Quillayute Airport

AIRPORT MASTER PLAN

Forks, WA
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Chapter 1
Introduction

The City of Forks is preparing an Airport Master Plan Update for Quillayute Airport in cooperation with the Federal Aviation Administration (FAA) to address the Airport's needs for the next 20 years. The Airport Master Plan (AMP) will provide specific guidance in making the improvements necessary to maintain a safe and efficient airport that is economically, environmentally, and socially sustainable.

Study Purpose

The purpose of the Airport Master Plan is to define the current, short-term, and long-term needs of the Airport through a comprehensive evaluation of facilities, conditions, and FAA airport planning and design standards. The study will also address elements of local planning (land use, transportation, environmental, economic development, etc.) that have the potential to affect the planning, development, and operation of the Airport.

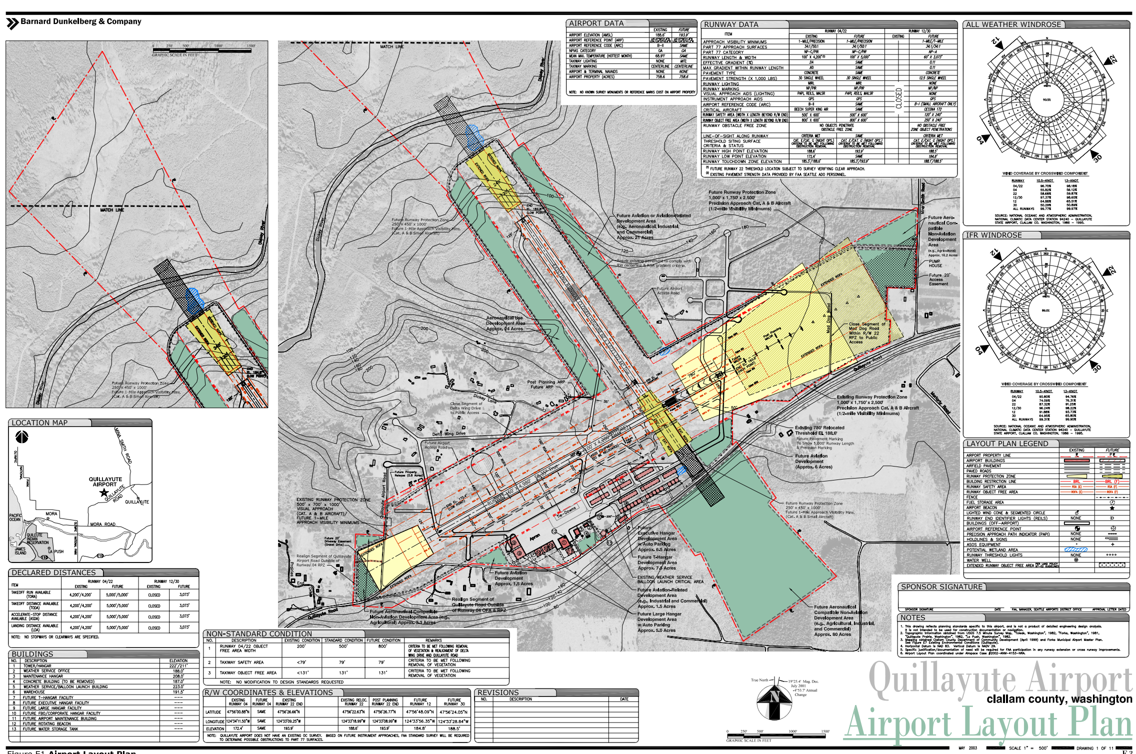


Figure E1 Airport Layout Plan

Project Need

The FAA requires airport sponsors (in this case, the City of Forks) to periodically update their master plans as conditions change in order to maintain current planning. This project replaces the 2003 Airport Master Plan and Airport Layout Plan (ALP) drawing set that guided recent projects, including rehabilitations of runway and taxiway pavement.

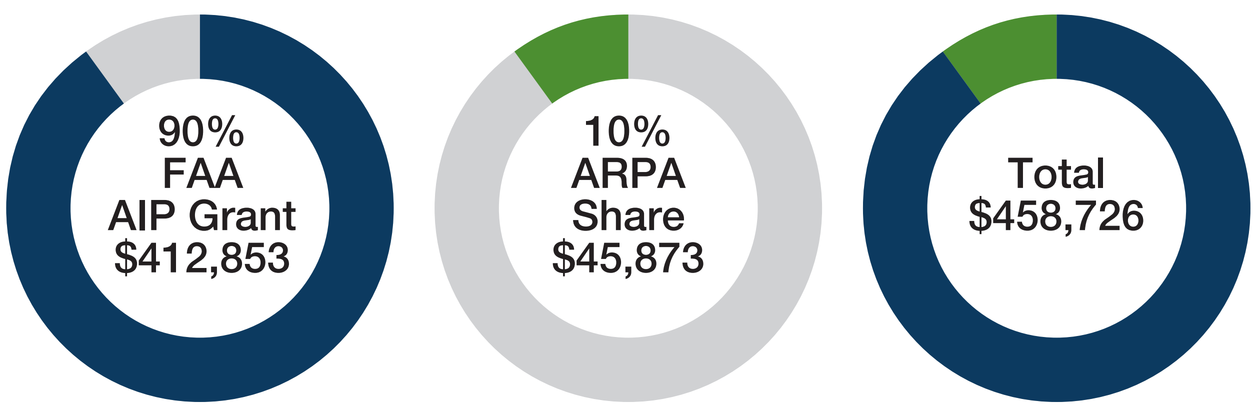
Although most of the 46 projects ($23.2 million) included in the 2003 AMP 20-year capital improvement program (CIP) have not been implemented, time-driven changes in both local conditions and FAA planning and design guidance, suggest a clear need to reexamine previous planning and recalibrate the Airport's development program moving forward. This project also includes an Airport GIS (AGIS) survey, now required by FAA to perform the technical evaluations for instrument procedure development. Completion of the AGIS survey will allow the City of Forks to realize its long-established goal of obtaining an instrument approach to the Airport.

The master plan update reevaluates the development concepts presented in the previous planning effort, and address new facility needs. The updated plan will reflect changing local conditions, updated FAA standards, and current trends within the aviation industry.

The 2003 AMP Report serves as a primary source for inventory data. More recent information provided by the City, published FAA data, and data obtained from on-site airfield inspections will be reflected in the AMP and ALP updates.

Project Funding

The 2021-2041 AMP for Quillayute Airport is being fully funded at the federal level. This includes an FAA Airport Improvement Program (AIP) grant of $412,853 to cover the usual 90% FAA project funding share, and $45,873 of additional FAA funding under the American Rescue Plan Act (ARPA) to cover the usual 10% local sponsor match. The AIP is a dedicated fund administered by FAA with the specific purpose of maintaining and improving the nation's public use airports. The AIP is funded exclusively through fees paid by users of general and commercial aviation.



Goals of the Master Plan

The primary goal of the master plan is to provide the framework and vision needed to guide future development at Quillayute Airport. The FAA sets goals and objectives that each master plan should meet to ensure future development will cost-effectively satisfy aviation demand and also consider potential environmental and socioeconomic impacts.

Goal 1: Define the vision for the Airport to effectively serve the community, airport users, and the region. Assess known issues including airspace, runway-taxiway system configuration and condition, airfield lighting, and utility services/extensions required to support economically-feasible tenant development.

Goal 2: Document existing activity, condition of airfield facilities, and policies that impact airport operations and development opportunities.

Goal 3: Forecast future activity based on accepted methodology.

Goal 4: Evaluate facilities and conformance with applicable local, state, and FAA standards.

Goal 5: Identify facility improvements to address conformance issues and accommodate demand.

Goal 6: Identify potential environmental and land use requirements that may impact development.

Goal 7: Explore alternatives to address facility needs. Work collaboratively with all stakeholders to develop workable solutions to address needs.

Goal 8: Develop a detailed five-year work program to define key projects with an implementation schedule and funding strategy within the overall 20-year Capital Improvement Program (CIP). Develop long-term financial strategy for the Airport's maintenance & operations (M&O) and capital development needs.

Goal 9: Develop an Airport Layout Plan to graphically depict proposed improvements consistent with FAA standards as a road map to future development.

Goal 10: Review land use and zoning affecting the Airport and its immediate surroundings to ensure effective County oversight and to remove barriers to appropriate growth at the Airport.

Goal 11: Summarize the collective vision and plan for the Airport in the AMP.

THE FAA ROLE IN THE AIRPORT MASTER PLAN

FAA *Advisory Circular 150/5070-6B Airport Master Plans* defines the specific requirements and evaluation methods established by FAA for the study. The guidance in this AC covers planning requirements for all airports, regardless of size, complexity, or role. However, each planning study must focus on the specific needs of the airport for which a plan is being prepared.

The recommendations contained in an airport master plan represent the views, policies and development plans of the airport sponsor and do not necessarily represent the views of the FAA. Acceptance of the plan by the FAA does not constitute a commitment on the part of the United States to participate in any development depicted in the plan, nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public law. The FAA reviews all elements of the plan to ensure that sound planning techniques have been applied. However, the FAA only approves the Aviation Activity Forecasts and Airport Layout Plan (ALP) drawings.

Planning Process

The three phase planning process is designed to provide multiple feedback loops intended to maintain the flow of information and ideas among the community and project stakeholders and ultimately maximize public involvement.

DEVELOP UNDERSTANDING

A comprehensive understanding of the issues and opportunities, existing conditions, and an identified level of future aviation activity that would mandate facility improvements required to satisfy future demand.

Analysis
- Develop Scope of Work
- Public Involvement Strategy
- AGIS Survey
- Existing Conditions Analysis
- Aviation Activity Forecasts

Project Meetings
- Bi-Weekly Planning Team Meetings
- Project Kick-off Meeting
- Planning Advisory Committee (PAC) Meetings

Work Product
- Introduction
- Existing Conditions
- Aviation Activity Forecasts

EXPLORE SOLUTIONS

A collaborative exploration of local Airport needs, goals, and facility requirements in sequence with the development of community generated ideas, solutions, and development alternatives.

Analysis
- Define Updated Airfield Design Standards
- Perform Demand/Capacity Analysis
- Define Facility Goals and Requirements
- Identify & Prepare Development Alternatives
- Evaluate Development Alternatives

Project Meetings
- Bi-Weekly Planning Team Meetings
- Planning Advisory Committee (PAC) Meetings
- Public Open House

Work Product
- Facility Goals & Requirements
- Airport Development Alternatives

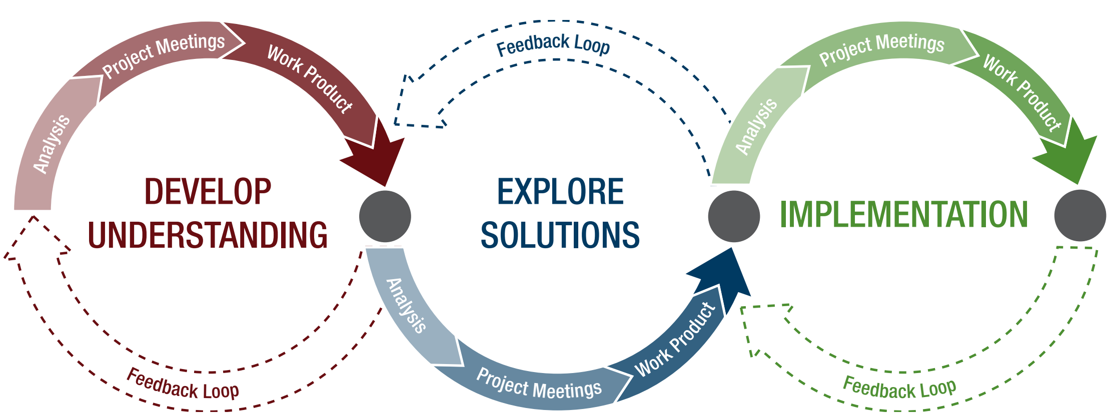
IMPLEMENTATION

An implementation program with recommended strategies and actions for future land use, transportation, and environmental requirements; a realistic and workable CIP; and current ALP drawings that graphically depict existing conditions at the airport as well as proposed development projects.

Analysis
- Develop Strategies & Actions
- Develop CIP/Phasing/Financial Plan
- Develop ALP Drawing Set

Project Meetings
- Bi-Weekly Planning Team Meetings
- Planning Advisory Committee (PAC) Meetings

Work Product
- Strategies & Actions
- Financial Plan (CIP/Phasing)
- ALP Drawing Set
- Draft AMP Report
- Final AMP Report



Framework of the Airport Master Plan

The framework of the AMP provides a clear structure to inform and steer future planning decisions. The AMP serves as a tool to guide a process that allows the plan to take shape through flexibility, iteration, and adaptation. The framework recognizes the rural setting of the Airport, its required airside and landside elements, as well as the management and administration functions of the municipal general aviation airport. The framework provides guidance, while being flexible enough to adapt to changing conditions to maximize opportunities to develop understanding, explore solutions, and implement the preferred development alternatives that benefit the Airport and the community it serves.

Develop Understanding

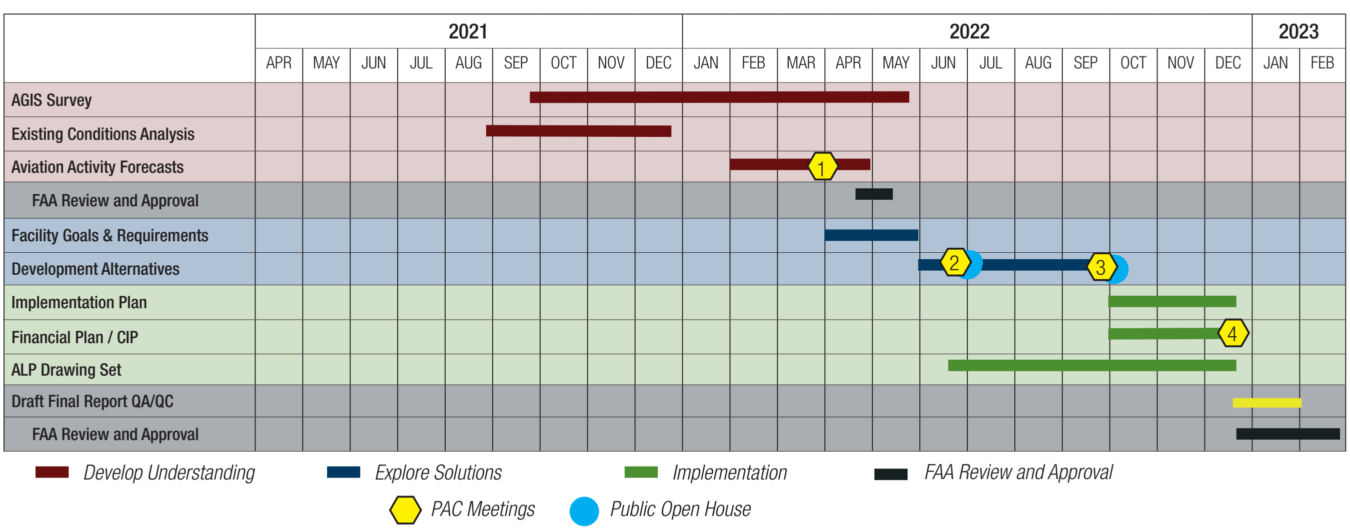
Explore Solutions

Implementation

Regional Setting	Airside Elements	Landside Elements	Airport Administration
Location & Vicinity	Area Airspace	Terminal Building	Airport Ownership & Management
Socio-Economic Data	Instrument Flight Procedures	Aprons/Tiedowns	Airport Financials
Airport Role	Runway/Helipad	Hangars	Airport Rates and Charges
Airport History	Taxiways/Taxilanes	Airport Fencing	Local Rules & Regulations
Area Airports Context	Pavement Condition	Airport Surface Roads	FAA Compliance Overview
Airport Operations	Airside Support Facilities	Vehicle Parking	
Relevant Studies		Utilities	
Environmental Data			
Local Surface Transportation			
Land Use/Zoning			

Project Schedule

The Quillayute AMP schedule is expected to occur over the course of 18-24 months. **Phase 1 – Develop Understanding** will take approximately 6-7 months, excluding the AGIS survey. The AGIS survey implementation occurs during Phase 1 and extends though the project on a parallel track to obtain full FAA acceptance of survey data. **Phase 2 – Explore Solutions** will take approximately 8-9 months. **Phase 3 – Implementation** will take approximately 8-9 months, including 3 months (or longer) for formal FAA review and approvals at the end of the project.



Public Involvement Process

A comprehensive and engaging public involvement process is a key element to a successful airport master plan. For this project, numerous opportunities for public input were built in to the process. These included Planning Advisory Committee (PAC) meetings, a Public Open House for the project, and ongoing access to the project website that included draft work products and project updates. Additional coordination meetings involving the FAA, City staff, and the project planning team were conducted and reported over the course of the project.

The following summary of public meetings included updated information base on actual events.

PLANNING ADVISORY COMMITTEE (PAC) MEETINGS

The local Planning Advisory Committee (PAC) function for this project was performed by City staff and elected officials. Public input and participation was encouraged. The PAC meetings provided opportunities for a public discussion of Airport issues and future planning needs. The FAA Seattle Airports District Office (ADO) project manager will interact with the project team throughout the project, and may attend one or more of the PAC meetings. The FAA has primary responsibility for technical review, comment, and approval of forecasts and ALP.

The PAC meetings included in-person, remote (video conferencing), and a combination thereof (hybrid) depending on the COVID-19 pandemic. Public gathering restrictions established by local and state government.

PAC Meeting #1

The Consultant summarized the goals and objectives of an Airport Master Plan, and also presented the existing conditions of the Airport, community, and aviation industry; as well as the preliminary aviation activity forecasts that were submitted to FAA for formal review and approval.

PAC Meeting #2

PAC Meeting #2 was an interactive discussion with the PAC that focused on the Airport's facility needs to meet FAA standards, future growth, as well as the goals of the City and its users. The Consultant presented a series of preliminary alternative concepts capable of satisfying future demand and any non-standard conditions and sought input from the PAC and public.

PAC Meeting #3

The input provided in PAC #2 was used to refine the concepts, and based on technical evaluations, public input and coordination with the City, a preferred alternative was presented to the PAC. The Consultant presented an implementation program with recommended strategies and actions for future land use, transportation, and environmental requirements; a realistic and workable CIP; and current ALP drawings that graphically depict existing conditions at the Airport.

Known Issues & Opportunities

At the outset of the AMP there were several known issues and opportunities identified by the FAA, City, and planning team. The issues and opportunities identified below are anticipated focus areas for the master plan; other areas of emphasis may be identified during the project. Addressing these areas will ensure a comprehensive and thorough assessment that supports the proposed solutions and methods of implementation.

TARGETED FACILITY NEEDS – CREATE A REALISTIC PLAN FOR IMPLEMENTATION

The AMP will create a detailed development program that identifies critical tasks required for completion of each priority project. A focused approach will be used for a small number of priority projects that can be completed or significant progress made within the next five years. The program will include clear project definitions, detailed engineering cost estimates, financial strategy elements, and the required sequence of actions for successful implementation.

INSTRUMENT APPROACH AND DEPARTURE

The AGIS survey was initiated at the outset of the AMP with an aerial photography flight in August, 2021 to capture full leaf-on conditions. Preliminary field work was also conducted in the early fall to allow the obstruction data to be collected and analyzed. Contact with the FAA Air Traffic Office (ATO) is being established early in the AMP to include a request for procedure feasibility that can be refined with AGIS data, when it becomes available. The goal is to obtain an FAA finding of technical feasibility that can be incorporated into the airfield alternatives analysis, then move into the procedure design phase. The process of formal FAA procedure design and approval will extend beyond the AMP, but these steps will facilitate the most efficient process and shortest development period possible.

RUNWAY LIGHTING, PAPI, BEACON

Upgrades in airfield lighting will be critical elements for instrument procedure development. The AMP will verify the FAA's minimum system requirements for publishing new instrument procedures at the Airport. The identification and phasing of lighting systems as critical path items required for instrumentation will be a main focus in the first five years of the CIP. A review of available FAA-approved lighting technologies will be performed to develop accurate estimates of cost.

UTILITIES – AIRPORT SYSTEM ASSESSMENT

An updated evaluation of existing utility services and on-airport distribution systems will be conducted to identify service gaps that may limit current or future development on the Airport. The analysis will address availability, capacity, and quality of water, sanitary sewer, electric, and communication (broadband/internet) service from existing providers/sources. Natural gas service is not available in Forks. The utilities assessment will include order-of-magnitude costs for service improvements, which will then be used to gauge overall project feasibility for the City of Forks.

The evaluation of water will also address potential operational factors such as fire flow distribution or water storage required to serve existing/future tenants from the existing water source (well). A review of any planned utility service upgrades for the area along Quillayute Road will be conducted to identify potential opportunities for the service extensions or upgrades at the Airport.

AVIATION ACTIVITY FORECASTS

New aviation activity forecasts will be developed for the Airport. By all appearances, the 2003 AMP 20-year forecast has not been realized (2021: 15 based aircraft; 19,088 aircraft operations). There are currently no based aircraft at the Airport. The previous master plan assumptions about Forks Municipal Airport will be reexamined and revised, as needed. An updated estimate of (transient) aircraft activity will be prepared and will include medevac operators, flight training providers, and military aircraft. A review of the previously-defined Airport Reference Code (ARC) (now Aircraft Approach Category -AAC and Airplane Design Group - ADG), which is directly tied to the forecast (critical aircraft), is also required to meet FAA requirements. The activity assessment will also identify the range of users that rely on the Airport to provide critical emergency and natural disaster response capabilities.

MASTER PLAN NEEDS TO SUPPORT NON-AERONAUTICAL LAND USE

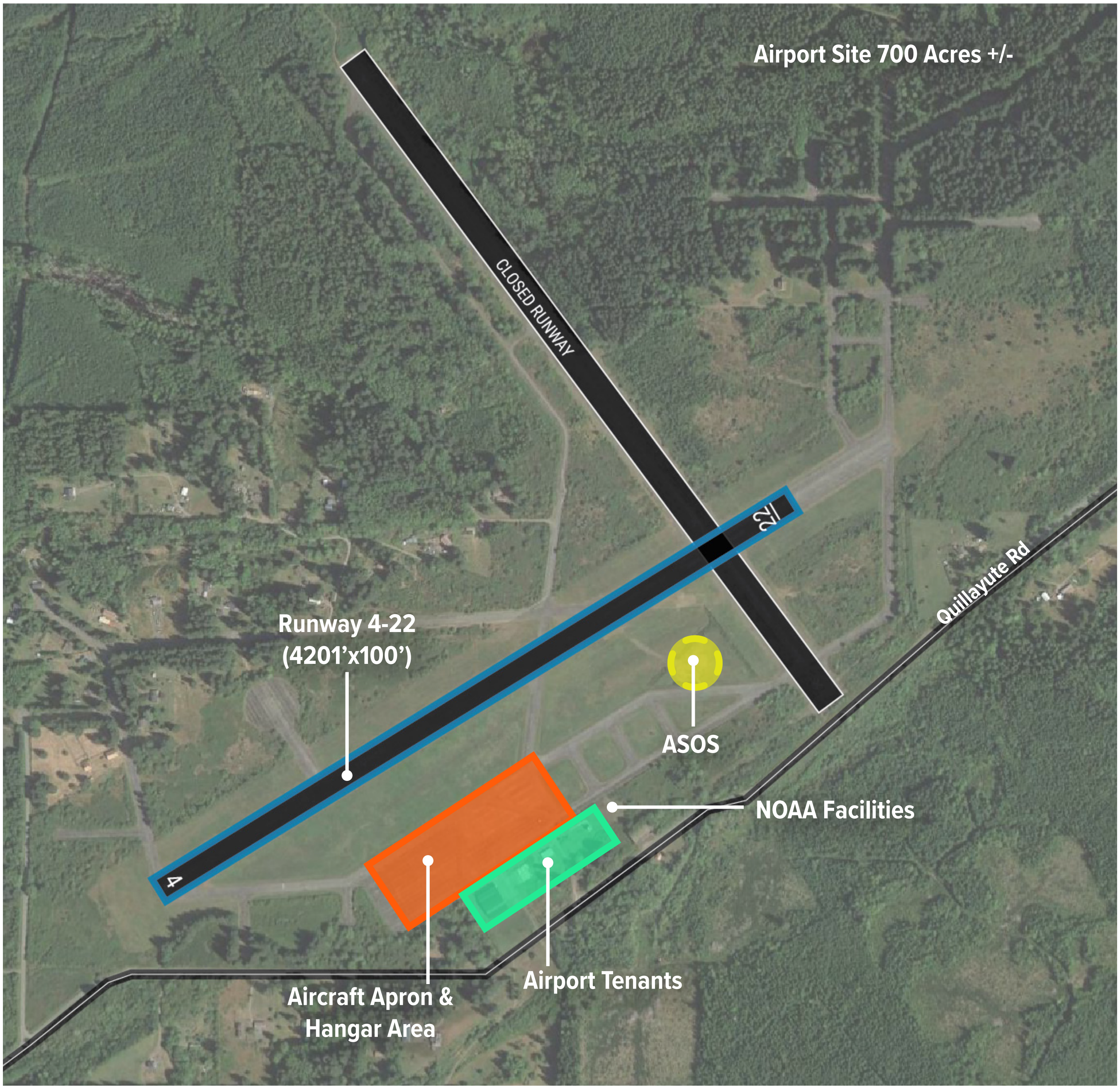
The definition of aeronautical and non-aeronautical land use areas on the Airport will provide clear guidance on future revenue-generating activities, including periodic timber sales and use of airport land to support local and regional economic development activities. Identification of developable non-aeronautical areas of the airport will include surface access and utilities assessments to determine overall feasibility of development.

AIRFIELD PAVEMENT

An updated evaluation of airfield pavement needs will be performed based on the most recent WSDOT Aviation pavement data (2018) and the engineering analysis performed on the most recent runway/taxiway rehabilitation projects. The 2018-2025 PCI ratings indicate that the main apron and west taxiway pavements will require rehabilitation during the current 20 year planning period.

The evaluation of existing airfield pavements will also examine the pavement areas that are required to meet the applicable FAA design standard. As a former military facility, many existing pavement sections are oversized and may not be eligible for future FAA funding without modification. The main apron will be evaluated for optimal configuration and ongoing cost of maintenance. The previous recommendation to rehabilitate the closed runway (12/30) will be evaluated to determine cost, benefit and potential funding sources.

Existing Conditions



Chapter 2
Existing Conditions

Introduction

The Existing Conditions Analysis documents existing airfield facilities and conditions that affect the operation and development of the Quillayute Airport (UIL) within the context of the regional setting, landside, airside, and administrative functions. The findings documented in this chapter will be used to support subsequent studies and recommendations throughout the development of the master plan. The 2003 Quillayute Airport Master Plan[1] and other subsequent work products serve as primary source documents for the master plan update. In addition, numerous meetings with City staff were conducted to support the effort.

Regional Setting

The Regional Setting section provides an overview of conditions and activities affecting the Airport, including local and regional socio-economic conditions. The section also summarizes several airport-specific items: history, functional role, definition of service area, current activity, recent development, local surface transportation, land use, environmental conditions, and recent relevant studies.

LOCATION & VICINITY

Quillayute Airport is located in unincorporated Clallam County, west of the City of Forks city limits and urban growth area (UGA) boundary. Clallam County is located in the Northwestern corner of Washington, on the northern section of the Olympic Peninsula, bordering Jefferson County to the south and east. Quillayute Airport is located about 10 driving miles west of Forks and 10 miles east of LaPush via State Highway 110 and secondary roads. Airport elevation is 193 feet above mean sea level (MSL). **Figure 2-1** depicts a location and vicinity map.

Forks is located on U.S. Highway 101, 56 miles west of Port Angeles, the county seat and largest population center in Clallam County. Highway 101 is the primary surface route through the county, connecting numerous small communities with its three incorporated cities (Forks, Port Angeles, and Sequim). Highway 101 travels south to Hoquiam (104 miles), and continues to Los Angeles; it travels east of Forks before heading south along Hood Canal to Tumwater. State Highway 110 connects to Highway 101 near Forks, and extends 14 miles to LaPush.

1 Quillayute Airport Master Plan (Barnard Dunkelberg & Co., May 2003)

FIGURE 2-1: LOCATION & VICINITY MAP

COMMUNITY SOCIO-ECONOMIC DATA

The information presented in **Tables 2-1 to 2-3** summarize historical population and demographic data that may affect Quillayute Airport. Forecast economic and population data will be presented in Chapter 3: Aviation Activity Forecasts to supplement the updated projections of future aviation activity.

Population

Data obtained from the State of Washington Office of Financial Management (OFM) (**Table 2-1**) show that Clallam County population growth over the past decade was about just above half the statewide growth rate. The county's average annual growth rate (AGR) during the 10-year period was 0.86%. compared to 1.46% for Washington. The net increase in county population during the period was 5,750 (8.0%). The data indicate the population of Forks (incorporated area only) declined by 210 residents between 2012 and 2021 (-5.92%; -0.67% AGR). However, the year-over-year decline (-300) between 2019 and 2020 significantly skews the overall trend.

TABLE 2-1: HISTORICAL POPULATION

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Washington	6,817,770	6,882,400	6,968,170	7,061,410	7,183,700	7,310,300	7,427,570	7,546,410	7,707,047	7,766,975
									Average AGR:	1.46%
Clallam County	72,000	72,350	72,500	72,650	73,410	74,240	75,130	76,010	77,155	77,750
									Average AGR:	0.86%
Forks	3,545	3,545	3,565	3,565	3,580	3,595	3,615	3,635	3,335	3,335
									Average AGR:	-0.67%

Source: State of Washington Office of Financial Management Postcensal Estimates of Population (2012-2020); April 1 Official Population Estimates Revised November 30, 2021 (2021)

Table 2-2 summarizes population from 1990 to 2021, including both U.S. Census data and OFM annual estimates. The 6% decline in Forks' population between the 2010 and 2020 Censuses was not portended by the OFM annual population estimates generated (see **Table 2-1**) between the two censuses. Local officials indicate that several factors contributed to the population decline contained in the 2020 Census. These include documented closures of three local employers resulting the loss of more than 150 jobs. A second factor is the potential undercounting of the Latino population, which is partly attributed to 2020 Census methodology, language barriers, and limited digital access in rural communities. Despite potential limitations, the 2020 Census and 2021 OFM annual estimate are accepted as the current measure of local and county population used in this study.

Over the last 30 years, the portion of county population located in unincorporated areas (including local urban growth areas) has remained steady at about 60%. The data indicates that Forks consistently accounted for 4 to 5% of Clallam County population, while Port Angeles' share has declined by 6 percentage points and Sequim's share increased by 5 percentage points. During this period, Sequim's population more than doubled, although it continues to represent less than 10% of Clallam County's overall population. Based on potential limitations with data, coupled with the uncertainty created by the COVID-19 pandemic, the use of county-wide population data and long-term forecasts is recommended for this project.

TABLE 2-2: HISTORICAL POPULATION – LOCAL AREA DISTRIBUTION

	1990	2000	2010	2015	2021
Clallam County	56,454 (100%)	64,525 (100%)	71,404 (100%)	72,650 (100%)	77,750 (100%)
Forks	2,862 (5%)	3,120 (5%)	3,532 (5%)	3,565 (5%)	3,335 (4%)
Port Angeles	17,710 (31%)	18,397 (29%)	19,038 (27%)	19,140 (26%)	20,120 (26%)
Sequim	3,616 (6%)	4,334 (7%)	6,606 (9%)	6,915 (10%)	8,125 (11%)
Unincorporated	32,266 (57%)	38,674 (60%)	42,228 (59%)	43,030 (59%)	46,170 (59%)

Source: US Decennial Census (1990,2000,2010). Washington Office of Financial Management (OFM) annual estimates (2015,2021). Distribution percentages rounded, may not sum.

Area Demographics

Clallam County has a diverse blend of private and government employment. **Table 2-3** notes the unemployment rate for the county often runs above the statewide average. The county-wide median household income is approximately 27% lower than the state and the percentage of residents 65 and over is nearly double the statewide average.

TABLE 2-3: CLALLAM COUNTY DEMOGRAPHICS[1]

Demographic	Data
Population (2020)	77,155 (2020 Census)[1]
Ethnicity (2019)	Caucasian (87.1%); Hispanic or Latino (6.6%); American Indian and Alaska Native (5.6%); Asian, Native Hawaiian, other Pacific Islander (2.1%) (Clallam County)
Median Household Income (2019)	$52,192 (Clallam County); $73,775 (Washington)
Persons in Poverty (%) (2019)	13.3% (Clallam County); 12.6% (Washington)
Persons Under 18 (%)	16.7% (Clallam County); 21.8% (Washington)
Persons 65 and Over (%)	30.5% (Clallam County); 15.9% (Washington)
Total Employment (2020)[2]	22,290 (Clallam County) • Private Sector: 66% • Government Sector: 34%
Leading Employment Sectors by Industry[3]	• Government (33.8%) • Trade, Transportation, and Utilities (17.3%) • Retail Trade (14.4%) • Education and Health Services (13.0%) • Leisure and Hospitality (11.8%)
Unemployment Rate (%)[4]	Clallam County/Washington 4.5%/4.5% (December 2021) 20.4%/16.3% (April 2020) 9.2% /6.3% (February 2015)

[1] U.S. Census Bureau QuickFacts State of Washington, Clallam County (2020 Census); other data and distributions are 2019.
[2] Total NonFarm Employment
[3] Washington State Employment Security Department (ESD).
[4] Washington ESD. Not seasonally Adjusted

Olympic Experimental State Forest (OESF)

The Olympic Experimental State Forest (OESF) was established by the U.S. Forest Service as part of the agency's National Experimental Forest and Range Network. Although the OESF is established to support scientific research and long-term forest management, several communities are located within its boundaries, including Forks and the service area defined for Quillayute Airport.

The OESF boundary provides a unique perspective for the western sections of Clallam and Jefferson Counties, which includes several small communities located within about 1.3 million acres of federal, tribal, state, and private lands. The following descriptive section was provided by the City of Forks, sourced from several State of Washington Department of Natural Resources documents, U.S. Census data, and other sources related to the OESF. The overview of population and economic data for the communities within the OESF highlights the underlying conditions affecting the local community and planning at Quillayute Airport:

> *"A Brief Overview of the OESF*
> *The OESF is located in the Northwest corner of the Olympic Peninsula and consists of approximately 1.3m acres or 2,031 sq. miles which would make it the 14th largest county in the state.[1] The OESF region has approximately 10,000 residents living within one of three tribes, two counties, or one city (Hoh, Quileute, and Makah; Clallam and Jefferson; and, Forks).[2] With such a population, the OESF has more people than four existing counties in the state (Columbia, Ferry, Garfield, and Wahkiakum).[3]*
>
> *The OESF includes a matrix of federal, tribal, state, and private lands. Federal, non-tribal, ownership/ management consists of 39% of the OESF geographic area. National Park Service manages 27% of the*

OESF having 355,815 acres or 556 sq. miles. The United States Forest Service manages 12% of the OESF having 158,017 acres or 247 sq. miles. The three tribal nations of the Hoh, Quileute and Makah have a combined ownership of 124,023 acres or 194 sq. miles. The remaining 385,521 acres, or 602 sq. miles, is in private ownerships that range from individual home owners in Forks to large timber lands owned by private corporations.

Five census tracts, identified by the US Department of Treasury as low income communities, account for most of the OESF. The following table provides a 2017 snap shot of the economic status of these:

Location Census Tract	*Population*	*Median Income as % of State*	*Poverty Rate % of tract pop.*	*Unemployment % of tract pop*
Makah 5300994000	*1,489*	*53.87*	*19.30*	*17.00*
Clallam Bay/Sekiu 53009000200	*938*	*79.79*	*28.00*	*4.20*
La Push/Sol Duc 53009000400	*1,540*	*71.28*	*14.90*	*6.80*
Forks 53009000300	*4,657*	*62.06*	*23.70*	*10.90*
Hoh/JeffCo[4] 53031950702	*1,656*	*62.12*	*23.60*	*16.80*
	Total Population 10,280	*Ave. Median Inc. 65.86*	*Ave. % in Poverty 21.9*	*Unemployment 11.14*

The major economic sectors within the region include natural resources, retail & services, and government. Each of these sectors have components that cover a wide range of activities. Natural Resources includes timber extraction, private timber management, milling, commercial & recreational fisheries (tribal & non-tribal), etc. Retail & Services incorporates such activities as restaurants and groceries stores, as well as lodging, outdoor guiding, private medical, etc. The latter is a continually growing element of the region and is being singled out for further evaluation as part of this effort. Government in the OESF can range from tribal governments to the US Coast Guard at the federal level; Clallam County District Court staff to County road crews to sheriffs at the county level; to the hundreds of employees associated with established special purpose districts such as the Forks Community Hospital and its clinics, to the schools, libraries, etc.

1. *See Olympic Experimental State Forest Revised Draft Environmental Impact Statement, DNR at ES-7 and 8; and, the county list provided at http://www.wa-list.com/?p=436*
2. *See US Treasury Department's Community Development Financial Institutions Fund mapping of opportunity zones found at https://www.cdfifund.gov/pages/opportunity-zones.aspx*
3. *See the OFM 2017 April 1 Population Estimated for Washington State at https://www.ofm.wa.gov/sites/default/files/public/legacy/pop/april1/ofm_april1_population_final.pdf*
4. *This census tract actually stretches the Hoh Reservation to Brinnon on the east side of the Peninsula. The entire data set is used herein."*

The Washington Employment Security Department (ESD) current Clallam County profile provides the following overview on its economic growth *"In summary, over the past 20 years, the economy in Clallam County has experienced slow but steady growth. This economic growth has been shaped by a vibrant port district in the county's major coastal city of Port Angeles. New in-migration is also on the rise as many retirees are attracted to Sequim's "sunbelt" climate."* This assessment appears to recognize the unique economic challenges within the county are largely consistent with the historical population trends described earlier.

Efforts to grow and diversify the local economy are well established, and currently include the Emerald Coast Opportunity Zone (ECOZ), created in 2018. The current ESD Clallam County profile characterizes the ECOZ *"This Opportunity Zone is a unique collaboration of five Tribal Nations, four cities, two counties (Clallam and Jefferson) and two port authorities that spans 14 federally designated Opportunity Zone census tracts. Together, the partners of the Emerald Coast Opportunity Zone are building a deal "engine" of community driven projects that both present good investments but also create good jobs, construct affordable and high-end housing, and support innovative entrepreneurs."* Opportunity zones were created at the federal government level to provide capital gains tax relief for developments in underserved communities. The City of Forks is one of three cities in Clallam County collaborating in the ECOZ.

Area Tourism

Despite relatively flat population growth and declines in traditional industry sectors (logging, fisheries, etc.), Forks and Clallam County have seen significant growth in visitor activity associated with both outdoor-themed and event driven tourism. Visitor activity related to the Twilight Saga series of books and films reached peak levels several years ago, but continues to generate interest in the local community.

A variety of recreational segments contribute to a growing year-round visitor activity, including camping, beachcombing, hiking, and water sports. The National Park Service (NPS) reports that nearby Olympic National Park is consistently among the top ten most visited national parks (2.5 million visitors in 2020). Forks provides prime access to the western section of the Park, campsites and trails in the adjacent Olympic National Forest, and the rugged north coast area that includes tribal lands, the Olympic Coast National Marine Sanctuary (OCNMS), and other federally-protected wildlife refuges and wilderness areas. The Quileute Oceanside Resort in LaPush, and the Kalaloch Lodge at Olympic National Park are popular facilities near Forks offering year-round access to Pacific Ocean beaches.

AIRPORT ROLE (NATIONAL, STATE, AND LOCAL)

The role of an airport may vary slightly within the context of the national, state, or local perspective. Understanding the existing roles of the Quillayute Airport is key to establishing the long-term vision and development of the facility. As noted earlier, Quillayute is one of two public use airports located in Forks that are owned and operated by the City of Forks. These airports accommodate 100% of the fixed wing air traffic activity in the local area and a portion of helicopter activity.

National Role

The Federal Aviation Administration (FAA) is responsible for oversight of the national airport system, which currently includes 3,304 public use airports, heliports, and seaplane bases in the National Plan of Integrated Airport Systems (NPIAS). *The National Plan of Integrated Airport Systems (2021-2025), Report to Congress provides the following summary "The FAA's responsibility is to work with State and local units of government, as well as other stakeholders, to ensure effective planning of a safe and efficient system of airports to support the needs of the civil aviation industry… Accordingly, this NPIAS identifies the airports included in the national airport system, the roles they currently serve, and the amounts and types of airport development eligible for Federal funding under the Airport Improvement Program (AIP) over the next 5 years. The FAA has been publishing a Federal airport plan since the 1940s and the NPIAS since 1984."*

Quillayute Airport is classified as a **Basic** airport in the NPIAS, within the larger category of Nonprimary (general aviation) airports. The NPIAS provides the following definition of Basic airports: *"Basic airports fulfill 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. In some instances, the airport is the only way to access the community and provides emergency response access, such as emergency medical or firefighting and mail delivery. These airports have moderate levels of activity with an average of nine propeller-driven aircraft and no jets. Many of these airports are located in rural areas."*

Quillayute and William Fairchild International Airport, in Port Angeles, are the only NPIAS airports in Clallam County. Forks Municipal Airport is not included in the NPIAS and does not receive FAA funding.

State Role

The Washington Department of Transportation – Aviation Division (WSDOT Aviation) has developed and regularly updates the Washington Aviation System Plan (WASP) to provide guidance on preserving the State's system of airports. The WASP presents a framework for improving the system for continued support of communities and economic development. The 2017 update to the WASP classifies Quillayute Airport as a Local airport. Local airports support primarily single-engine and smaller multi-engine aircraft. Primary activities at Local airports include GA-Personal Transportation/Recreation, Pilot Training, and Agriculture. Local airports are typically outside larger metro areas, have a paved runway, and have less than 15 based aircraft. Forks Municipal Airport is also categorized as a Local airport by WSDOT.

AIRPORT HISTORY

Ownership

Quillayute Airport was commissioned as Quillayute Naval Auxiliary Station in February, 1944. The 2003 airport master plan noted that *"In 1962, the Federal Government transferred approximately 750 acres of the facility to the State of Washington (i.e., the airfield, etc.), with the remaining 450 acres being deeded and/or sold to between the Quillayute Valley School District and private parties."*

Upon its transfer, the facility was operated as Quillayute State Airport until 1999, when ownership was transferred to the City of Forks. The 2003 Exhibit 'A' Airport Property Map lists airport acreage as 753.4 acres.[2] No known changes in airport property ownership have occurred since the 2003 Exhibit A drawing was prepared.

As part of accepting airport ownership, the City of Forks also transferred the community's NPIAS designation from Forks Municipal Airport to Quillayute Airport. This action was based on the challenges in meeting FAA design standards at the Forks Municipal Airport site. As noted earlier, a primary assumption in the 2003 Quillayute Airport Master Plan was the planned closure of Forks Municipal Airport and the relocation of locally-based aircraft to Quillayute.

Airfield Development

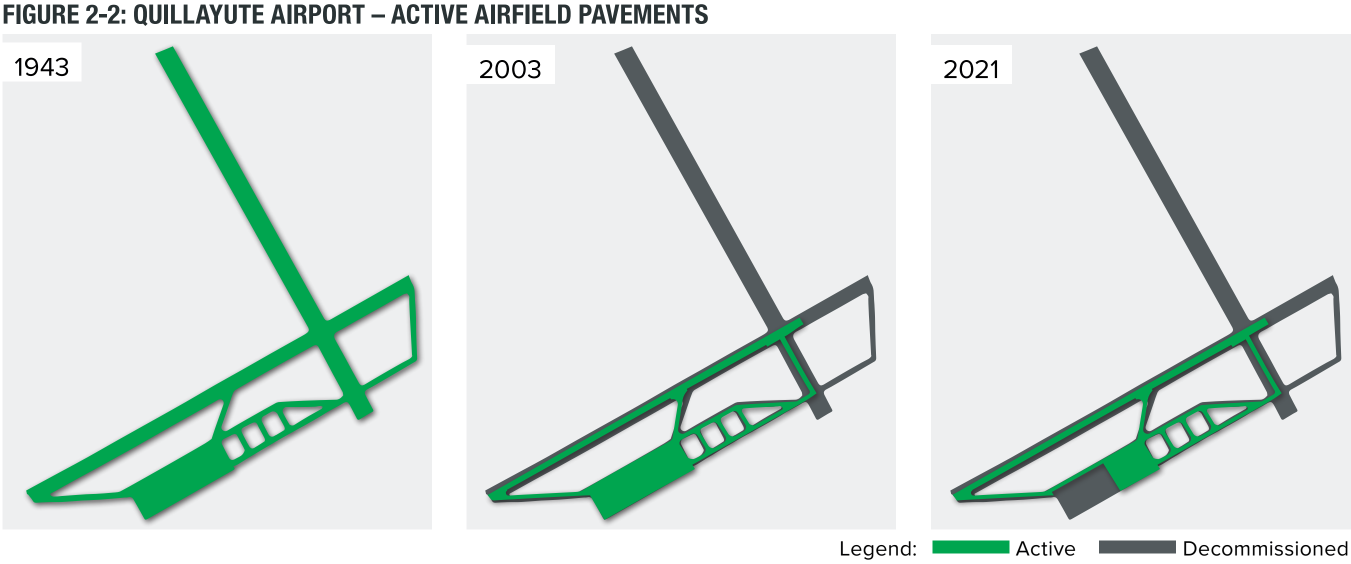
The original airfield pavements were constructed in 1943 with Portland Cement Concrete (PCC). The pavements remain largely intact, although several sections (second runway, taxiways, revetments, etc.) have been decommissioned and are not maintained. The pavement reductions have been accomplished through changes in markings (e.g., narrowing runway 4/22 with edge stripes, "X" old runways and taxiways, etc.). The reduction in the Airport's maintained pavement area reflects general aviation aircraft use and provides a more cost–effective pavement maintenance obligation for the City.

The active airfield pavements currently total over 1 million square feet, down from more than 2.5 million in 1943. **Table 2-4** summarizes the reduction in actively used airfield pavement areas through the Airport's history. **Figure 2-2** depicts the gradual reduction of actively used airfield pavements from original construction to current use.

TABLE 2-4: QUILLAYUTE AIRFIELD ACTIVE PAVEMENT AREA (SQUARE FEET)

Facilities	Original Configuration (1943)	2003 ALP	2021 Existing Conditions
Runways	1,680,000	750,000	436,945
Taxiways	349,550	349,550	342,335
Apron	484,688	484,688	273,402
All Pavements	2,514,238 (57.7 Acres)	1,584,988 (36.4 Acres)	1,052,682 (24.1 Acres)

FIGURE 2-2: QUILLAYUTE AIRPORT – ACTIVE AIRFIELD PAVEMENTS



2 Quillayute Airport – Airport Layout Plan (Barnard Dunkelberg, 2003); 2018 WSDOT IDEA Database; Historical USN Documents (1943).

Table 2-5 summarizes the configuration of major airfield facilities based on their active use: when constructed (1943), as depicted on the 2003 Airport Layout Plan, and currently.

TABLE 2-5: QUILLAYUTE AIRPORT – HISTORICAL AIRFIELD FACILITIES CONFIGURATION SUMMARY

Facility	1943 Original Configuration	2003 ALP	2021 Existing Conditions	Actions
Runway 4/22	4,980' x 200'	4,980' x 150'	4,210' x 100'	Runway narrowed twice from original construction. Runway 22 threshold relocated 770 feet west after 2003 AMP. No removal of original PCC pavement sections. All changes in useable pavement accomplished through markings and subsequent maintenance.
Runway 12/30	4,700' x 200'	Closed	Closed	Runway closed around 1995 to 1997, prior to City of Forks ownership.
Main Apron	1,175' x 412'	Same	Same*	*WSDOT IDEA Airfield Pavement Database depicts only the eastern section of the apron – approximately 550' x 412'. This area appears to be consistent with recent pavement maintenance but there are no markings or signs indicating that a portion of the apron is closed.
Access Taxiways	Taxiways to both ends of Runway 4/22. Taxiways to both ends of Runway 12/30. Extensive taxiway network serving aircraft revetments or other facilities.	Original taxiways depicted, including for areas no longer part of airport property.	New access taxiway for east section of Runway 4/22. Off airport taxiways converted to roads or abandoned.	South end of closed runway (12/30) converted to taxiway to access Runway 4/22. East taxiway used to access former Runway 22 end is decommissioned.

FAA Funding

Quillayute Airport's history of FAA funding began in 2000, with a congressional appropriation for a runway rehabilitation project. **Table 2-6** summarizes recent FAA funding for the rehabilitation of Runway 4/22 and the addition of perimeter fencing (south airport frontage).

TABLE 2-6: QUILLAYUTE AIRPORT – FAA PROJECT SUMMARY

Project Description	Fiscal Year	AIP
Install Perimeter Fencing	2005	$89,300
Install Perimeter Fencing, Rehabilitate Runway 4/22	2008	$249,867
Runway 4/22 Rehabilitation	2017	$450,000
Runway 4/22 Rehabilitation	2019	$271,917
Update Airport Master Plan Study, AGIS	2021	$458,726
Total		**$1,519,810**

Source: FAA AIP Grant Database

AREA AIRPORTS CONTEXTUAL ANALYSIS

Quillayute Airport is unusual in that the facility has two distinctly different functional roles:

- The first is the same as any general aviation airport—the Airport supports aviation activity related to the local community, and this activity is directly affected by the facilities and services available at competing airports.
- The second is of major importance to both the local community and the region—Quillayute Airport is uniquely capable (non-duplicated facilities and geographic proximity) of supporting a wide range of natural or maritime disaster response needs for the Olympic Peninsula in Washington state. Providing for extreme public safety needs requires a uniquely long-term strategy that is not diminished by an ongoing absence of catastrophe.

These functional roles are discussed below in order of their uniqueness.

Regional Significance

Quillayute Airport's location, elevation (relative to nearby coastal areas), and built airfield facilities provide the region with a major operational asset than can support critical emergency responses for a wide range of natural disasters. At approximately 193 feet above mean sea level (MSL), the Airport sits outside the common tsunami zone defined for nearby coastal areas, and the area of prime exposure for a Cascadia Subduction Zone event. Scientists estimate that waves could reach heights of 80 to 100 feet in a major event, accompanied by subsidence of coastal terrain and a rise in sea level within the zone. Even a less severe offshore event with significantly lower wave heights and less geological disturbance would be expected to cause major damage and extended disruption to low-lying communities, infrastructure, and road systems. The remote western section of the Olympic Peninsula is also at risk for wildfires, high wind events, and other natural disasters which could trigger the need for similar, focused responses. For example, Quillayute Airport has been designated as a critical facility for aircraft access and operational support in the event of a major coast oil spill.

Quillayute Airport, as it currently exists, is the only airport in the western section of the Olympic Peninsula capable of supporting a sustained forward response effort associated with a major natural or maritime disaster. While master plan-recommended improvements will enhance current capabilities, the WWII era airfield, constructed entirely of Portland cement concrete, remains intact and serviceable with only minimal preparation required to support emergency military-grade aircraft operations. In addition to its aeronautical capabilities, the Airport has adequate land area to accommodate a wide range of logistical and support roles, including temporary shelter and the distribution of food, water, and medical supplies for the region.

These considerations are reflected in the City of Forks decision to operate and maintain Quillayute Airport, in addition to Forks Municipal Airport, as part of a regional response that extends beyond its role in providing basic general aviation airport facilities. The Federal Aviation Administration (FAA) recognizes these unique conditions in its ongoing support of the Quillayute Airport as the local airport included in the federal airport system.

General Aviation Activity

The airport service area refers to the geographic area surrounding an airport that is directly affected by the activities at that airport. Normally a 30 or 60-minute surface travel time is used to approximate the boundaries of general aviation airport service areas. Airports located beyond these travel times have less impact on local airport activity due largely to the redundancy provided by closer facilities.

An airport service area represents several significant geographic elements:

- The primary residential or work locations for local users.
- The majority of business or recreational destinations for transient users.
- The number of airports competing for aeronautical activity and the range of services/capabilities available.

It is not uncommon to have several competing airports located within an airport's service area. Although the availability of facilities and services will vary (hangar space, fuel, aircraft maintenance, instrument approach, etc.), basic market dynamics (cost, convenience, and quality) tend to drive private investment in facilities, and overall activity. It is also recognized that smaller general aviation airports often have limited facilities or services available, such as fuel, aircraft maintenance, or hangar rentals. Although this may often be an indication of underlying market demand, the absence of services or facilities can also contribute to lower activity levels at an airport.

For Quillayute Airport, only Forks Municipal Airport (S18), located 1 mile southwest of city center is within a 30-minute drive. Based on the significant travel distances to other communities, the two airports in Forks accommodate virtually all fixed wing aircraft activity for the local community. Helicopter traffic is accommodated at the airports, a local helipad located at Forks Community Hospital, and in a variety of off-airport settings.

Quillayute Airport, Forks Municipal Airport, and Sekiu Airport are the only public use airports located within a 60-minute driving time from Quillayute Airport. These airports are the only public use airports in western Clallam County. This area is sparsely populated, with several small communities located along the highway and secondary road system. The next closest airport is William R. Fairchild International Airport in Port Angeles (70-minute drive).

A review of the FAA aircraft registration data (FAA Registry 3/15/22) lists of a total of 214 registered aircraft with Clallam County addresses. Seven aircraft (3%) are registered with a Forks address; one aircraft is registered with a Clallam Bay address, and the majority (95%) are registered with Port Angeles, Sequim, or Carlsborg addresses. While the address of an aircraft owner does not always correspond to their home airport location, the geographic distribution of Clallam County registered aircraft closely correlates to the number of aircraft based at Quillayute Airport and Forks Municipal Airport. The aircraft ownership data suggests that most local users of Quillayute Airport will live or work within 30 minutes of the Airport.

The 4,210-foot runway length available at Quillayute Airport allows the Airport to accommodate a larger segment of general aviation activity than nearby Forks Municipal Airport with its 2,400-foot-long runway. Based on the Airport's elevation and moderate temperatures, the runway can accommodate a wide range of multi-engine piston and turbine aircraft, including business jets and various and military aircraft. The potential addition of instrument capabilities at Quillayute Airport also differentiates the two airports. Despite this, most of the locally generated aviation activity appears to be currently generated at Forks Municipal Airport. The primary factors appear to be convenience and the availability of hangar space. Neither airport currently offers aviation fuel for sale. Private aviation fuel storage may be available at Forks Municipal Airport. Previous efforts to establish commercially viable aviation fuel (AVGAS and jet fuel) at Quillayute Airport were not successful. The two aboveground fuel tanks have been decommissioned and remain on the main apron.

As part of the master plan update, area flight schools and air charter operators were contacted about their use of Quillayute Airport. A Port Angeles-based air taxi operator (Rite Brothers Aviation) indicates that their customers frequently use Forks Municipal Airport for charters due to its convenience. The operator did note that the addition of an instrument approach at Quillayute Airport would increase their use significantly, citing unpredictable local and enroute weather as a major factor limiting flights to Forks. Rite Brothers webpage includes a published rate sheet (effective February 2020) listing Quillayute Airport and Forks Municipal Airport with the same on-demand charter rates from Port Angeles: $270 fee a 5-passenger Cessna 206 and $220 for a 3-passenger Cessna 172.

OVERVIEW OF AREA AIRPORTS

Figure 2-3 and **Table 2-7** provide an overview of the publicly owned, public-use airports located in the service area for Quillayute Airport, and other airports that just beyond the service area. The most recent FAA Airport Master Record Form (5010-1) data available is presented for these airports to provide common reporting of activity. The 5010-1 data are provided for reference only and are not independently verified.

Forks Municipal Airport (S18)

Forks Municipal Airport is located approximately 11 road miles/6.7 nautical (air) miles west of Quillayute Airport. The Airport has one lighted asphalt runway: 4/22 (2,400'x75'), and supports mostly small single-engine aircraft, ultralights, and helicopters. The current FAA 5010-1 for Forks Municipal lists 13,600 operations for the 12 months ending 12/31/19 and 9 based aircraft. The Airport has 13 small hangars and aviation fuel is not available for purchase. The Airport is owned by the City of Forks; it is not included in the NPIAS and it does not receive FAA funding.

Sekiu Airport (11S)

Sekiu Airport is located approximately 39 road miles/22 nautical (air) miles northeast of Quillayute Airport. The Airport has one lighted asphalt runway: 8/26 (2,997 x 50’). No services are available. The Airport supports mostly small single-engine aircraft and ultralights. The current FAA 5010-1 lists 855 operations and 3 based aircraft for the 12 months ending 12/31/20. Sekiu is owned by the Port of Port Angeles; it is not included in the NPIAS and does not receive FAA funding. A review of recent Google Earth aerial photography identifies 3 hangars at the Airport.

William Fairchild International Airport (CLM)

Wm. Fairchild Int’l Airport is located approximately 61 road miles/44.1 nautical (air) miles east of Quillayute Airport. The Airport has two lighted asphalt runways: 8/26 (6,347 x 150’) and 13/31 (3,255 x 50’), onsite weather observation, and three instrument approaches. The Airport supports a full range of single- and multi-engine aircraft, jets, and helicopters. The Airport has a full-service fixed base operator (FBO) with both 100LL AVGAS and jet fuel available. The current FAA 5010-1 lists 25,158 operations and 66 based aircraft for the 12 months ending 12/31/18. CLM is owned by the Port of Port Angeles; it is included in the NPIAS and receives FAA funding.

Sequim Valley Airport (W28)

Sequim Valley Airport is located approximately 76 road miles/32 nautical (air) miles east-northeast of Quillayute Airport. The Airport has one asphalt runway: 9/27 (3,876’x60’) that is capable of accommodating a wide range of single- and multi-engine general aviation aircraft and helicopters. The Airport has storage hangars, a pilot building, a limited-service fixed base operator (FBO), 24-hour self-service fuel (100LL AVGAS), and serves the adjacent Discovery Farm Airpark. The current FAA 5010-1 lists 8,310 annual operations and 29 based aircraft. Sequim Valley is not included in the NPIAS and does not receive FAA funding.

Jefferson County International Airport (0S9)

Jefferson County Int’l. Airport is located approximately 106 road miles/71 nautical (air) miles east-northeast of Quillayute Airport. The Airport has one paved runway: 09/27 (3,000’x75’). The Airport has a full-service fixed base operator (FBO) with 100LL AVGAS available. The current FAA 5010-1 lists 58,100 annual operations and 53 based aircraft for the 12 months ending 12/31/19. Jefferson County Int’l. is included in the NPIAS and receives FAA funding.

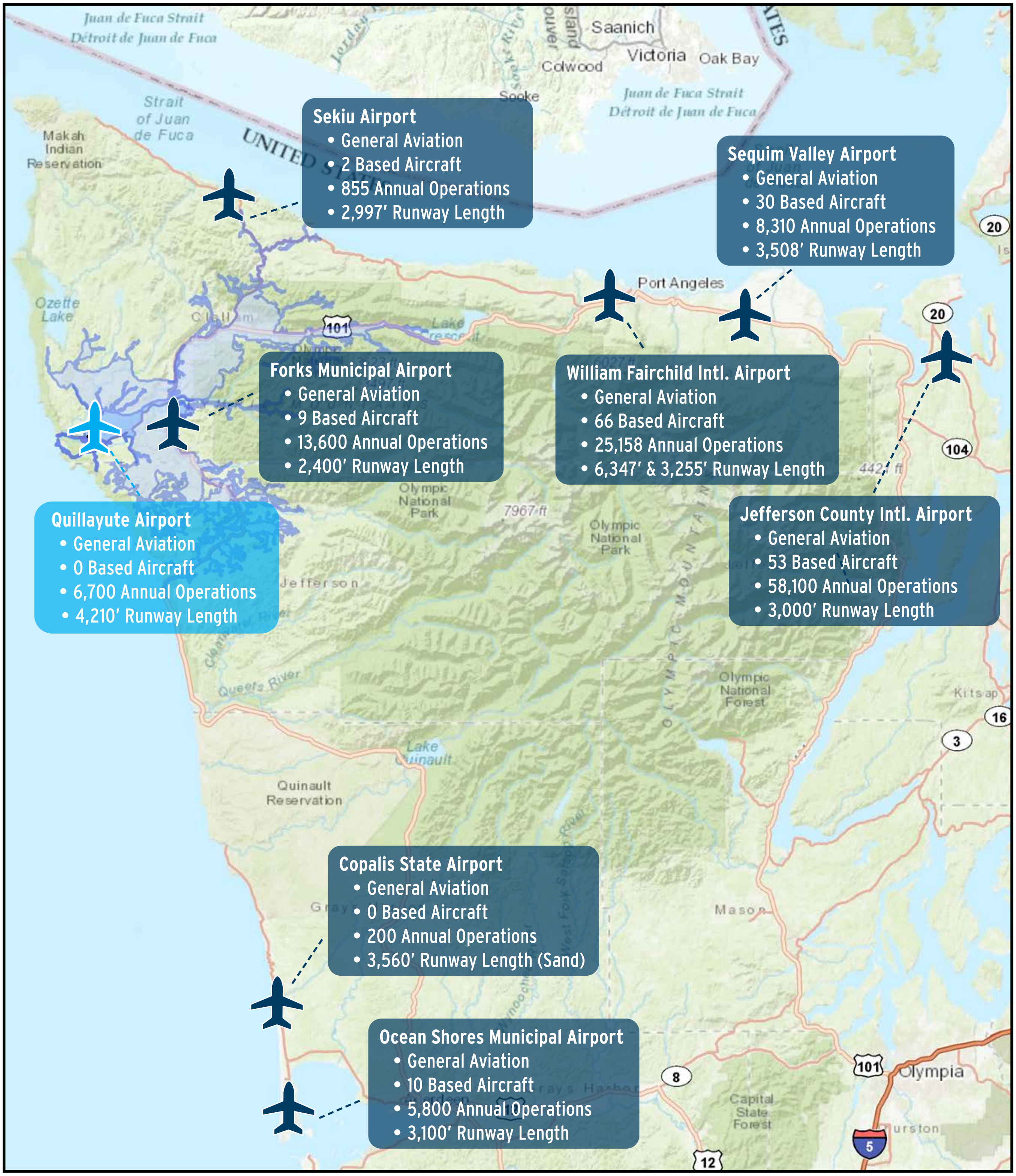
Copalis State Airport (S16)

Copalis State Airport is located approximately 111 road miles/50 nautical (air) miles south of Quillayute Airport. The beach airport has one sand runway: 14/32 (3,556’x150’) that is frequently submerged during high tides. The Airport has unimproved facilities and no services are offered. Based on its recent airport layout plan report, Copalis has no based aircraft and accommodates approximately 500 to 2,000 annual operations. Copalis State is not included in the NPIAS and does not receive FAA funding.

Ocean Shores Municipal Airport (W04)

Ocean Shores Municipal Airport is located approximately 120 road miles/59 nautical (air) miles south-southwest of Quillayute Airport. The Airport has one paved runway: 15/33 (3,100’x50’). The Airport has no services or fuel available. The current FAA 5010-1 lists 5,800 operations and 10 based aircraft for the 12 months ending 12/31/19. Ocean Shores Municipal is included in the NPIAS and receives FAA funding.

FIGURE 2-3: AREA AIRPORTS



Legend
30-Minute Drive Time Boundary
60-Minute Drive Time Boundary

Source: AirportIQ 5010, Esri, USGS, NOAA

TABLE 2-7: FAA 5010 DATA*

	Quillayute Airport (UIL)	Forks Muni. Airport (S18)	Wm. Fairchild I'ntl. Airport (CLM)	Sequim Valley Airport (W28)	Jefferson County I'ntl. Airport (0S9)	Ocean Shores Muni. Airport (W04)	Sekiu Airport (11S)
Air Carrier	0	0	0	0	0	0	0
Air Taxi	0	0	4,958	60	1,500	0	45
GA Local	3,198	8,300	10,800	2,700	21,700	800	150
GA Itinerant	3,302	5,250	9,200	5,500	34,800	5,000	660
Military	200	50	200	50	100	0	0
TOTAL OPERATIONS	**6,700**	**13,600**	**25,158**	**8,310**	**58,100**	**5,800**	**855**
TOTAL BASED AIRCRAFT	**0**	**9**	**66**	**30**	**53**	**10**	**2**
Single Engine	0	3	60	28	49	10	0
Multi Engine	0	0	3	1	2	0	0
Jet	0	0	1	0	0	0	0
Helicopters	0	3	2	0	0	0	0
Glider	0	0	0	0	2	0	0
Military	0	0	0	0	0	0	0
Ultra-Light	0	3	0	1	0	0	0

Source: https://www.airportiq5010.com/5010ReportRouter/
*Data presented as published by FAA (2021), not independently verified.

QUILLAYUTE AIRPORT ACTIVITY

Table 2-8 summarizes the estimated airport activity listed on the FAA 5010-1 Airport Record form, which is duplicated in the FAA Terminal Area Forecast, and the base year (2000) from the 2003 Airport Master Plan forecast.

TABLE 2-8: ESTIMATED AIRCRAFT OPERATIONS (QUILLAYUTE)

	2003 Airport Master Plan (2000)	FAA 5010-1 Airport Master Record (2019)	FAA Terminal Area Forecast (2019)
General Aviation (Local)	0	3,198	3,198
General Aviation (Itinerant)	450	3,302	3,302
Air Taxi	0	0	0
Military	50	200	200
TOTAL OPERATIONS	**500**	**6,700**	**6,700**

Source: 2003 Airport Master Plan Forecast base year; FAA 5010-1 (Operations for 12 Months Ending 12/31/2019); TAF 2019 (base year; TAF issued May 2021)

The FAA 5010 Airport Master Record is the only source for activity estimates currently available for Quillayute Airport. The current 5010 for Quillayute Airport lists 0 based aircraft and 6,700 aircraft operations (takeoffs and landings) for the 12 months ending in December 2019. This level of annual operations equates to an average of 18 per day. The 5010 based aircraft total (0) is consistent with the City of Forks' most recent validated count reported to FAA in the National Aircraft Inventory database.

With no based aircraft, 100% of air traffic at Quillayute Airport is currently generated by transient general aviation and military aircraft including:

- General Aviation (GA) flight training, personal, and business travel.
- Weather diversions due to local weather conditions (reported by aircraft owners based at Forks Municipal Airport) and area weather affecting flights transiting the Western Olympic Peninsula.
- Medical evacuation flights (fixed wing and helicopter).
- U.S. Coast Guard routine patrol, search and rescue, and training flights (helicopters).
- Military (USAF, Army, Navy, Air National Guard) operations support and flight training (primarily helicopters).
- On-demand air charter flights; and
- State, federal, and tribal government related flights.

An updated estimate of annual aircraft operations for Quillayute Airport is currently being assembled from individual user reports. Based on preliminary activity estimates provided by the defined user groups, current airport operations (takeoffs and landings) at the Airport are estimated to total less than 1,000 annually. The data will serve as the baseline for the updated aviation activity forecasts (Chapter 3); additional details about the individual user groups will be provided in Chapter 3. Once the updated activity forecasts are accepted and approved by FAA, the 5010 for the Airport will be updated for consistency.

The 2003 Airport Master Plan presented a similar estimate of flight activity in its aviation activity forecasts (forecast base year 2000: 500 annual operations). Two based aircraft (antique military jets) were recorded at the Airport in 2000. However, these aircraft were not believed to generate significant flight activity and were subsequently sold and relocated off the Airport.

Quillayute Airport's 4,210-foot runway is the longest available in western Clallam County and can accommodate a wide range of aircraft types including single- and multi-engine piston aircraft, business class turbine aircraft (business jets and turboprops), and helicopters. However, the current level of use appears to reflect the current facility limitations (lighting, instrument approach, available hangar space, etc.) and a preference for Forks Municipal Airport by local aircraft owners. It is reasonable to assume that increased use of Quillayute Airport is possible with improvement in facilities that could attract new tenants and increased use.

RELEVANT STUDIES

2003 Quillayute Airport Master Plan (AMP)

The 2003 Airport Master Plan (AMP) provided a detailed assessment of site-specific airport development needs and recommended facilities intended to guide improvements at Quillayute Airport. As noted in Table 2-6 earlier in the chapter, the projects completed at the Airport in recent years have included pavement rehabilitation work on the runway and installation of fencing along the frontage along Quillayute Road.

The 2003 AMP outlined significant facility upgrades, expansion, and new development that has not occurred. Recommended projects included an extension of Runway 4/22, re-opening the closed crosswind runway, installation of airfield lighting, the addition of a precision instrument approach, and the construction of new hangars. These recommendations will be reviewed in the current master plan update to reassess the need and priorities for future facility improvements at the Airport.

2001 Quillayute Airport Environs Land Use Plan

The 2001 land use plan, prepared in conjunction with the 2003 AMP, provided a two-phase approach to develop an inventory of existing land use and to prepare model ordinances for airport land use and height zoning protections. The work generated in this project was incorporated into the 2003 Airport Layout Plan (ALP) drawing set. The current Clallam County zoning ordinance was updated to include an airport overlay zone based on this work.

Washington Aviation System Plan (WASP)

In 2017, the State of Washington Department of Transportation – Aviation Division, completed the Washington Aviation System Plan (WASP) for the system of 136 public use airports located throughout the state. The WASP study included both commercial service and general aviation airports. The WASP updated previous system plans to provide a current look at how the entire state aviation system performs and how individual airports interact to contribute to the system. Airport classifications generally reflect the type of aircraft and customers the airport serves as well as the characteristics of the airport's service area.

The WASP establishes a new classification system of five categories for Washington airports to better capture system performance. Quillayute Airport is in the WASP Local airport classification. Local airports support GA activities including personal transportation, recreational flying, pilot training, and agricultural activities. Airports classified as Local are located outside of metropolitan areas and regional centers; they have paved primary runways; and 15 or fewer based aircraft. As a Local airport, the WASP has identified certain minimum standards that should ideally be in place. The existing facilities at Quillayute Airport appear to meet most minimum standards, as they pertain to the Airport's Local role in the WASP. A review of WASP minimum standards compliance will be summarized in the updated facility requirement assessment (Chapter 4).

WASHINGTON AVIATION ECONOMIC IMPACT STUDY

In 2020, Washington State Department of Transportation released the Washington Aviation Economic Impact Study (AEIS).[3] The AEIS measured the annual economic impacts that the state's public-use airports and the state-wide system had on local communities, geographic regions, and the state as a whole.

The study includes summaries of aviation economic impacts by individual airport and their associated city. For Forks, data are provided for Quillayute Airport and Forks Municipal Airport, the two public use airports owned and operated by the City of Forks. **Table 2-9 and 2-10** summarize the economic data for each airport, and combined totals for both airports to gauge the overall economic impacts for the community associated with the airports.

TABLE 2-9: AIRPORT ECONOMIC IMPACTS BY TYPE (TOTAL) – FORKS, WASHINGTON

Airport	Jobs	Labor Income	Value Added	Business Revenues
Quillayute	47	$2,816,000	$4,710,000	$7,498,000
Forks Municipal	4	$124,000	$198,000	$337,000
Combined (Forks)	**51**	**$2,940,000**	**$4,908,000**	**$7,835,000**

Source: 2020 WSDOT Washington Aviation Economic Impact Study (AEIS).

TABLE 2-10: WASHINGTON TAX REVENUES BY TYPE – FORKS, WASHINGTON

Airport	On-Airport Local/State	Off-Airport (Visitor Spending) Local/State	Total Taxes (On-Airport and Visitor Spending)Local/State
Quillayute	$4,750/$38,680	$200/$1,070	$4,950/$39,750
Forks Municipal	$400/$1,590	$2,140/$11,650	$2,540/$13,240
Combined (Forks)	**$5,150/$40,270**	**$2,340/$12,720**	**$7,490/$52,990**

Source: 2020 WSDOT Washington Aviation Economic Impact Study (AEIS).

According to the study, Quillayute Airport contributes nearly $7.5 million in annual business revenue to the local and regional economies (based on 2018-2020 surveys and data). The number of jobs related to the Airport was reported at 47, with an estimated payroll of $2.8 million.

Note: The economic impact data generated for Quillayute Airport is presented for reference only. The stated employment generated economic impacts could not be verified locally and the AEIS does not provide detailed documentation.

3 Washington Aviation Economic Impact Study (WSDOT Aviation, July 2020)

Environmental Data

PHYSICAL GEOGRAPHY

The western section of Clallam County consists of coastal rainforests, mountainous terrain, valleys, lowlands, river drainages, lakes, bogs, and coastal areas, emerging from the Olympic Mountains to the east. The Quillayute and Forks Prairie Complex is a unique land system that is not forest covered, providing habitat for a wide range of flora and fauna.[4] The Quillayute Prairie is located between the Dickey and Sol Duc Rivers, beginning about 3 miles east of La Push and the Pacific Ocean at the outlet of the Quillayute River.

Quillayute Airport sits at an elevation of 193 feet above mean sea level (MSL). The gradual rise in elevation from the sea level at the Pacific coast continues to about 300 feet MSL in Forks, before increasing into more mountainous terrain. The varying terrain between the coast and Forks, about 12 miles inland, contributes to variation in climate conditions (cloud cover, precipitation, temperatures, wind, etc.).

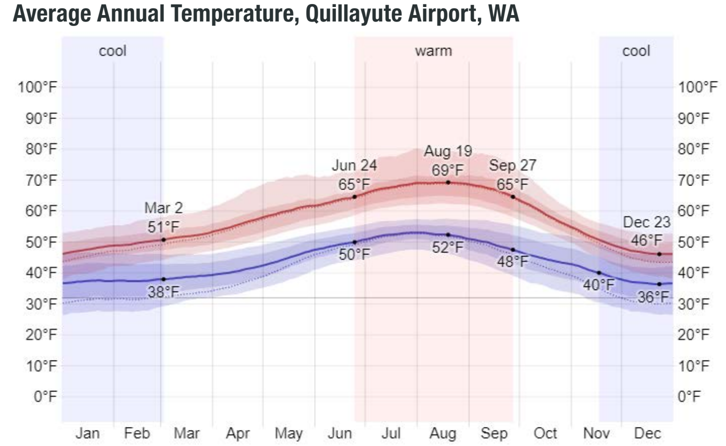
LOCAL CLIMATE ANALYSIS

Fifty years of historical climate data (1966- 2016) for Quillayute Airport (Station No. 456858) was reviewed.[5] The data indicate that August is normally the hottest month, with an average maximum temperature of 68.8 degrees Fahrenheit (F). December and January are the coldest months with an average low temperature of 46.5 degrees F. Total annual precipitation averaged 102.11 inches, with an average of 13.2 inches of snowfall recorded in the November to April period. Graphics depicting average monthly temperature and precipitation at Quillayute Airport accessed from weatherspark.com are presented in **Figure 2-4**.

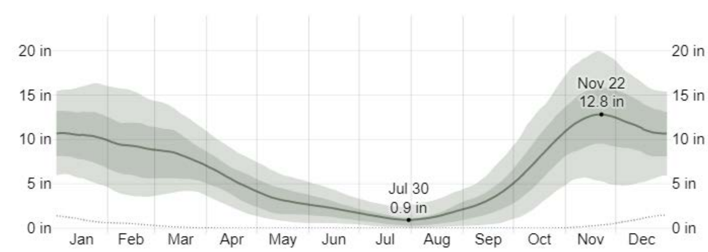
FIGURE 2-4: ANNUAL TEMPERATURES

The following climate data charts were retrieved from weatherspark.com to illustrate the typical temperature and precipitation patterns at the Quillayute Airport. These are based on an analysis of historical weather reports and model reconstructions.

Average Annual Temperature, Quillayute Airport, WA



Average Annual Precipitation, Quillayute Airport, WA



4 Reference: 2021 Sharpe, Olympic Peninsula Prairies.
5 Historical Climate Summary, Western Regional Climatic Center (https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa6858)

A comparison of climate data for Quillayute Airport (Station 456858) and Forks 1E (Station 456858) in **Table 2-11** highlights some local variations. The data are consistent with local reports that Quillayute Airport often has better weather conditions (cloud cover and precipitation) than experienced in Forks.

TABLE 2-11: HISTORICAL WEATHER OBSERVATIONS – QUILLAYUTE AIRPORT AND FORKS, WASHINGTON STATIONS

Weather Station	Average Total Precipitation (inches) Annual	Average Maximum Temperature (F) Warmest Month	Average Minimum Temperature (F) Coldest Month	Average Total Snowfall (inches) Annual
Quillayute AP (456858)	102.11	68.8	34.7	13.2
Forks 1E (452914)	117.89	72.5	33.4	13.0

Source: Western Regional Climate Center (WRCC) data; Quillayute 1966-2016; Forks 1907-2016

WIND ANALYSIS

The 2003 ALP drawing included all-weather and instrument flight rules (IFR) wind roses based on wind data collected on site between 1986 and 1995. The wind roses are used to evaluate the crosswind coverage provided for runways within direct (90-degree) crosswind components at specific wind speeds (most general aviation aircraft are designed with a maximum direct crosswind component of 10.5 to 13 knots). By FAA standard, a single runway should be able to accommodate at least 95% of all wind conditions. When wind coverage is below 95%, a second (crosswind) runway may be considered to meet the 95% threshold.

The 2003 wind analysis indicated that the primary runway (4/22) had 96.70% wind coverage at 10.5 knots, and 98.18% wind coverage at 13 knots under all-weather conditions. However, the wind rose developed for instrument weather conditions indicated wind coverage below the 95% threshold at 10.5 knots (90.8%) and 13 knots (94.76%). The wind analysis indicated that while Runway 4/22 provides adequate crosswind coverage for both small and large general aviation aircraft in all-weather conditions, coverage during instrument meteorological conditions (IMC) was below the FAA-recommended threshold of 95% for a single runway configuration.

The IFR wind coverage combined with the planned development of an instrument approach appears to be reflected in the previous recommendation to re-open and reconfigure Runway 12/30. The evaluation of runway wind coverage and the potential reactivation of the closed runway will be addressed in the facility requirements and alternatives section of the airport master plan. New wind roses will be created for this analysis using more recent onsite wind data.

Environmental Conditions

The Airport Master Plan scope of work includes an overview of existing environmental conditions and a preliminary screening of environmental impact categories defined in the National Environmental Policy Act (NEPA). The purpose of the screening is to identify potential environmental resources that occur at the Quillayute Airport that should be taken into consideration of future improvements identified in the Airport Master Plan Update. A cultural resource assessment was also performed for the site. This section briefly summarizes the screening. The full technical memorandums are provided in **Appendix A and B**. A review of recommended improvements will be provided in Chapter 5 – Alternatives Analysis.

As noted earlier in the chapter, most of the built items associated with Quillayute Airport were constructed in 1943 by the U.S. Navy. As such, the footprint of previously disturbed areas on the Airport has been established, unchanged for nearly 80 years. The only new construction completed since the 2003 Airport Master Plan beyond the airfield's hard surfaces is the addition/replacement of fencing and vehicle access gates on the south side of the Airport. An original aircraft hangar was also demolished in place due to its deteriorated condition, although the original building foundation remains.

NEPA REVIEW

The environmental screening[6] is based on the National Environmental Policy Act (NEPA) Environmental Impact Categories outlined in FAA Order 1050.1F *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B *Airports Environmental Handbook* utilizing available data and information. Research was performed for the following environmental impact categories described within the FAA's Order 1050.1F:

- Air Quality;
- Biological Resources (including fish, wildlife, and plants);
- *Department of Transportation Act*, Section 4(f);
- Hazardous Materials, Solid Waste, and Pollution Prevention;
- Natural Resources and Energy Supply; and
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers).

A brief summary is provided below and **Figure 2-5** depicts the Airport area. The full environmental review technical memorandum is provided in **Appendix A**.

Air Quality

The Airport is located in a portion of Clallam County that attains all National Ambient Air Quality Standards (NAAQS). Clallam County currently complies with federal NAAQS.

Biological Resources

The screening identified several resources in the vicinity of Quillayute Airport, although documented sitings on the Airport are limited.

Special Status Species

Federal Endangered Species Act (ESA) and Washington Priority Habitat and Species Critical Habitats (PHS)

A large variety of state- or federally-protected species that may occur in the vicinity of the Airport are identified. The status of individual species ranges from "candidate" to "endangered." Recorded sightings at the Airport are not documented for majority of the species, although the presence of habitat (natural or buildings) is noted. However, the screening notes "Roosevelt Elk (status Protected game WA) are mapped by PHS using the portion of airport property north of the Dickey River."

6 Quillayute Airport Environmental Screening (ESA, September 2021)

Multiple species of federal and state listed fish have mapped occurrences on airport property and vicinity in nearby rivers and creeks. The Dickey, Quillayute, Sol Duc, and Bogachiel rivers, and Colby and Coal creeks, provide critical habitat for several threatened or protected species of trout and salmon. A portion of the Dickey River is located on the northern section of airport property. The other rivers are located several miles from the Airport, at their nearest points. A portion of Colby Creek is located near the northwest corner of airport property.

Migratory Bird Treaty Act (MBTA)

Birds protected under the Migratory Bird Treaty Act (MBTA) may nest, winter, or migrate throughout the area. Migratory birds are known to occur in the vicinity of the Airport. 185 species are identified as representative of species found in the vicinity, though not necessarily on airport property.

Birds of Conservation Concern (BCC)

The Quillayute Airport falls within the USFWS Birds of Conservation Concern (BCC) Zone 5. Recorded sitings are noted on the Airport, and within 2.5 and 3.5 miles of the Airport. The screening notes "Of the species recorded on airport property, all observations except for one of the varied thrush sightings occurred on the eastern boundary where the property borders Quillayute Prairie."

Bald And Golden Eagle Protection Act

The bald eagle and golden eagle are protected under the Bald and Golden Eagle Protection Act of 1940, which provides specific guidance for minimizing effects to these species. The screening notes "While there are no recorded observations of golden eagles within the immediate vicinity of the airport, there are recorded observations of bald eagles on the eastern boundary of Quillayute Airport property, where the tree line opens to Quillayute Prairie."

Environmental Sensitive and Critical Habitats

Designated critical habitat areas are located in the vicinity (3.5 to 9.5 miles) of the Quillayute Airport:

- Bull trout critical habitat is approximately 3.35 miles west of the Airport in the Pacific Ocean and 8 miles south of the Airport in Goodman Creek;
- Marbled murrelet critical habitat is approximately 5.5 miles southeast of the Airport, and approximately 8 miles east of the Airport within and on the outskirts of Olympic National Park; and
- Northern spotted owl critical habitat is approximately 9.5 miles northeast and approximately 11 miles east of the Airport in Olympic National Park.

National Wetland Inventory (NWI) and PHS mapped freshwater emergent wetlands and freshwater forested/shrub wetland are located on airport property (see **Figure 2-5**). On airport property, adjacent and connecting to the northern side of the Dickey River, PHS has mapped a wetland complex named Elkhorn Pond that is not mapped on NWI or NHD resources. This area is documented as a snag rich wetland/pond that is habitat for elk and numerous bird species. This area is also a WDFW enhancement project for creating off-channel habitat for juvenile Coho.

Section 4(f) of the US Department of Transportation Act

Section 4(f) of the Department of Transportation (DOT) Act, provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a historic site, public parks, recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.

There are no Section 4(f) resources located within the immediate vicinity of the Airport. The closest Section 4(f) resource is Olympic National Park/Daniel J. Evans Wilderness Area that is approximately one mile southwest of the Airport.

Hazardous Materials, Solid Waste, and Pollution Prevention

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. According to the EPA's EJSCREEN, the closest brownfield site is located approximately 29 miles north of the Quillayute Airport property. The closest superfund site is located at the Makah Reservation Warmhouse Beach Dump in Neah Bay, WA, approximately 30 miles north of the Airport.

According to the Washington Department of Ecology (DOE) "What's in my Neighborhood Map," the Formerly Used Defense Site (FUDS) Quillayute Naval Auxiliary Air Station (NAAS) cleanup site is located on the Airport. The site was initially reported and investigated in 1999 and the affected media and contaminants included:

- Priority pollutant metals in the soil confirmed above cleanup level, and
- Polycyclic aromatic hydrocarbons in the soil confirmed above cleanup level.

The DOE spills map identifies six spills of varying types of oil and fuel that occurred in the town of La Push approximately three miles southwest of the Airport. The recorded spills were all under 50 gallons each and took place between the years of 2015 to 2019.

The EPA Toxics Release Inventory Tool lists one facility within a 10-mile radius of the Quillayute Airport. The mapped TRI facility is the Interfor Pacific Forks Sawmill that was closed in 2014. While in operation, it released a variety of hazardous emissions but followed permitting compliances with the Clean Air Act (CAA), Clean Water Act (CWA) and the Resource Conservation and Recovery ACT (RCRA).

WATER RESOURCES

The screening identified several resources on and in the vicinity of Quillayute Airport.

Wetlands

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the Clean Water Act. Wetlands are defined in Executive Order 11990, Protection of Wetlands, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction." The National Wetland Inventory (NWI) mapping within the vicinity of the Airport is shown on **Figure 2-5** and includes the following resources:

- One freshwater forested/shrub wetland at northernmost point of airport property near Coal Creek. The USGS National Hydrography Dataset (NHD) has mapped a tributary to Coal Creek originating on airport property and flowing east to west through this wetland. Surrounding this tributary, NWI has mapped riverine wetland habitat.
- A tributary to the Dickey River flows through the airport property south of Coal Creek and north of the Dickey River. NWI maps riverine wetland habitat along the banks of this tributary. The NWI also maps a freshwater emergent wetland south of Dickey River that appears to connect to the river. An NHD mapped tributary to the Dickey River flows east to northwest through the airport property south of Dickey River, along the banks of this tributary, there is a NWI mapped riverine wetland habitat. Approximately 400 ft south of the Dickey River there is another freshwater forested/shrub wetland mapped by NWI.
- Two other small tributaries to the Dickey River appear to originate on the western edge of the airport property and have riverine wetlands mapped by NWI along the banks.
- Two freshwater emergent wetlands and one forested/shrub wetland is mapped by NWI at the end of Runway 4. The NWI indicates that the forested/shrub wetland could be a headwater of one of the small tributaries of the Dickey River.

In addition to the NWI mapping, three wetlands are mapped on the Quillayute Airport Layout Plan documented by Barnard Dunkelberg and Company (2003). The source of the data concerning these mapped wetlands is not listed. However, two out of the three wetlands mapped on these plans do not correspond with NWI mapped wetlands. The following wetlands are mapped on the Quillayute Airport Layout Plans and shown on **Figure 2-5**:

- One wetland near the southwest end of the closed runway.
- One wetland near the northeast interior corner of the airport property boundary.
- One wetland at the end of the northern runway protection zone for Runway end 12. This wetland corresponds to an NWI mapped freshwater forested/shrub wetland south of the Dickey River.

Floodplains
Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains. Based on a review of Federal Emergency Management Agency (FEMA) maps, there are areas of 100-year floodplains on airport property.

Areas that lie within the floodplain on airport property are associated with Coal Creek and Dickey River. All areas within the floodplain are at minimum 600 feet past the end of Runway 12 (which is currently closed). The portion of the airport property that lies in the 100-year flood plane is classified as FEMA Zone A. Zone A areas lie within the floodplain but base flood elevations and flood hazard factors are not determined.

Surface Waters
This airport property is in a watershed defined by the United States Geological Service (USGS). The largest National Hydrography Dataset (NHD) mapped surface water on Quillayute Airport property is the Dickey River. NHD also maps five tributaries to the Dickey River on airport property as well as one tributary to Coal Creek. Coal Creek is a larger tributary to Dickey River that is approximately 30 feet west of the northwestern most point of the airport property. The NHD mapping within the vicinity of the Airport is shown on **Figure 2-5**. NHD maps all surface water resources present on the airport property as streams/rivers with perennial hydrology except for the tributary to Coal Creek in the northernmost portion of the property and the tributary to Dickey River located west of the central portion of the closed runway (formerly Runway 12/30).

The segments of Dickey River and Coal Creek that pass through and near the airport property are classified as an impaired water under Section 303[d] of the Clean Water Act. In addition, the nearest portion of the Sol Duc River approximately 0.85 miles south of the airport property is also classified as an impaired water under section 303[d]. All three waters are listed for water temperatures above criterion. Currently, no Total Daily Maximum Loads (TDMLs) have been established for any of these surface waters.

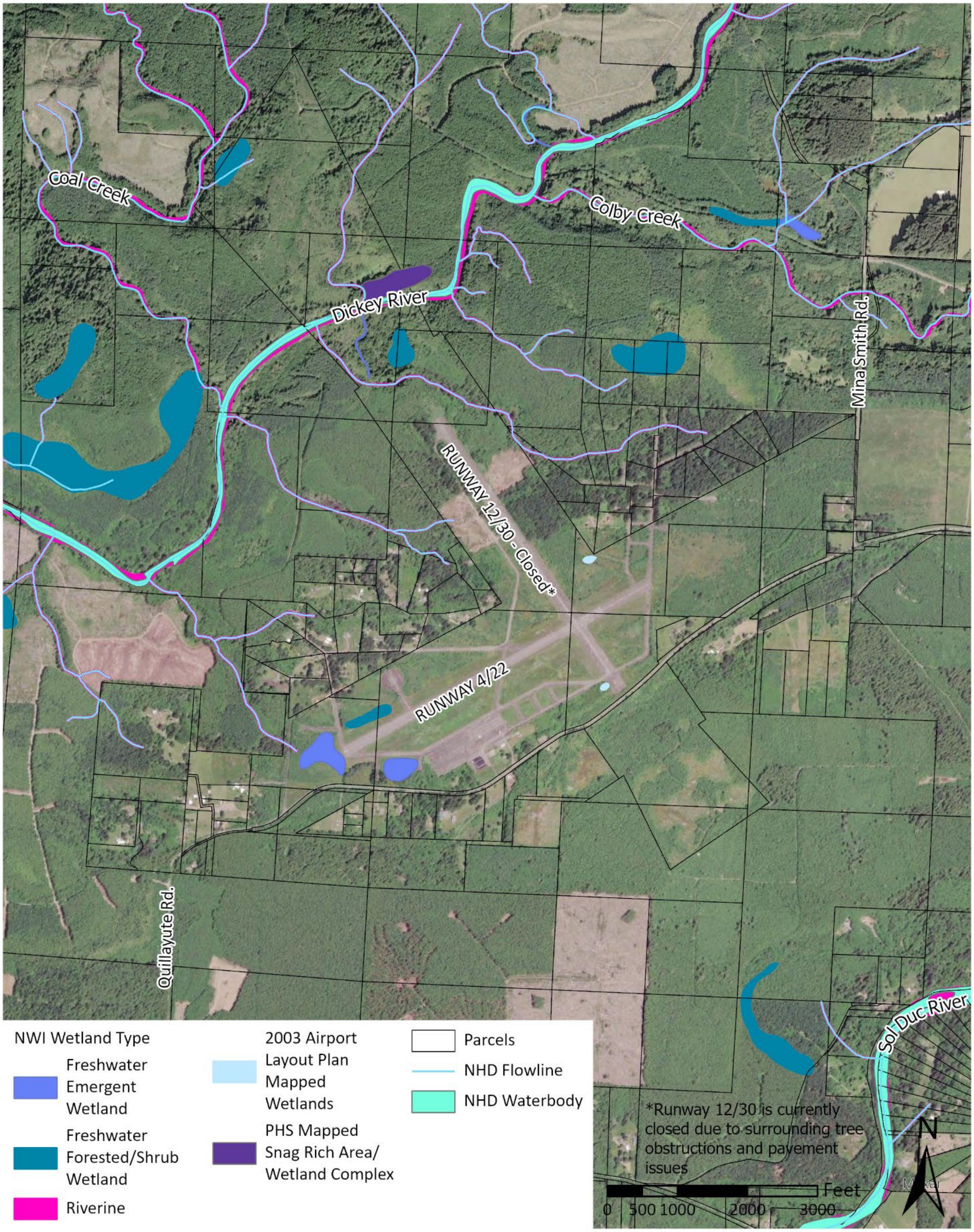
Although Dickey River is listed as an impaired waterway, the Airport can prevent further degradation of the water quality by adhering to the National Pollutant Discharge Elimination System (NPDES) permit obligations and not further contributing to point-source pollutants.

Groundwater
According to the USGS Principal Aquifers of the 48 Conterminous United States map, the general aquifer type in the vicinity of the Quillayute Airport is Pacific Northwest basin-fill aquifers composed of unconsolidated sand and gravel aquifers. The USGS notes that this type of aquifer is prevalent in stream valleys and lowlands associated with structural or erosional basins. They provide freshwater for domestic, commercial and industrial purposes and are important for providing agricultural irrigation.

The 2003 Airport Master Plan lists one well, a 6-inch main line running along Quillayute Road, and system of distribution lines (3.5 to 6-inches) to different areas of the Airport and south of Quillayute Road. The well is located southwest of the intersection of the two runways. The functional status (flow rate and active service lines) of this 1940s system was not indicated. Fire hydrants and the structures located in the terminal area were served by this system. Current system capabilities and capacities and future system needs will be addressed in the facility requirements evaluation.

National Wild and Scenic Rivers
The National Wild and Scenic Rivers System was created in 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values. The closest designated segment of a Wild and Scenic River is a portion of the Skagit River, located approximately 115 miles east of the Airport (USFWS 2016).

FIGURE 2-5: PARCELS, WETLANDS AND WATER RESOURCES MAP



Source: ESA Draft Environmental Screening

CULTURAL RESOURCES ANALYSIS

This section briefly summarizes the March 2022 Cultural Resources Documentation for the Quillayute Airport Master Plan prepared by Drayton Archaeology (Drayton). The study consists of a built environment assessment of 5144 Quillayute Rd, Forks, WA 98331, Clallam County. A brief summary is provided below. The full cultural resources technical memorandum is proved in **Appendix B**.

As noted in the study *"The project involves inventory and assessment of historic-aged structures located on the Quillayute Airport property…No archaeological or subsurface testing was initiated per the project's purpose and scoping. No project or undertaking is currently planned for this property; therefore, no further archaeological or architectural oversight is warranted…The purpose of the historic property survey was to identify potentially eligible buildings located on the property and assess their eligibility for listing to the National Register of Historic Places."*

The project Area of Potential Effect (APE) consists of approximately 500 acres. The current evaluation involves extant buildings built in conjunction with Naval Auxiliary Air Station Quillayute (Quillayute Airport). The updated inventory of historical structures identifies only three remaining WWII era structures on the property. These include one aircraft hangar and one operational structure (armory and instruments building) located immediately adjacent to the main aircraft apron. Detailed reports are provided for these structures. The third building, a warehouse located east of the main apron, adjacent to Quillayute Road, is not referenced further in the study.

Historic property reports for the two noted structures indicate that both structures appear to be eligible for listing on the National Register of Historic Places (NHRP) based on specific criterion. The reports note that the smaller building remains largely intact and its condition is generally consistent with its original feeling and setting. The hangar has deteriorated significantly and some repairs/restorations are noted as detracting from the original historic feeling and setting of the structure.

- **The Armory and Instruments Building** (currently occupied by the National Oceanic and Atmospheric Administration). The report states: *"The Armory and instruments Building is NRHP-eligible under Criterion A as it possesses an important association with the development and operations of Naval Auxiliary Air Station (NAAS), Quillayute. It thus has a significant connection with World War II military mobilization and operations in the Pacific Northwest. The building is eligible per Criterion C as it is an intact representation of the distinctive type, period, and method of construction. Minimal alterations to the building have resulted in some minor incursions to its integrity of materials. Overall, the building retains quality integrity of design, location, materials, workmanship, and feeling."*
- **Hangar** (currently unoccupied). The report states: *"In 2009, the north wing was rehabilitated, resulting in the replacement of all original windows and siding. The south elevation remains intact but is in a state of decay. Every window is either missing panes, boarded-up, or collapsed. A large section on its southeast detracts from its overall historical character and feeling. Its large timber hanger doors on its east and west elevation are in varying states of decay. The hanger (sic) is NRHP-eligible under Criterion A as it possesses an important association with the development and operations of Naval Auxiliary Air Station (NAAS), Quillayute. It thus has a significant connection with World War II military mobilization and operations in the Pacific Northwest. While the building has sustained alterations and degradation of its materials, the hanger (sic) is eligible per Criterion C as it represents a distinctive type, period, and method of construction. Alterations to the building have resulted in diminished integrity of materials. Changes to the airport detract from the hangers (sic) integrity of feeling and setting. It retains the integrity of location, workmanship, and design."*

All federally funded projects require compliance with Section 106 of the National Historic Preservation Act (NHPA) (43 USC 470f, as amended) and its implementing regulations (36 CFR Part 800).

NOISE CONTOURS

A noise analysis is not included in the scope of work for this master planning effort due to the relatively low levels of flight activity at the Airport, which falls below the FAA threshold for analysis. The 2003 AMP did not provide a set of current year noise contours "due to the very low operational counts that are currently estimated to occur at the airport." One set of future noise contours was generated based on 2021 forecast aircraft operations levels (19,088). Although the operational levels reflected in the 2021 forecasts were not realized, it is worth noting that all mapped noise contours (60-75 DNL)[7] for this level of activity, which included 620 turbine operations (jets and turboprops), were contained entirely within airport property.[8]

AIRSPACE & NAVIGATIONAL AIDS

Airspace Classifications

Airspace within the United States is classified by the FAA as "controlled" or "uncontrolled" with altitudes extending from the surface upward to 60,000 feet above mean sea level (MSL). Controlled airspace classifications include Class A, B, C, D, and E. Class G airspace is uncontrolled. See **Figure 2-6**.

Aircraft operating within controlled airspace are subject to varying levels of positive air traffic control that are unique to each airspace classification. Requirements to operate within controlled airspace vary, with the most stringent requirements associated with very large commercial airports in high traffic areas. Uncontrolled airspace is typically found in remote areas or is limited to a 700 or 1,200-foot above ground level (AGL) layer above the surface and below controlled airspace.

Local Area Airspace Structure

The Seattle Sectional Aeronautical Chart depicts nearby airports, notable obstructions, special airspace designations, and instrument airways in the vicinity of Quillayute Airport. See **Figure 2-7.**

Quillayute Airport is located in an area of Class G airspace, which extends from the surface to 14,500 feet MSL. Above 14,500 feet MSL is Class E airspace. The current airspace configuration is consistent with the Airport's visual flight operations capabilities. Any future addition of instrument approach capabilities for the Airport will require the addition Class E airspace to protect the approach and departure routes defined for the procedures. The nearest areas of Class E airspace are located 25 nautical miles north (Neah Bay USCG Helipad) and 32 nautical miles northeast (the western section of airspace defined for Fairchild International Airport, in Port Angeles). These areas of Class E airspace have a floor 700 feet above the surface.

Radio communication is not required for visual flight rules (VFR) operations in Class G or E airspace, although pilots are encouraged to use the common traffic advisory frequency (CTAF) when operating at the Airport. Aircraft are required to obtain an air traffic control (ATC) clearance prior to operating in Class E airspace under instrument flight rules (IFR) flight plans.

Special Use Airspace

Several areas of special use airspace are located in the vicinity of the Quillayute Airport. These are summarized in **Table 2-12**. Pilots are requested to maintain a minimum of 2,000 feet above ground level (AGL) when overflying federal wildlife refuges, national parks, and forest service areas.

7 DNL: Day-Night Average Noise Level, which is intended to represent the average noise exposure levels based on a 12-month, 24-hour per day period, including both periods of active aircraft use and quiet.

8 2003 Quillayute AMP, Figure F.8;

TABLE 2-12: SPECIAL USE AIRSPACE IN VICINITY

Area	Description	Controlling Agency
Olympic Military Operations Area (MOA)	Located on the Olympic Peninsula, this MOA extends from the Strait of Juan de Fuca south to Hoquiam, and from the Olympic National Park west to the coastline. This area is used for in-flight air refueling training, flight familiarization, and aircraft combat maneuvering. The MOA excludes airspace below 1,200 feet AGL.	FAA Seattle; NAS Whidbey Island Complex
Quillayute Needles National Wildlife Refuge	Protected wildlife habitat for off-shore rocks, reefs, and islands, except those designated as Native American reservations.	U.S. Fish and Wildlife Service (UWFWS)
The Olympic Coast National Marine	The OCMNS is a protected coastal area that extends seaward from to Koitlah Point near Neah Bay, south to the mouth of the Copalis River. The OCNMS directly abuts the Pacific Ocean shoreline, including the section located near LaPush, about 3.5 miles from the Airport.	U.S. National Oceanic and Atmospheric Administration (NOAA).
Olympic National Park	A narrow section of the national park is located along the Pacific Ocean between Kalaloch, Mora and Ozette; the main section of the park is located east of Forks. The Hoh Rain Forest entrance to the Olympic National Park is located about 31 miles south of Forks off U.S. Highway 101.	National Park Service

Source: Century West Engineering; FAA Seattle Sectional Aeronautical Chart, National Park Service Webpage (https://www.myolympicpark.com/park)

Controlled & Uncontrolled Airspace

Quillayute Airport is a non-towered airport, meaning that pilots are responsible for all aircraft movements and communications to avoid traffic conflicts, observing common right of way rules, and following all applicable FAA procedures for uncontrolled airports. The airport Unicom/common traffic advisory frequency (CTAF) is used for communications on the ground and in the vicinity of the Airport, although radio communications are not mandatory based on the Airport's airspace classification.

It is noted that the same CTAF (122.9 MHz) is used for Quillayute Airport and Forks Municipal Airport, located 6.7 nautical miles east. The use of the same frequency at two uncontrolled airports in proximity requires increased pilot awareness and communication to avoid confusion when reporting the location of aircraft in flight or on the ground in the local area.

Navigational Aids and Airways

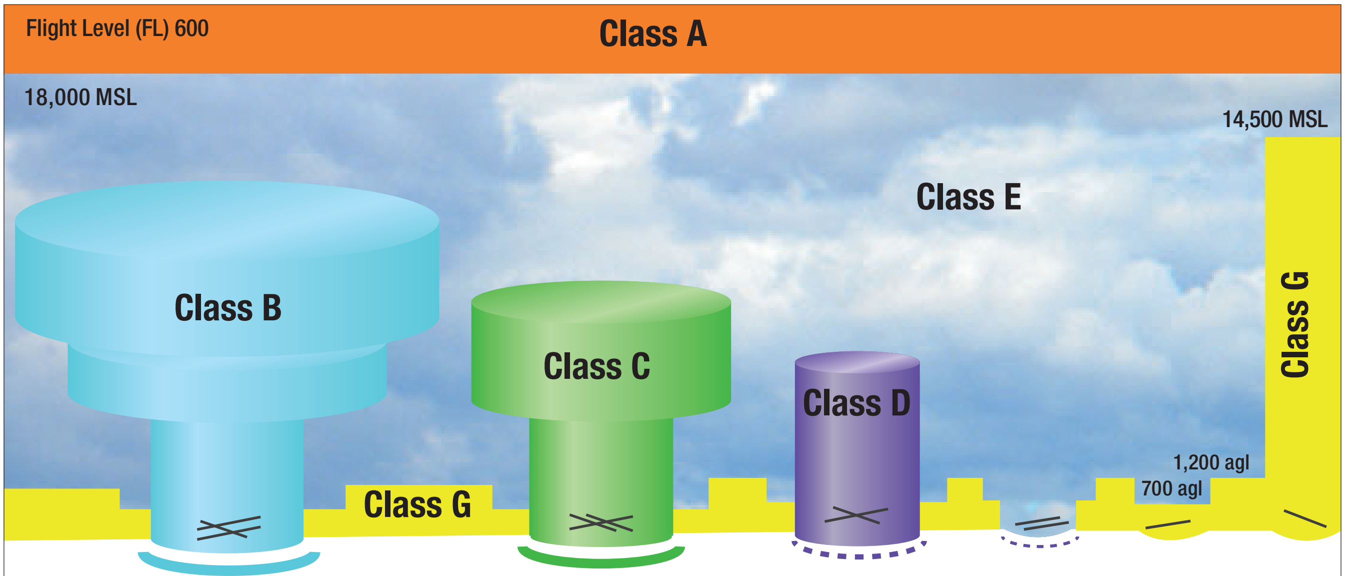
The nearest electronic navigational aid is the Tatoosh VORTAC[9] (TOU 112.2 MHz), located 22 nautical miles north of Quillayute Airport. A low altitude instrument airway (Victor 4 - V4) extends 73 miles east from TOU to the JAWBM intersection, located near the Jefferson County International Airport in Port Townsend. V4 has a minimum enroute altitude of 5,800 feet MSL for its entire length and passes immediately north of Fairchild International Airport in Port Angeles.

A satellite based (GPS) RNAV instrument airway (T257) was activated by FAA in 2021. T257 extends from Ventura City, California to Tatoosh. The "T-Route" segment extending from Hoquiam to Tatoosh, passes about 3 miles east of Quillayute Airport at its nearest point, with a minimum enroute altitude of 3,700 feet MSL (GNSS RNAV required). The ongoing development of T Routes by FAA is designed to increase flexibility in aircraft routing, rather than being limited to a linear fixed course between two ground-based electronic navigational aids.

The ELWHA non-directional beacon (NDB) (Identifier: CL, 515 KHz) is located 38 nautical miles northeast of the Airport, west of Port Angeles. The low-level navigational aid is used for enroute navigation (low transmitting power, range).

9 VORTAC: Very high frequency Omni-directional Range with Tactical air navigation

FIGURE 2-6: AIRSPACE CLASSIFICATIONS



COMMUNICATION REQUIREMENTS AND WEATHER MINIMUMS

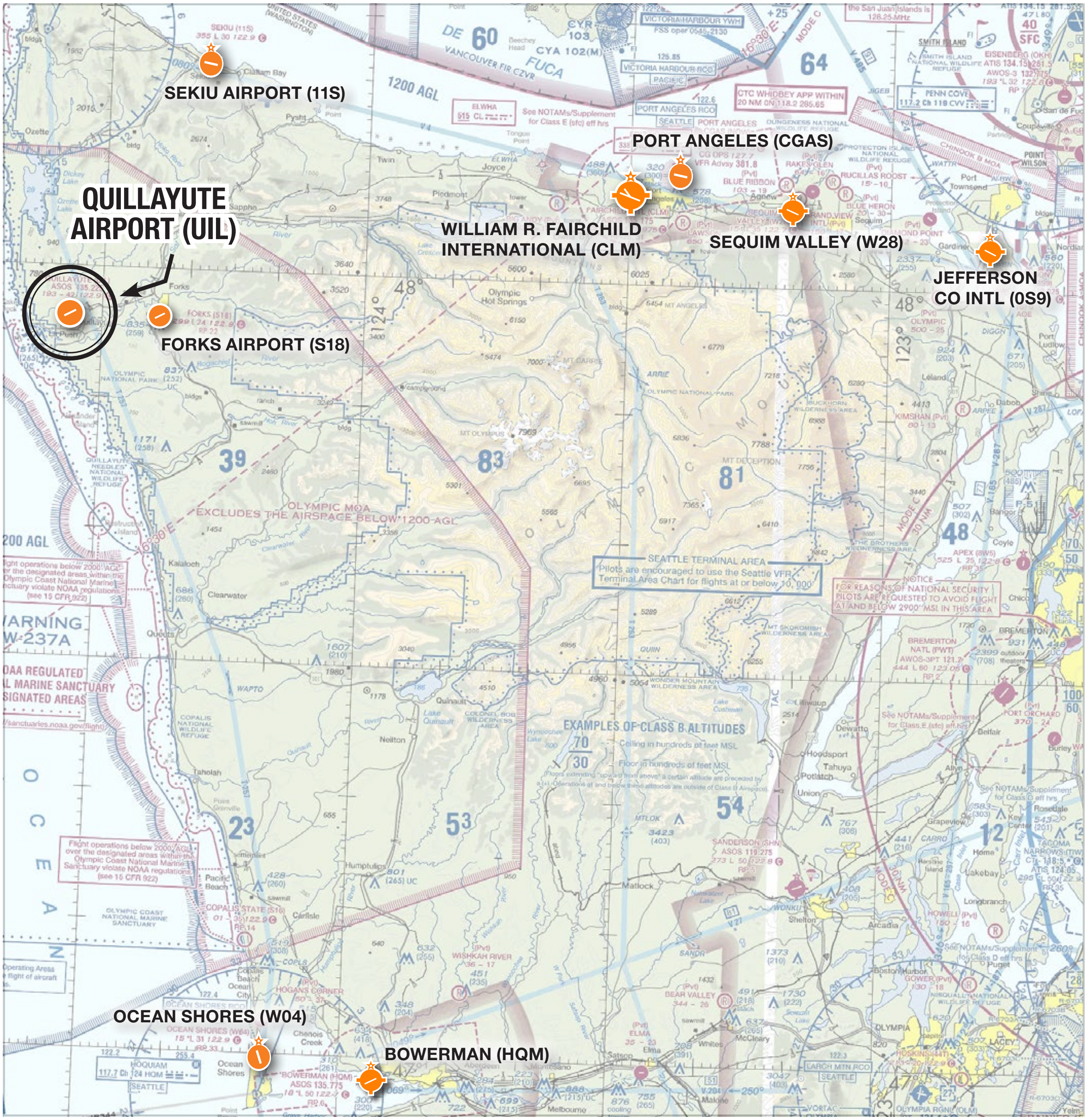
	Class A	Class B	Class C	Class D	Class E	Class G
Airspace Class Definition	Generally airspace above 18,000 feet MSL up to and including FL 600.	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports	Generally controlled airspace that is not Class A, Class B, Class C, or Class D	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E
Minimum Pilot Qualifications	Instrument Rating	Student*	Student*	Student*	Student*	Student*
Entry Requirements	IFR: ATC Clearance VFR: Operations Prohibited	ATC Clearance	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: None	None
VFR Visibility Below 10,000 MSL**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	Day: 1 Statute Mile Night: 3 Statute Miles
VFR Cloud Clearance Below 10,000 MSL***	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal***
VFR Visibility 10,000 MSL and Above**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	5 Statute Miles	5 Statute Miles
VFR Cloud Clearance 10,000 MSL and Above	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal

* Prior to operating within Class B, C, or D airspace (or Class E airspace with an operating control tower), student, sport, and recreational pilots must meet the applicable FAR Part 61 training and endorsement requirements. Solo student, sport, and recreational pilot operations are prohibited at those airports listed in FAR Part 91, appendix D, section 4.

** Student pilot operations require at least 3 statute miles visibility during the day and 5 statute miles visibility at night.

*** Class G VFR cloud clearance at 1,200 agl and below (day); clear of clouds.

FIGURE 2-7: AREA AIRSPACE – SEATTLE SECTIONAL CHART



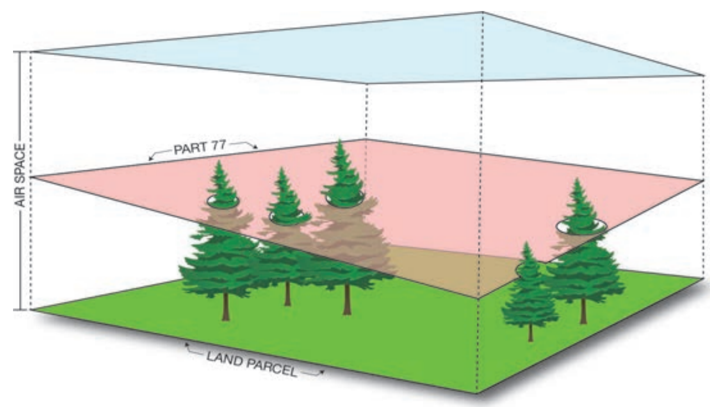
LEGEND			
	Airports with other than hard-surface runways		VOR or RNAV Airways
	Airports with hard-surfaced runways 1,500 ft. to 8,069 ft.		Class E Airspace (surface)
	VOR/ VORTAC		Class E Airspace with floor 700' above surface
	Compass Rose (VOR/DME or VORTAC)		National Wilderness Area

Airspace – 14 Code of Federal Regulations (CFR) Part 77, TERPS, And Runway Threshold Siting Surfaces

A variety of federal regulations and design criteria are used to guide the protection of airspace associated with airports—also referred to as terminal airspace. Airport Cooperative Research Program (ACRP) Report 38 - Understanding Airspace, Objects, and Their Effects on Airports provides a comprehensive description of the regulations, standards, evaluation criteria, and processes designed to protect the airspace surrounding airports. These are briefly summarized below for reference, and they will be addressed further in updated airspace evaluations performed in the Airport Master Plan for Quillayute Airport.

14 Code of Federal Regulations (CFR) Part 77 Safe, Efficient Use, and Preservation of the Navigable Airspace (see **Figure 2-8**)

CFR is the central regulation governing airspace protection, with cross-references to many other criteria documents. It defines airport "imaginary surfaces" for civil and military airports and heliports. The surfaces are intended to be free of obstacles to the greatest extent feasible to provide for safe environment for aircraft operating in the vicinity of the landing area. For runways, Part 77 surfaces are established based on the approach type (visual, non-precision instrument, or precision instrument) and the size of aircraft. Part 77 also defines requirements for notification of FAA for proposed construction in vicinity of airports, defines obstruction criteria; and describes aeronautical studies required to assess hazard status.



FAA Order 8260.3B – United States Standard for Terminal Instrument Procedures (TERPS)

This Order, along with several derivative orders in the 8260 series and other related orders, define the technical criteria used by FAA flight procedure designers when creating instrument flight procedures. Common procedures include instrument approaches, missed approach and holding procedures, and departure procedures. Although similar to Part 77 airspace, TERPS surfaces are specifically defined to provide a safe operating space for aircraft operating in without the benefit of visual reference to the ground surface during the approach or departure from the airport. TERPS surfaces have defined vertical and lateral obstacle clearance standards relative to the paths defined for aircraft.

The proposed development of instrument approach and departure procedures at the Quillayute Airport will reflect obstruction clearance requirements for the applicable TERPS surfaces defined for Runway 4/22.

FAA AC 150/5300-13B – Airport Design

This Advisory Circular (AC) is the principal document utilized by the FAA, airport sponsors and airport planners when planning and designing new airports or modifications to existing airports. Obstruction clearance and mitigation options for key runway end features are defined for Runway End Siting Surfaces.

This AC is periodically updated and has undergone extensive revision since the last master plan was completed. A comprehensive review of current FAA design standards will be provided in the facility requirements chapter of the master plan update to identify any existing facilities that do not conform to current FAA standard.

FAA AC 150/5070-6B – Airport Master Plans

This Advisory Circular (AC) is described by FAA as follows: *"provides guidance for the preparation of master plans for airports that range in size and function from small general aviation to large commercial service facilities. The intent of this AC is to foster a flexible approach to master planning that directs attention and resources to critical issues. The scope of each master plan must be tailored to the individual airport under evaluation."* The FAA-approved scope of work for this master plan project is consistent with the AC.

Instrument Flight Procedures

Quillayute Airport is not currently equipped with instrument approach procedures. Instrument approach and departure procedures are developed by the FAA using electronic navigational aids or satellite navigation to guide aircraft through a series of prescribed maneuvers in and out of an airport's terminal airspace. Procedures are designed to enable continued airport operation during instrument meteorological conditions (IMC), but are also used during visual conditions, particularly in conjunction with an instrument flight plan. The capabilities of each instrument approach are defined by the technical performance of the procedure platform (ground-based or satellite navigational aids) and the presence of nearby obstructions, which may affect the cloud ceiling and visibility minimums for the approach, and the routing for both the approach and missed approach procedure segments. The aircraft approach speed and corresponding descent rate may also affect approach minimums for different types of aircraft.

The Airport Master Plan update includes an Airport Geographic Information System (AGIS) survey, which is now required by FAA to develop new instrument procedures. The AGIS field work and aerial photography was conducted in late 2021 and the survey data analysis and mapping are scheduled for completion and FAA approval in 2022. Early in the master planning process, a formal request was submitted to the FAA's technical flight operations team to perform a preliminary assessment of feasibility for development of an instrument approach at the Airport. The findings of this assessment will be incorporated into the airside facility requirements and alternatives analyses.

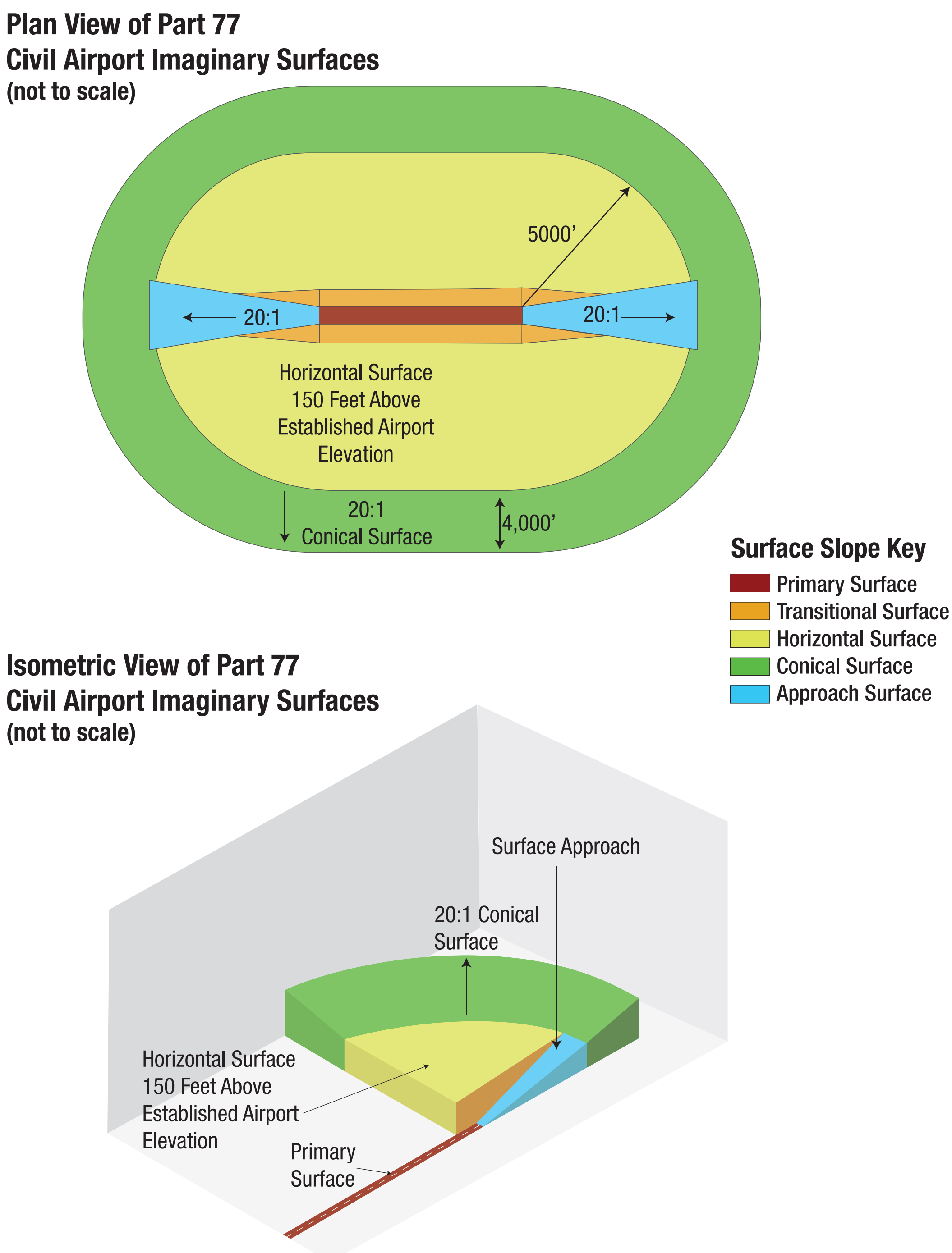
The 2003 airport master plan recommended development of instrument capabilities for the Airport and depicted ultimate Part 77 airspace consistent with future precision and non-precision GPS instrument approaches. The 2003 Airport Layout Plan and Airspace Plan drawings depict the following future approach types:

- Runway 22 - Precision Instrument. Approach surface 50:1/40:1 slope; 50,000 feet long
- Runway 4 – Non-Precision Instrument. Approach surface 34:1 slope; 10,000 feet long
- Runway 12 – Non-Precision Instrument. Approach surface 20:1 slope; 5,000 feet long
- Runway 30 – Non-Precision Instrument. Approach surface 20:1 slope; 5,000 feet long

The 2003 airport master plan recommended several runway changes, including an extension for Runway 4/22 and re-opening and reconfiguring Runway 12/30. The plan also recommended the addition of several airfield lighting systems including a rotating beacon, and runway edge lights, runway end identifier lighting, visual guidance indicators for Runway 4/22. Some of the systems are required to support day/night instrument operations. None of these projects have been completed and the previous recommendations will be reviewed in facility requirements and alternatives evaluations.

The addition of instrument capabilities at Quillayute Airport remains a high priority for the City of Forks to support its broad functional role. The limited number of airports with instrument capabilities on the Olympic Peninsula highlights a gap in service for all general aviation segments, but particularly for critical medical evacuations (MEDEVAC) flights and natural disaster response. General aviation and military users contacted during the master plan data collection phase also indicate that the addition of an instrument approach at Quillayute Airport would increase their use of the airport since poor weather conditions on the outer Olympic Peninsula often limits their visual flight activity.

FIGURE 2-8: FAR PART 77 AIRSPACE



For Quillayute Airport, the approach surfaces for the runway extend 5,000 feet beyond each runway (beginning 200 beyond the runway end).

LAND USE & ZONING ANALYSIS

Quillayute Airport is located in unincorporated Clallam County, approximately 7 miles west of the City of Forks urban growth area (UGA) on State Highway 110 (La Push Road). All land use actions related to the airport site, and its immediate surroundings are under Clallam County jurisdiction.

The Clallam County comprehensive plan and zoning ordinance articles associated with the Airport are summarized below and provided in **Appendix C**. The Part 77 airspace surfaces defined for Quillayute Airport on the 2003 ALP extend primarily over areas of Clallam County jurisdiction with the exception of a portion of the future Runway 22 precision instrument approach surface (AMP Figure E3, Runway 22 Extended Approach Surface) that extends over the City of Forks. These airspace surfaces will be reviewed based on the current master plan's preferred airside facility configuration and approach types.

Each jurisdiction is responsible for protection of the Part 77 airspace surfaces for Quillayute Airport that fall within their boundaries. The county and city are also each responsible for compliance with State of Washington airport land use protections within their respective jurisdictions.

Clallam County

Comprehensive Plan

Clallam County Code, Title 31 Comprehensive Plan includes county-wide and subarea comprehensive plan elements. The Western Regional Comprehensive Plan (Chapter 31.06) is the subarea plan that includes Quillayute Airport and the surrounding area that defines the rural character of the area. The comprehensive plan recognizes the "grandfathering" of land uses that predate current zoning and land use controls and states that "existing land uses shall not be rendered invalid nonconforming uses by changes in land use regulation." The comprehensive plan also notes that public lands make up large areas of the planning area.

Quillayute Airport has a "**Rural Center**" land use designation (**31.06.110 Rural land – Classifications**):

> (1) *Rural Center*. A land use classification intended for areas with a mixture of land uses, including commercial, residential and industrial.
>
> (a) *Standards*. Minimum Lot Size – One-half acre.
>
> Maximum Residential Density – Based on health regulations.
>
> Setbacks – Per existing Zoning Code.
>
> (b) *Permitted Uses*. See matrix in CCC 31.06.130.
>
> (c) *Location.* Proposed for Sappho, Beaver, Three Rivers, **Quillayute Prairie Airport.**

The rural land use matrix (31.06.110) identifies a range of land uses permitted in the Rural Center zone. Airports or airport-related development are not included in the listed land uses. However, staff from the Clallam County planning department indicate that proposed developments at Quillayute Airport are evaluated based on the listed use (commercial, residential, industrial, etc.) most like the airfield since the Airport was established prior to the introduction of land use and zoning codes within the county.

Clallam County also defines Generalized Locations of **Limited Areas of More Intensive Rural Development (LAMIRD**) throughout the county, including an area that includes Quillayute Airport and adjacent lands located along Quillayute Airport (Clallam County Map 31.02.263(A), June 2009).

Clallam County Code Section 31.02.263 provides the following description of LAMIRDs:

"Clallam County, like many Washington counties, is characterized by areas of more intensive rural development such as higher density residential, commercial, industrial, or mixed use development that are located outside of urban areas. These developments may or may not be served by sewer, water, fire, and other public services. The uncontrolled expansion of such areas of intensive, nonrural uses tends to promote sprawl and threaten the rural character. Counties found these existing developments are difficult to reconcile with State growth management goals and requirements for rural areas. At the same time, many of the resource industries that have traditionally

provided jobs and income to rural residents have cut back operations or even disappeared. Many rural residents expressed a need for more employment opportunities and convenient services in rural areas."

Quillayute Airport is located within the **Western Regional Rural Center (WRC) LAMIRD**, which includes Sappho, Lake Pleasant, Quillayute Airport, and Mora Road/La Push Road Junction (Three Rivers) areas.

Clallam County Code Section 31.02.620 Economic development goals includes a policy focused on LAMIRDS:

(d) Policy 4. Continuously develop and maintain updated land use plans and regulations which encourage business location and retention in appropriately designated areas including urban growth areas, rural centers and villages, existing LAMIRDs, rural commercial areas and other planned business and industrial locations.

Clallam County Code Section 31.02.410 Transportation – Background issues summarizes land use elements related to airport protection as an element of the Washington Growth Management Act (GMA).

"2) The Growth Management Act requires local jurisdictions to designate public use airports as essential public facilities (RCW 36.70A.200). Additionally, local jurisdictions must discourage incompatible land uses adjacent to public use general aviation airports (RCW 36.70A.547). The Washington State Department of Transportation – Aviation Division is charged with providing technical assistance to local governments to develop comprehensive plans and development regulations consistent with these requirements. The intent of the requirements is to protect the safety of people on the ground and in aircraft, the current operations of the airport, and the future viability of the airport.

(3) Title 14, CFR, Part 77 of the Federal Aviation Regulations (FAR) "Objects Affecting Navigable Airspace" (referred to herein as FAR Part 77) establishes standards for determining obstructions in navigable airspace. Part 77 provides horizontal and vertical dimensions for airspace protection surfaces above and around each airport runway. The horizontal size and vertical slope of the airspace protection surfaces are based on the category of the runway. The category of runway is based on the most precise type of approach available or planned for that runway. See Figure 31.02.410(B) for a diagram of airspace protection surfaces."

Both Quillayute Airport and Forks Municipal Airport are referenced in **31.02.415 Transportation – Inventory**, although some facility and activity data are obsolete.

Clallam County Code Section 31.02.420 Transportation – Goals and policies includes several policies intended to protect airports:

(4) Airport.

(a) *Policy 16.* Maintain air transportation as a safe, efficient, economical, and environmentally acceptable travel mode serving the needs of County citizens.

(b) *Policy 17.* Encourage airport managers and sponsors to maintain up-to-date airport master plans, airport layout plans, airport facility plans, or other similar documents meeting Federal Aviation Administration and Washington State Department of Transportation Aviation Division requirements to determine the existing and future air transportation role of airports and provide the needed direction for future development.

(c) *Policy 18.* Coordinate land use development in and adjacent to public use airports to reduce hazards that may endanger the lives and property of the public and aviation users and to protect the viability of Clallam County's public use general aviation airports.

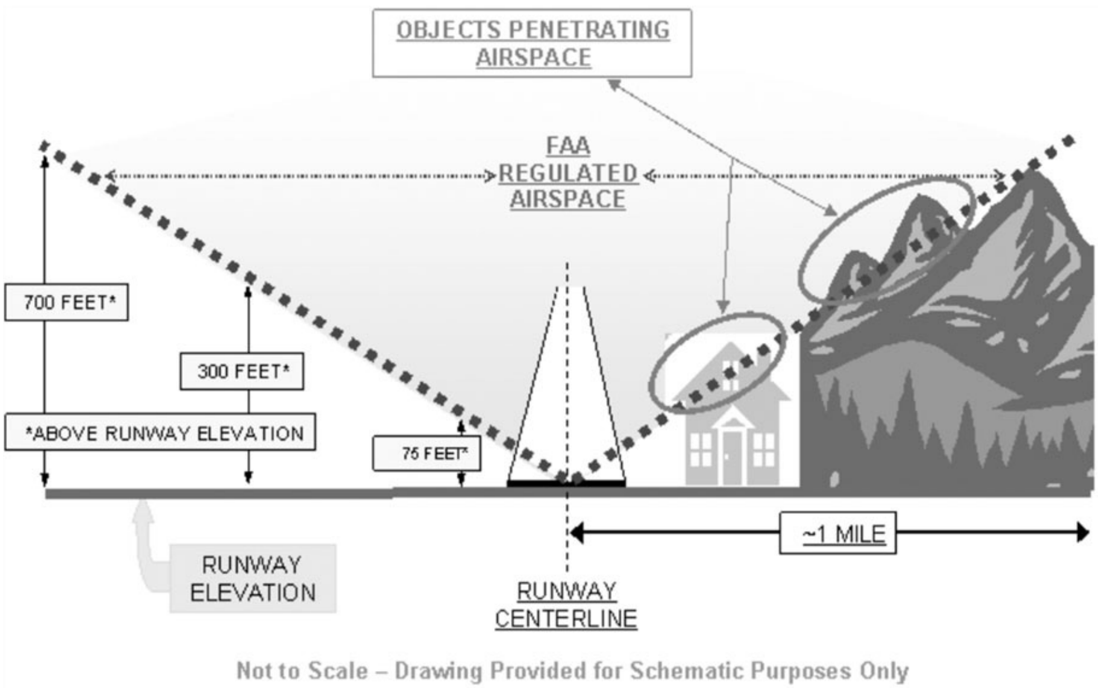
(d) *Policy 19.* Provide adequate surface transportation between airports and urban growth areas and ensure that the existing major arterial streets, roads, and highways serving the airport are adequate.

(e) *Policy 20.* Recognize Seattle-Tacoma International Airport (Sea-Tac) as the major air carrier hub airport for Clallam County. Support efforts to attract a passenger airline carrier with direct flights to Sea-Tac.

(f) Policy 21. Discourage siting of incompatible land uses around public use airports. Pursue a balance between this requirement and other goals of the Growth Management Act including, but not limited to, protection of private property rights, providing adequate housing, and appropriate economic development in rural and urban areas.

(g) Policy 22. Protect navigable airspace, as provided in Code of Federal Regulations Title 14 Federal Aviation Regulation (FAR) Part 77 – Objects Affecting Navigable Airspace, from obstructions that are of sufficient height as to constitute a danger to aircraft flight. See Figure 31.02.420(A) for an illustration of objects penetrating FAR Part 77 airspace.

Clallam County Figure 31.02.420(A). FAR Part 77 Schematic Displaying Objects Penetrating Airspace



(h) *Policy 23*. Provide notice and disclosure to current, future, and prospective purchasers of lands within the Airport Overlay District of potential hazards and nuisances associated with aircraft operations and the potential for land use and height regulations.

(i) *Policy 24.* Designate public use, general aviation airports located within Clallam County as essential public facilities.

(j) *Policy 25.* Enact regulations to preserve open land along the extended runway centerline within the Airport Overlay District.

(k) *Policy 26.* Discourage airport hazards including, but not limited to, the siting of land uses adjacent to airports that foster an increase in bird or wildlife populations, create visual hazards, discharge emissions of any particulate matter in the air that could impair airport operations, emit electrical transmissions that would interfere with aviation communications and/or instrument landing systems, or otherwise obstruct or conflict with aircraft patterns or result in potential hazards to aviation.

(l) *Policy 27.* Encourage economic development opportunities and aviation-related land uses within the Airport Overlay District to promote the efficient mobility of goods and services consistent with the economic development element and the regional transportation strategy.

(m) *Policy 28.* Consult with the Washington State Department of Transportation Aviation Division to provide input into the land use planning efforts around Clallam County's public use airports.

Clallam County Code Section 31.06.050 - Transportation – Inventory and analysis includes the following section related to airports:

(6) *Airports.*

(a) *Ensure that land uses adjacent to the Quillayute Prairie Airport are compatible with the continued use of the airport for air transportation needs of the region.*

(b) *If developed for commercial use, provide adequate roadway connections between the Quillayute Prairie Airport and the existing major arterial streets, roads and highways serving the airport. Ensure that there are public transportation connections to the Quillayute Prairie Airport.*

ZONING

Clallam County Title 33 – Zoning defines all zoning designations applicable to Quillayute Airport. The ordinance defines base zoning, LAMIRDs, and airport overlay zoning.

Quillayute Airport is zoned **Western Region Rural Center (WRC) in Clallam County Code, Chapter 33.15 - Commercial Zones (Section 33.15.045):**

"The purpose of the Western Region Rural Center zone is a land use classification intended for areas with a mixture of land uses, including commercial, residential and industrial."

Airports are identified as *Conditional Land Uses* in the WRC zone. Hangars, commercial buildings, and related development would be allowed as a conditional use. Business parks, commercial greenhouses, industrial uses, research facilities, wood manufacturing are also listed among the conditional uses in the WRC zone. Several airport-compatible commercial uses identified as *Allowed Land Uses* in the WRC zone, including timber harvesting and commercial storage.

Clallam County Code, Chapter 33.22 – LAMIRD Standards provides specific guidance for commercial or industrial development that would apply to new or infill development at Quillayute Airport. The guidance is intended "to maintain a more 'open' or 'rural' atmosphere…" and includes limits on impervious surface and minimum development setbacks for adjacent less intensive rural residential zoning, public roads or highways. Other conditions intended to preserve the underlying rural character of the LAMIRD, such as restrictions on overhead lighting glare with "cut-off" type fixtures are also consistent with protecting airports from incompatible land uses.

AIRPORT OVERLAY ZONING

Clallam County Code Chapter 33.08 - Airport Overlay District applies to all public use airports located in Clallam County, including Quillayute Airport. The overlay consists of two components: 1) Airport Land Use Compatibility Overlay, and 2) FAR Part 77 Surfaces and Height Hazard Overlay.

Section 33.08.050 – Airport Land Use Overlay defines six land use compatibility overlays:

- Runway Protection – **Zone 1**
- Airport Hangar Development – **Zone 2**
- Airport Development – **Zone 3**
- Aviation Related Residential – **Zone 4**
- Extended Runway Centerline Protection – **Zone 5**
- Airport Influence Area – **Zone 6**

The code provides land use guidance and protection standards for each zone. However, specific dimensions for each zone are not provided. References are provided for Map 33.08.020 (1a)) for the five airports listed in Section 33.08.020 – Applicability. However, the maps currently included in the code are for Sequim Valley Airport (submitted by airport owner). The other four public use airports, including Quillayute, are reserved with no additional information provided.

Clallam County Community Development Department staff indicate that the overlay zone ordinance defined in Chapter 33.08 may be applied to each of the “reserved” airports at any time with the submittal and adoption of mapping to depict the referenced zones 1-6.

The land use compatibility overlays contained in Chapter 33.08 were developed based on airport land use compatibility guidance provided by the Washington Department of Transportation – Aviation Division, originally developed in the 1990s. The code indicates the intent to comply with requirements of the Washington State Growth Management Act (GMA), RCW 36.70A.510 and 36.70.54 by discourage siting of incompatible land uses that may impair the future development and operation of public use general aviation airports.

The updated airport land use plan drawing being developed as part of the airport master plan update will depict the geometric footprints with supporting documentation for applicable dimensions based on current WSDOT Aviation guidance. The mapping will satisfy Clallam County’s requirements for application of the code to Quillayute Airport.

Section 33.08.060 - Federal Aviation Regulations (FAR) Part 77, surfaces and height hazard overlay includes protections for the Federal Aviation Regulation (FAR) Part 77 Airspace defined for the referenced airports, including requirements for aeronautical studies of proposed construction in the vicinity of the airports through submittal and review of FAA Form 7460-1 “Notice of Proposed Construction or Alteration” where applicable.

The City of Forks Zoning Ordinance (Title 17) does not include airport overlay zoning, or any other provisions intended to protect the airspace surfaces associated with Quillayute Airport. The 2003 Airport Airspace Drawing (Figure E3) depicts portions of the FAR Part 77 future approach surface and approach transitional surface for Runway 22 that appear to extend over areas of City of Forks land use jurisdiction (north and east of the La Push Road and U.S. 101 connection). A review of airspace requirements for the Airport will be performed in the facility requirements and alternatives analysis to determine the need for city overlay zoning.

AIRPORT VICINITY ZONING

Clallam County zoning in the vicinity of Quillayute Airport is depicted on **Figure 2-9** and consists of rural designations consistent with the Western Regional Comprehensive Plan (Chapter 31.06):

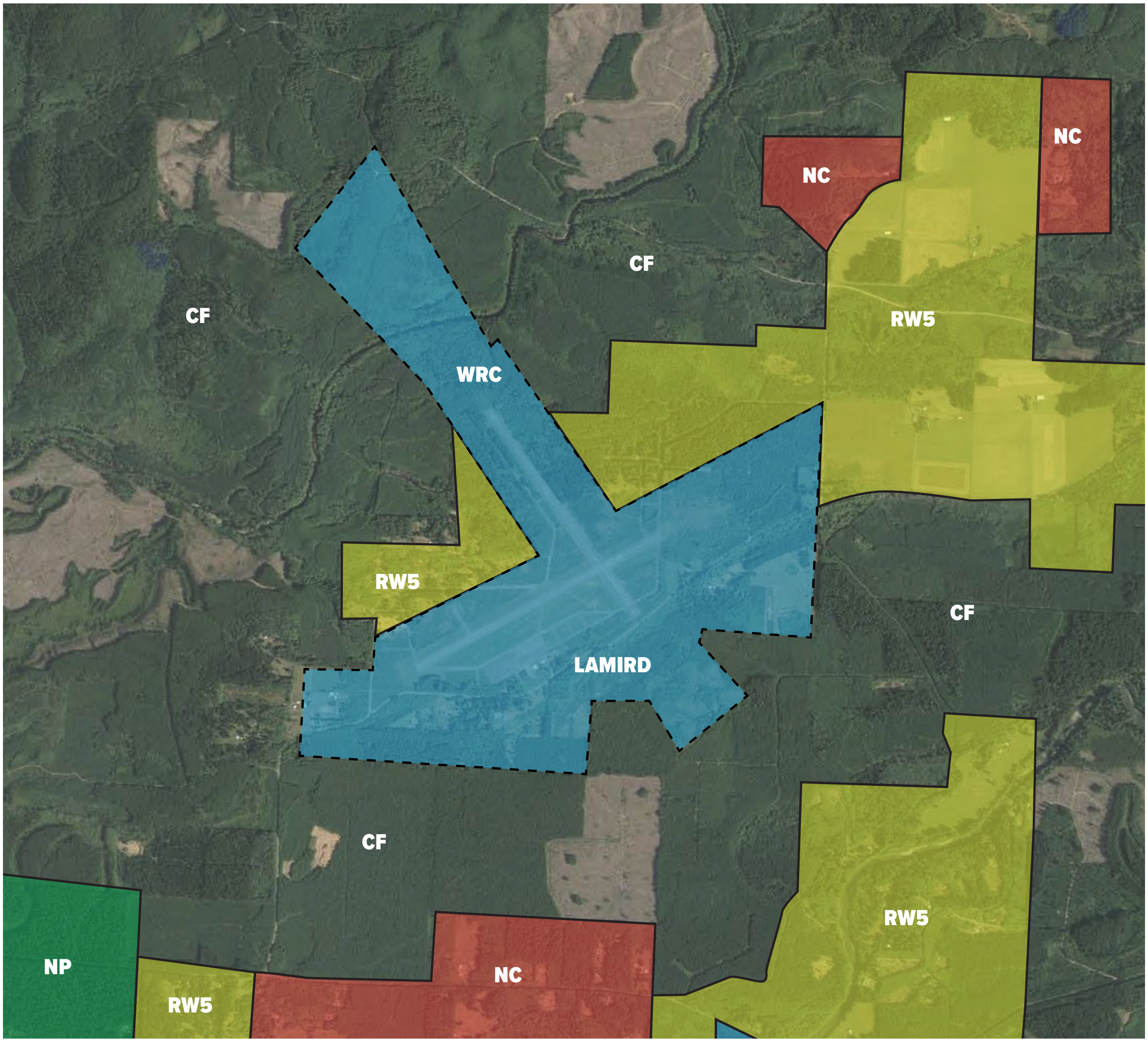
Western Region Rural Low (RW5) – *The purpose of the Western Region Rural Low zone is to provide home sites in rural forestry areas with limited encroachment of commercial and industrial activities in the western region of Clallam County. Maximum Residential Density: One dwelling unit per 4.8 acres or 1/128th of a standard section subdivision. Minimum Lot Size: 2.4 acres.*

Western Region Rural Moderate (RW2) – *The purpose of the Western Region Rural Moderate zone is to provide areas for persons who desire to live in a low-density rural setting with limited encroachment of commercial and industrial activities. Maximum Residential Density: One dwelling unit per acre. Minimum Lot Size one acre.*

Rural (R1) – *The purpose of the Rural zone is to provide areas having a suburban/rural density setting free from commercial and industrial developments. Maximum Residential Density: One dwelling unit per 2.4 acres. Minimum Lot Size. 2.4 acres.*

Quillayute Residential (QR) – *The Quillayute Residential zone is a land use classification in areas where residential one acre lots in rural areas are either currently the predominant land use or are proposed. Maximum Residential Density: One dwelling unit per one-half acre. Minimum Lot Size one-half acre.*

FIGURE 2-9: AIRPORT & VICINITY ZONING



Zoning Legend

- Commercial Forest (CF)
- Rural Commercial-Western Region (WRC)
- Western Region Rural Low (RW5)
- Rural Neighborhood Conservation (NC)
- Olympic National Park (NP)
- Limited Areas of More Intensive Rural Development (LAMIRD)

Source: Clallam County Zoning Ordinance

Airside Elements

Airside facilities are comprised of infrastructure that facilitate the movement and operation of aircraft on the ground and in the air. This section of the existing conditions analysis includes a discussion of the Airport's runway-taxiway system, airfield pavements, and support facilities. Quillayute Airport operates in day and night visual flight rules (VFR) conditions. The Airport does not currently have any instrument procedures or airfield lighting. Existing airfield conditions are depicted in **Figure 2-10**.

The addition of instrument capabilities at the Airport remains a high priority improvement for the City of Forks. The associated facility requirements will be examined, and options will be reviewed in the alternatives analyses in conjunction with AGIS obstruction survey being completed in conjunction with the master plan.

As noted earlier in the chapter, the original runways and taxiways constructed at Quillayute Airport were designed to accommodate larger and heavier aircraft than currently use the facility on a regular basis. The active operational areas (dimensions) for these pavements are listed on the FAA Airport Record Form (5010-1) and in the WSDOT IDEA Airfield Pavement database. All "existing" runway and taxiway information referenced in the airport master plan reflect current published data, unless noted otherwise.

RUNWAY

Quillayute Airport has one paved runway (4/22) that is oriented in a northeast-southwest direction. The runway's magnetic alignment is 043/223 degrees, based current magnetic variation.[10] Runway 4/22 is 4,210 x 100 feet with a full-length taxiway (Taxiway A) on its south side. Runway details are summarized in **Table 2-13**.

The runway is not equipped with edge lighting, retro-reflective edge markers, or visual guidance indicators. It is noted that the 1943 construction of the runway included edge lighting (fixtures abandoned, concrete mounts visible).

The runway is constructed of Portland Cement Concrete (PCC). The published weight bearing capacity for the runway is 30,000 pounds for aircraft with single-wheel landing gear, and 50,000 pounds for dual-wheel landing gear configurations. The 1943 concrete panels are original, although the center section of the runway has undergone periodic rehabilitation projects (joint repair, spall repair, crack repair, etc.). The most recent rehabilitation work was completed in 2019.

The Runway 4/22 pavement is in good condition with minor vegetation growth in panel joints. The runway markings (white) are Basic, consistent with visual approach requirements runway use and FAA standards. Current runway markings include:

- Runway End Numbers (24 feet long).
- Centerline Stripe (12 inch wide).
- Edge Stripes (36 inch wide); and
- Threshold Bar (10 feet wide) at the Runway 22 end identifies the northeast end of usable runway.

The runway markings were observed to be in very good condition (Fall 2021), repainted in 2019 as part of a runway rehabilitation project. Taxiway lead-in lines (yellow) are located at the west and east exit taxiway connections.

10 Magnetic Field Calculator WWM-2020 (https://www.ngdc.noaa.gov/geomag/magcalc.shtml). UIL:12/12/21 15° 52' E ± 0° 24' changing by 0° 6' W per year

FIGURE 2-10: EXISTING CONDITIONS

TABLE 2-13: RUNWAY DETAILS

Runway 4/22	
Dimensions	4,210' x 100'
Bearing	N 58° 35' E (True)
Effective Gradient	0.04%
Surface/Condition	Portland Cement Concrete (PCC)/Good
Weight Bearing Capacity	30,000 pounds - Single Wheel Gear; 50,000 pounds – Dual Wheel Gear
Markings	Visual/Basic; Runway designation numbers, centerline stripe, edge stripe, threshold bar (Rwy 22)
Lighting	None
Signage	None

Source: Quillayute Airport, FAA Airport Master Record (5010), Effective Date 12/31/2019; Quillayute Airport Layout Plan (2003, Dunkelberg)

Other Runway Markings

A closed section of Runway 4/22 (northeast 770 feet) is marked with yellow chevrons, the FAA-recommended marking used for paved runway overruns. The chevrons are in poor condition (faded). The former crosswind runway (12/30) has three large “X” markings to indicate the runway is closed. The X markings are in very good condition (recently repainted).

TAXIWAYS & TAXILINES

All currently developed areas of Quillayute Airport have paved taxiway or taxilane access. Runway 4/22 has three south side taxiway connections with the main apron and adjacent landside development area. The south taxiway system includes both parallel and angled sections. The major taxiways are 35 feet wide (based on edge stripes), although the actual pavements are up to 50 feet wide. The taxiways are unlighted and are not equipped with retroreflective edge markers.

The parallel section of taxiway has a runway-to-taxiway centerline separation of 540 feet. The eastern taxiway section extends along the south section of a closed runway (12/30) with an 85-degree connection to Runway 4/22, approximately 425 feet west of the east end of the runway.

All major taxiways at the Airport have centerline and edge stripes that have significantly faded. The west and east taxiway connections have lead-in lines that extend from the runway centerline to the taxiway centerlines. No aircraft hold line markings were observed on the three taxiway connections to the runway.

The main aircraft apron is accessed directly from the main taxiway. The northeast section of the main apron has received some pavement maintenance and taxilane striping (now faded).

PAVEMENT CONDITION

The Washington State Airport Pavement Management System (APMS) systematically identifies maintenance, repair, and rehabilitation projects needed to sustain functional pavements at Washington airports. The WSDOT “IDEA” database provides a thorough evaluation of current conditions and future projections of condition in terms of pavement condition indices (PCI) for all eligible pavements on all paved airports across the state. For NPIAS airports like Quillayute Airport that receive federal money, this work assists airport sponsors in meeting their FAA grant assurances.

The most recent Pavement Condition Index (PCI) survey for Quillayute Airport was performed in April 2018. The survey was performed using the PCI methodology developed by the U.S. Army Corps of Engineers and outlined in the current edition of *ASTMD-5340, Standard Test Method for Airport Condition Index Surveys*.

The current APMS PCI scale (0-100) identifies three corresponding categories of repair actions (reconstruction, major rehabilitation, preventive maintenance) rather than the range of seven qualitative ratings (Failed to Excellent) that were in use when the last master plan was completed. The 2018 weighted average PCI rating for all airfield pavements was 77, and all pavement sections fall into the *“preventive maintenance”* category (PCI ≥63). The average PCI for all airport pavements in the 1999 inspection was 66, which then corresponded to a “Good” rating. The PCI ratings are based on visual inspections and do not reflect any subsurface analysis.

Table 2-14 summarizes data from the 2018 PCI inspection for Quillayute Airport. The pavement ratings are consistent with pavement age and use. Airfield pavements included in the IDEA database are Runway 4/22, three taxiway connections to the runway, three taxilane stubs, and the east section of the main apron. **Figure 2-11** depicts the 2018 pavement inspection visual ratings.

TABLE 2-14: 2018 PCI INSPECTION FOR QUILLAYUTE AIRPORT

Pavement Section Identifiers	Facility	2018 PCI	1999 PCI *(Inspection Referenced in 2003 AMP)*
RO4QU-01	Runway 4/22 – main section	78	67 (*average of 6 sections)
RO4QU-02	Runway 4/22 – section at east access taxiway connection	75	Previously included in RO4QU-01
TO1QU-01	Access Taxiway to Runway 4 end	69	64
TO2QU-01	Mid-Runway Access Taxiway, central / east section of parallel taxiway; hangar taxilane stubs (3)	79	76 (*average of 5 sections)
TO3QU-01	East Access Taxiway. Extends from southeast corner of main apron to the east end of Runway 4/22	76	61
A01QU-01	East Section of Main Apron and the west section of the parallel taxiway	76	73 (including west section of apron)

Source: WSDOT IDEA Pavement Database (2018 Inspection; historical PCI data as noted)

All airfield pavements were constructed in 1943 with Portland Cement Concrete (PCC). The durability of the concrete pavement cannot be overstated. The nearly 80-year-old pavement has remained useable with minimal maintenance due in large part to its original design, the moderate local climate, and relatively low level of accumulated aircraft use since being surplused by the military.

It is noted that several pavement sections have been removed from the IDEA database since the last master plan, although no pavement has been physically removed or altered. These pavement sections are not currently rated:

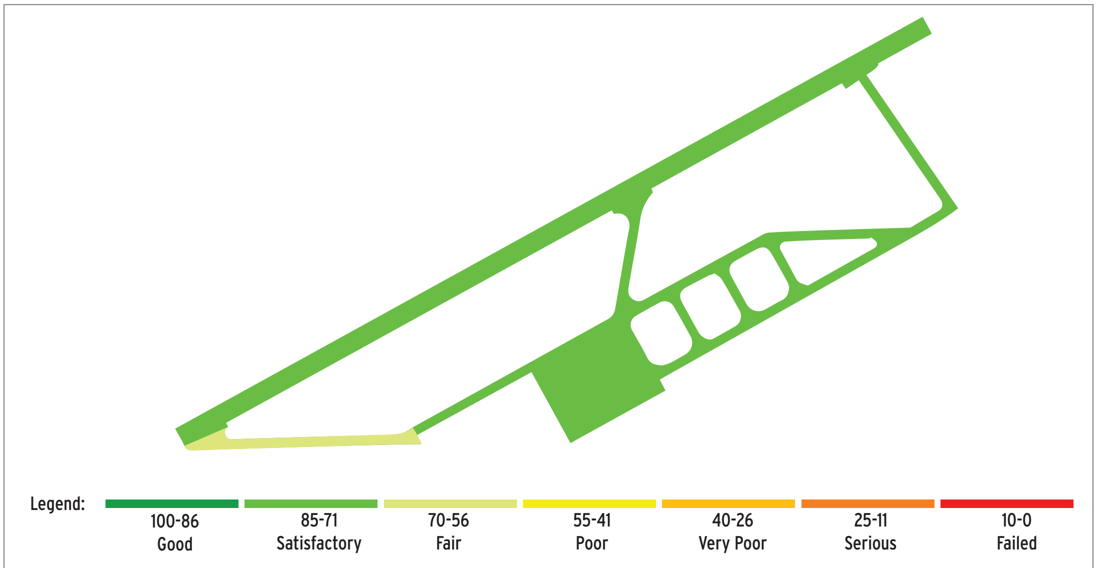
- Runway 4/22. The outer 25-foot-wide sections on both sides of the original runway.
- Runway 12/30 - north of intersection with Runway 4/22. The center 50-foot-wide section of the former runway, south of Runway 4/22, is retained as part of the east access taxiway (TO3QU-01).
- The western section of the main apron (the northern 50 feet of apron is retained as taxiway).
- The eastern 780 feet of Runway 4/22 eliminated with Runway 22 threshold relocation: and
- A section of the east access taxiway (TO3QU-01), north/east of Runway 13/31, that connected to Runway 22.

Other changes include the branch/section inventory of pavement for Runway 4/22 (formerly three 50-foot-wide sections, now reduced to one 100-foot section) and the addition of a taxiway section (converted) at the south end of the closed runway.

Pavement-related airfield projects completed since the last master plan include narrowing and shortening Runway 4/22 (from 4,980 x 150 feet to 4,210 x 100 feet). The change in runway configuration was accomplished with pavement markings and no pavement was removed. The change in runway length was the result of the 780-foot relocation of the Runway 22 threshold. The former runway pavement area is marked with yellow chevrons. The section of access taxiway that connected to the former Runway 22 threshold was closed and a section of the closed runway (12/30) was converted to taxiway to access Runway 4/22, near the relocated Runway 22 threshold.

The most recent pavement work was completed in 2019 which included general pavement rehabilitation for Runway 4/22. Since this rehabilitation work occurred after the 2018 inspection, the PCIs for Runway 4/22 may not accurately reflect current conditions. The next WSDOT Aviation APMS inspection at the Airport is expected in 2022 or 2023.

FIGURE 2-11: PAVEMENT CONDITIONS (2018 INSPECTION)



Source: WSDOT Aviation, Applied Pavement

AIRSIDE SUPPORT FACILITIES

Support facilities generally include airfield lighting, signage, weather reporting equipment and visual aids. Quillayute Airport accommodates day and night operations in visual meteorological conditions (VMC) and the corresponding visual flight rules (VFR) for aircraft. All airside support facilities were inspected during site visits conducted in Fall 2021.

Airport Lighting

Quillayute Airport is not currently equipped with airfield lighting. Potential airfield lighting improvements including a rotating beacon, runway edge lights, visual guidance indicators, lighted wind cone, and airfield signs will be assessed in the facility requirements evaluation, particularly in conjunction with any planned development of instrument approach capabilities at the Airport.

The Airport has one unlighted wind cone and segmented circle on the south side of Runway 4/22, near mid-runway and the northeast diagonal access taxiway from the apron to the runway.

Airfield Signage

Quillayute Airport has no airfield signage. Signage needs will be assessed in the facility requirements evaluation.

Weather Reporting

Quillayute Airport has an automated onsite weather observation providing 24-hour onsite weather information. The Automated Surface Observing System (ASOS) is owned and maintained by the National Weather Service:

ASOS detects significant changes and provides hourly and special observations via the networks. Additionally, ASOS routinely and automatically provides computer-generated voice observations directly to aircraft in the vicinity of airports (135.225MHz) and via telephone (360) 374-9731. Common weather element reporting includes:

- Sky condition: cloud height and amount (clear, scattered, broken, overcast) up to 12,000 feet.
- Visibility (to at least 10 statute miles).
- Basic present weather information: type and intensity for rain, snow, and freezing rain.
- Obstructions to vision: fog, haze.
- Pressure: sea-level pressure, altimeter setting.
- Ambient temperature, dew point temperature.
- Density altitude.
- Wind: direction, speed, and character (gusts, squalls).
- Precipitation accumulation.
- Selected significant remarks.

Landside Elements

The landside elements section includes the facilities designed to support airport operations. This section of the existing conditions analysis includes a discussion of aircraft aprons/ tiedown areas, hangars, utilities, fencing, surface roads, and vehicle parking.

APRONS & TIEDOWN AREAS

Quillayute Airport has one main apron area that accommodates aircraft parking and fueling. The apron features are summarized in **Table 2-15**.

TABLE 2-15: APRON DETAILS

Runway 4/22	
Dimensions	1,175' x 412' (484,688 square feet) Approximately 540' x 450' (273,402 square feet) WSDOT IDEA Pavement Database Area includes 50'x 660' remnant of west section of apron used as taxiway
Surface/Condition	Portland Cement Concrete (PCC)/Good or Fair
Markings	Tiedown and taxilane centerline striping (poor condition)
Tiedowns	15 small airplane tiedowns
Other Facilities	Aboveground Fuel Storage Tanks and Dispensing • Aircraft AVGAS and jet fuel storage tanks (2) – Inactive • USGG jet fuel storage tank (1)

Source: Quillayute Airport, FAA Airport Master Record (5010), Effective Date 12/31/2019; Quillayute Airport Layout Plan (2003, Dunkelberg)

AIRPORT PERIMETER FENCING

The perimeter of Quillayute Airport has areas of fencing including range fencing and chain link. A 2008 project added 2,500 feet of 7-foot chain link fencing along the south edge of the Airport bordering Quillayute Prairie Road. The fence was designed to encourage elk to migrate through the area diverting past Runway 4/22 and avoiding the adjacent road. Two manual swing gates were installed in the new fence section. The main airport gate is located at the entrance to the main apron; additional gates are located on the entrance to the NOAA weather station and near the south end of the closed runway (12/30).

AIRPORT SURFACE ROAD ACCESS

Vehicle access to the Airport is provided from a direct paved entrance road (240 feet) that connects Quillayute Road to the main apron and hangar. A second road paved road, located about 250 feet east on Quillayute Road, provides access to the NOAA weather station and vehicle parking area.

VEHICLE PARKING

Designated automobile parking areas are located adjacent to the WWII hangar and main apron, at the main airport entrance and adjacent to the NOAA weather station.

AIRCRAFT FUEL

Quillayute Airport currently has no aviation fuel available for sale. Two above ground fuel storage tanks (<5,000 gallons each) are located on the main apron. The tanks were previously used for aviation gasoline (AVGAS) and jet fuel storage and dispensing, with 24-hour self-serve access. The tanks are now inactive. The City of Forks reports that financial viability could not be achieved based on low fuel sales volumes when the system was operational.

The U.S. Coast Guard (USCG) installed a small jet fuel storage tank in 2022 to support its helicopter operations in the area. The new aboveground tank was installed adjacent to the existing aviation fuel tanks to access existing electrical power. The jet fuel cache will not be available for public use.

HANGARS

Quillayute Airport currently has one existing hangar (1944 conventional hangar) located along the south edge of the main apron. A detailed report on the hangar is included in **Appendix B** (Historic/Cultural Report). The WWII era hangar is not currently in aeronautical use due to its condition. Some renovation of the hangar was completed in 2009 with the intent of returning the structure to aeronautical use. An adjacent air traffic control structure was destroyed by fire in 2008 and was demolished.

The condition of the hangar was documented in the 2003 Airport Master Plan and remains largely accurate, except for the subsequent renovation (north wing) and the adjacent structural fire noted absove:

"The hangar/office is located on the central portion of the apron and consists of approximately 8,100 sq. ft. Due to a state of disrepair, rehabilitation to this building would include re-roofing, installation of new windows and doors, replacing and upgrading existing electrical, installation of a new septic tank, plumbing repairs, and heating of the building. Additional exterior work will need to be undertaken to replace rotting siding with new concrete-based siding that would match the original siding used on the building. Total estimated cost for pursuing such a project is estimated to be $190,000. The facility is currently occupied by WACO." (Dunkelberg, 2003)

In addition to the overall historical significance of the hangar, it is recognized as one of only a few remaining from the era with the unique roof design (Quonset style convexed roofline for the main hangar bay).

As noted earlier in the chapter, only two other buildings on the Airport remain from the original World War II airfield construction. These include armory and instruments building (currently housing the NOAA weather station) located immediately adjacent to the main aircraft apron and a warehouse located east of the main apron, adjacent to Quillayute Road.

The NOAA building supports operations and launch facilities for high altitude weather observation balloons. The balloon launch facility and a 250-foot radius critical area are identified on the 2003 ALP and Terminal Area Plan drawings. The warehouse is currently unoccupied. The building was previously recommended for rehabilitation and use to accommodate potential non-aeronautical tenants.

POWER

The Clallam County Public Utility District (PUD) provides electric service throughout the county. A main service line extends west of Forks to serve the Quillayute area, a portion of the Olympic National Park, and the Quileute Indian Reservation. The electrical service to the Airport is provided by two direct overhead single-phase drop lines that connect to the service line traveling along Quillayute Road. Existing electrical service is provided to the NOAA facilities, including the ASOS unit on the airfield, and to the existing hangar. Other portions of the airfield, including the runway-taxiway system and previously planned hangar areas, are not served by electrical power.

WATER

The Airport is served by an on-site water system that includes one well and distribution lines (previously reported as wood stave pipes) that were constructed in during WWII.

The 2003 Airport Master Plan provided the following system description:

"A six (6) inch main line runs along Quillayute Road, with the following extensions:

- *A six inch line in the access driveway, which loops around the maintenance hangar, ending at the warming apron.*
- *A four inch line running directly to the mooring circle.*
- *A six inch line looping through the living areas, south of Quillayute Road.*
- *A three and a half inch line looping around the recreation field."*

The plan noted that the existing system was designed for approximately 500 people. Information on the well flow rate and the condition of service lines was not obtained during the data collection, although the rest rooms on the NOAA building and the hangar appear to be functional. It is also unknown if the lines extending south of Quillayute Road are currently in service.

SANITARY SEWER

Quillayute Airport has an on-site septic tank system constructed during WWII. It appears that the system was designed to serve facilities on both sides of Quillayute Road. The three remaining structures located on the north side of the road are connected to the system. The condition of tank system and service lines was not determined during the data collection, although the rest rooms on the NOAA building and the hangar appear to be functional.

NATURAL GAS

Natural gas is not available at the Airport or western Clallam County.

STORMWATER

The stormwater systems located on the Airport were installed during the 1943 airfield construction and include a series of catch basins and surface conveyances for runoff into adjacent vegetated areas.

Airport Administration

The Airport Administration section provides a summary of Airport Ownership & Management, Airport Finance, Rates and Charges, Rules and Regulations, and overview of FAA Grant Assurances and Compliance.

AIRPORT OWNERSHIP & MANAGEMENT

Quillayute Airport is owned and operated by the City of Forks. The city is responsible for the day-to-day management and maintenance of the Airport. The financials for Forks Municipal Airport, also owned by the City, are maintained separately from Quillayute Airport to avoid co-mingling funds between FAA-eligible and non-eligible facilities.

AIRPORT FINANCE

Quillayute Airport operates within the City's general fund, with all revenue generated through operations remaining in the Airport's budget. This is required by FAA to prevent revenue diversion from airport operations to the sponsor's general services. The primary revenue generating sources for the Airport include ground leases and rents from city-owned buildings. The Airport also receives periodic revenues from timber sales. Revenues from timber sales were realized in 2020 and 2021, but not in years 2017-2019.

TABLE 2-16: AIRPORT FINANCIALS (FY2022 BUDGET)

AIRPORT EXPENSES	
Professional Services	$11,880
Insurance	$8,741
Utilities	$3,326
Maintenance and Repair	$4,347
TOTAL AIRPORT OPERATING EXPENSES	**$28,293**
AIRPORT REVENUES	
Fee Use Agreements	$3,000
UIL Funds on Hand	$4,000
Authorized Loan Proceeds	$10,000
TOTAL AIRPORT OPERATING REVENUES	**$17,000**
NET OPERATING INCOME (LOSS)	**($11,293)**

Source: City of Forks, 2022 Final Budget
Grant funding and associated projects are not included in the financials.
Periodic timber sales contribute to Airport cash balance.

The primary expenditures for the Airport include professional services, insurance, utilities, and maintenance. The capital improvement projects at Quillayute Airport are typically funded through FAA grants with a local match that may be partially offset by WSDOT Aviation grants.

Based on a review of the Airport's revenues and expenses since 2014, in years that there are no timber sales, the Airport's revenues do not cover the operating expenses of the airport. Fiscal year 2022 operating revenue and expense budgets for Quillayute Airport are summarized in **Table 2-16**.

AIRPORT RATES & CHARGES

The City of Forks rates and charges for Quillayute Airport includes improved and unimproved ground leases and building rentals. Building rental rates vary for the three city-owned structures currently on the Airport. A summary of current airport rates and fees will be provided in the financial management section of the Implementation chapter (Chapter 8).

RULES & REGULATIONS

The City of Forks operates the Airport for the use and benefit of the public to make it available to all types, kinds, and classes of aeronautical activity on fair and reasonable terms and without unjust discrimination.

FAA Compliance Overview

A management program based on the FAA's "Planning for Compliance" guidance and the adoption of additional airport management "Best Practices" is recommended to address FAA compliance requirements and avoid noncompliance, which could have significant consequences.

Airport management "Best Practices" are developed to provide timely information and guidance related to good management practices and safe airport operations for airport managers and sponsors. The practices outlined herein are designed for use by the City of Forks for evaluating and improving their current and future operation and management program.

Airport sponsors must comply with various federal obligations through agreements and/or property conveyances, outlined in FAA Order 5190.6B, Airport Compliance Manual. The contractual federal obligations a sponsor accepts when receiving federal grant funds or transfer of federal property can be found in a variety of documents including:

- Grant agreements issued under the Federal Airport Act of 1946, the Airport and Airway Development Act of 1970, and Airport Improvement Act of 1982. Included in these agreements are the requirement for airport sponsors to comply with:
  - Grant Assurances;
  - Advisory Circulars;
  - Application commitments;
  - FAR procedures and submittals; and
  - Special conditions.
- Surplus airport property instruments of transfer;
- Deeds of conveyance;
- Commitments in environmental documents prepared in accordance with FAA requirements; and
- Separate written requirements between a sponsor and the FAA.

Airport Compliance with Grant Assurances

As a recipient of both federal and state airport improvement grant funds, the sponsor is contractually bound to various obligations referred to as "Grant Assurances", developed by the FAA and WSDOT. These obligations, presented in detail in federal and state grants and state statute and administrative codes, document the commitments made by the airport sponsor to fulfill the intent of the grantor (FAA and State of Washington) required when accepting federal and/or state funding for airport improvements. Failure to comply with the grant assurances may result in a finding of noncompliance and/or forfeiture of future funding.

Federal grant assurances and their associated requirements are intended to protect the significant investment made by the FAA and City to preserve and maintain the nation's airports as a valuable national transportation asset, as mandated by Congress.

FAA Grant Assurances

The FAA's Airport Compliance Program defines the interpretation, administration, and oversight of federal sponsor obligations contained in grant assurances. The Airport Compliance Manual defines policies and procedures for the Airport Compliance Program. Although it is not regulatory or controlling regarding airport sponsor conduct, it establishes the policies and procedures for FAA personnel to follow in carrying out the FAA's responsibilities for ensuring compliance by the sponsor.

The Airport Compliance Manual states the FAA Airport Compliance Program is: *"…designed to monitor and enforce obligations agreed to by airport sponsors in exchange for valuable benefits and rights granted by the United States in return for substantial direct grants of funds and for conveyances of federal property for airport purposes. The Airport Compliance Program is designed to protect the public interest in civil aviation. Grants and property conveyances are made in exchange for binding commitments (federal obligations) designed to ensure that the public interest in civil aviation will be served. The FAA bears the important responsibility of seeing that these commitments are met. This order addresses the types of commitments, how they apply to airports, and what FAA personnel are required to do to enforce them."*

According to the FAA, cooperation between the FAA, state, and local agencies should result in an airport system with the following attributes:

- Airports should be safe and efficient, located at optimum sites, and be developed and maintained to appropriate standards.
- Airports should be operated efficiently both for aeronautical users and the government, relying primarily on user fees and placing minimal burden on the general revenues of the local, state, and federal governments.
- Airports should be flexible and expandable, able to meet increased demand and accommodate new aircraft types.
- Airports should be permanent, with assurance that they will remain open for aeronautical use over the long-term.
- Airports should be compatible with surrounding communities, maintaining a balance between the needs of aviation and the requirements of residents in neighboring areas.
- Airports should be developed in convert with improvements to the air traffic control system.
- The airport system should support national objectives for defense, emergency readiness, and postal delivery.
- The airport system should be extensive, providing as many people as possible with convenient access to air transportation, typically not more than 20 miles of travel to the nearest NPIAS airport; and
- The airport system should help air transportation contribute to a productive national economy and international competitiveness.

The airport sponsor should have a clear understanding of and comply with all assurances. The following sections describe the selected assurances in more detail.

Project Planning, Design, and Contracting

Sponsor Fund Availability (Assurance #3)

Once a grant is given to the airport sponsor, the sponsor commits to providing the funding to cover their portion of the total project cost. Currently this amount is ten percent of the total eligible project cost, although it may be higher depending on the particular project components or makeup. Once the project has been completed, the receiving airport also commits to having adequate funds to maintain and operate the airport in the appropriate manner to protect the investment in accordance with the terms of the assurances attached to and made a part of the grant agreement.

Consistency with Local Plans (Assurance #6)

All projects must be consistent with city and county comprehensive plans, transportation plans, zoning ordinances, development codes, and hazard mitigation plans. The airport sponsor should familiarize themselves with local planning documents before a project is considered to ensure that all projects follow local plans and ordinances.

Accounting System Audit and Record Keeping (Assurance #13)

All project accounts and records must be made available at any time. Records should include documentation of cost, how monies were actually spent, funds paid by other sources, and any other financial records associated with the project at hand. Any books, records, documents, or papers that pertain to the project should be available at all times for an audit or examination.

General Airport Assurances

Good title (Assurance #4)

The airport sponsor must have a Good Title to affected property when considering projects associated with land, building, or equipment. Good Title means the sponsor can show complete ownership of the property without any legal questions, or show it will soon be acquired.

Preserving Rights and Powers (Assurance #5)

No actions are allowed, which might take away any rights or powers from the sponsor, which are necessary for the sponsor to perform or fulfill any condition set forth by the assurance included as part of the grant agreement.

Airport Layout Plan (ALP) (Assurance #29)

Quillayute Airport should maintain an up-to-date ALP, which should include current and future property boundaries, existing facilities/structures, locations of non-aviation areas, and existing and proposed improvements. FAA requires proposed improvements to be depicted on the ALP to be eligible for FAA funding. If changes are made to the airport without authorization from the FAA, the FAA may require the airport to change the alternation back to the original condition or jeopardize future grant funding.

Disposal of Land (Assurance #31)

Land purchased with the financial participation of an FAA Grant cannot be sold or disposed of by the airport sponsor at their sole discretion. Disposal of such lands are subject to FAA approval and a definitive process established by the FAA. If airport land is no longer considered necessary for airport purposes, and the sale is authorized by the FAA, the land must be sold at fair market value. Proceeds from the sale of the land must either be repaid to the FAA, or reinvested in another eligible airport improvement project.

Airport Operations and Land Use

Pavement Preventative Maintenance (Assurance #11)

Since January 1995, the FAA has mandated that it will only give a grant for airport pavement replacement or reconstruction projects if an effective airport pavement maintenance-management program is in place. WSDOT Aviation prepares and updates pavement reports for all public use general aviation airports in Washington. These reports identify the maintenance of all pavements funded with federal financial assistance (also applies to state funding) and provides a pavement condition index (PCI) rating (0 to 100) for various sections of aprons, runways, and taxiways; including, a score for overall airport pavements.

Operations and Maintenance (Assurance #19)

All federally funded airport facilities must operate at all times in a safe and serviceable manner and in accordance with the minimum standards as may be required or prescribed by applicable federal, state, and local agencies for maintenance and operations.

Compatible Land Use (Assurance #21)

Land uses around an airport should be planned and implemented in a manner that ensures surrounding development and activities are compatible with the airport. The airport is located outside of City limits and urban growth area (UGA) boundary in unincorporated Clallam County. The airport sponsor should work with land use authority (Clallam County) to ensure there are zoning laws that protect the airport from incompatible land uses. Incompatible land uses around airports represents one of the greatest threats to the future viability of airports.

Day-To-Day Airport Management

Economic Non-Discrimination (Assurance #22)

Any reasonable aeronautical activity offering service to the public should be permitted to operate at the airport as long as the activity complies with airport established standards for that activity. Any contractor agreement made with the airport will have provisions making certain the person, firm, or corporation will not be discriminatory when it comes to services rendered including rates or prices charged to customers.

Exclusive Rights (Assurance #23)
No exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. However, an exception may be made if the airport sponsor can prove that permitting a similar business would be unreasonably costly, impractical, or result in a safety concern, the sponsor may consider granting an exclusive right.

Leases and Finances
Fee and Rental Structure (Assurance #24)
An airport's fee and rental structure should be implemented with the goal of generating enough revenue from airport related fees and rents to become self-sufficient in funding the day-to-day operational needs. Airports should update their fees and rents on a regular basis to meet fair market value, often done through an appraisal or fee survey of nearby similar airports. Common fees charged by airports include fuel flowage fees, tie-down fees, landing fees, and hangar or ground lease rents.

Airport Revenue (Assurance #25)
Revenue generated by airport activities must be used to support the continued operation and maintenance of the airport. Use of airport revenue to support or subsidize non-aviation activities or to fund other City departments who are not using the funds for airport specific purposes is not allowed and is considered revenue diversion. Revenue diversion is a significant compliance issue for FAA.

For additional information on FAA Grant Assurances, please go to: https://www.faa.gov/airports/aip/grant_assurances/#current-assurances.

WSDOT Aviation Division Grant Assurances
In 2013, WSDOT Aviation adopted grant assurances (WAC Chapter 468-260) for airport sponsors that are intended to protect the public's investment in the Washington aviation system. The WSDOT grant assurances apply to both NPIAS and non-NPIAS airports that receive funding through the WSDOT Airport Aid Grant Program. The WSDOT grant assurances are consistent and complimentary to FAA grant assurances with a significant emphasis placed on land use planning, public process, and environmental stewardship.

Chapter 3

Aviation Activity Forecasts

COVID-19 IMPACTS ON AVIATION ACTIVITY FORECASTS

This forecast was prepared at the end of the second full year of the COVID-19 pandemic. The disruption of activity experienced throughout the U.S. airport system related to COVID-19 since 2020 is unprecedented and has led to significant declines in activity that are not consistent with recent historical trends. It is acknowledged that not all elements of general aviation activity have been affected equally. Some segments of personal air travel have demonstrated resilience, partly in response to the heavily impacted commercial airline industry.

Although the limits of the current industry-wide disruption have yet to be defined, it is believed that the underlying elements of demand within general aviation will remain intact until all public health constraints are fully addressed, and economic conditions gradually return to normal.

Federal Aviation Administration (FAA) forecast approval will be based in reference to the data and methodologies used and the conclusions at the time the document was prepared. However, consideration must still be given to the significant impacts of COVID-19 on aviation activity. As a result, there is lower than normal confidence in future growth projections.

FAA approval of the forecast does not provide justification to begin airport development. Justification for future projects will be made based on activity levels at the time the project is requested for development, rather than this forecast approval. Further documentation of actual activity levels reaching the planning activity levels will be needed prior to FAA participation in funding for eligible projects.

Introduction – Key Takeaways

The evaluation of historical, current, and future activity at Quillayute Airport (UIL) has identified several important takeaways that are critical in understanding Quillayute Airport.

The 2003 Quillayute Airport Master Plan forecasts were based on several assumptions related to specific local events occurring in the 20-year planning period (2000-2021). These events did not transpire as assumed, and activity at the Airport did not increase as forecast. As noted in the Chapter 2, Existing Conditions current activity at the Airport is comparable to the baseline activity (year 2000) documented in the 2003 forecast. Quillayute Airport currently has no based aircraft and generates approximately 570 annual operations, 100% by transient aircraft.

The unique circumstances surrounding Quillayute Airport described earlier in the master plan are reflected in a unique FAA perspective for the Airport. Despite its low level of activity, the FAA Seattle Airports District Office (ADO) recognizes Quillayute Airport's functional role as an emergency response asset that is uniquely capable of supporting the western Olympic Peninsula in the event of a major disaster, up to and including a major Cascadia Subduction Zone seismic event. Quillayute Airport is listed in the National Plan of Integrated Airport Systems (NPIAS) as the only federally eligible airport in Western Clallam County. The City of Forks has taken on the responsibility of maintaining and improving Quillayute Airport as both a local and regional facility with FAA support, while also maintaining its non-NPIAS airport—Forks Municipal Airport.

The FAA supports maintaining the critical aircraft, Airport Reference Code (ARC), now defined as Runway Design Code (RDC), and design standards previously defined in the 2003 Airport Master Plan. These elements are applied in the forecast and facility requirements analyses prepared in this master plan, and the planning criteria designations from the 2003 Airport Layout Plan (ALP) drawing are maintained.

The updated aviation activity forecasts reflect a realistic level of non-emergency activity that could be expected during the 20-year planning period. There are no reliable forecast methods available to estimate aviation activity that might be associated with a major catastrophic event. In such an event, intense periods of flight activity could be sustained for weeks or months and could resemble relief efforts associated with coordinated civilian/ military responses in coastal areas impacted by tsunamis or hurricanes, with subsequent flood damage, or major earthquakes in remote areas.

It is important to note that among the unique features of the Airport is its Portland cement concrete airfield pavement (constructed in 1943) that remains largely intact, including pavement sections that have been previously closed. Based on available pavement condition ratings, it appears that all portions of the original airfield could be re-activated for emergency use with minimal effort (vegetation removal in cracks, moss removal on surfaces, repainting airfield markings, etc.). For this reason, the goal of preserving the Airport's original airfield capabilities with modern improvements intended to enhance regular aeronautical activity will be the primary focus of the facility requirements analysis. It is assumed that with the basic airfield intact, any emergency use facility needs will be funded through separate, expedited emergency authorizations rather than through existing FAA funding programs.

The following planning criteria will be applied in the 2021-2041 Quillayute Airport Master Plan based on FAA and airport sponsor agreement:

2021-2041 Quillayute Airport Master Plan – Planning Criteria

Forecasts

Existing/Future Critical Aircraft Designation and RDC.

- *Runway 4/22: Large multi-engine turboprop (King Air 350 typical). **AAC-ADG: A-II**. These standards will apply to the runway and all major taxiways on the Airport.*
- *Second runway (formerly 12/30) is currently closed. If recommended for re-opening, its critical aircraft will be a small single-engine piston aircraft. **AAC-ADG A-I Small Aircraft**.*

Facility Requirements (Existing and Future Standards)

Design Standards: Aircraft Approach Category (AAC) and Airplane Design Group (ADG)

- *Runway 4/22: **A/B-II, Visibility Minimums Not Lower than 1 mile** (Table G-4, FAA AC 150/5300-13B).*
- *Second runway is currently closed. If recommended for re-opening, it will be **RDC A/B-I Small Aircraft, Visual**. (Table G-1, FAA AC 150/5300-13B).*

Part 77 Airspace

- *Runway 4/22: **Non-Precision Instrument (NPI), visibility minimums >3/4 statute mile**.*
- *Second runway is currently closed. If recommended for re-opening, it will be **Visual**.*

2022 Update: FAA Forecast Approval

The draft Aviation Activity Forecast (Chapter 3) was submitted to the FAA Seattle ADO for review on July 19, 2022. Upon completing its review, the FAA approved the forecasts as submitted, with AMP excerpts (forecast summary table, key planning assumptions) included in the approval letter issued on August 19, 2022. The forecast approval letter for Quillayute Airport is provided in **Appendix D**. The FAA forecast approval letter indicated that *"The FAA also approves the A-II (small) family of aircraft for the existing and future critical aircraft."* It is noted that the A-II (small) designation deviated from the forecast chapter recommendation (B-II) that was based on initial FAA coordination on appropriate planning criteria to be used in the master plan. The original planning criteria noted above has not been changed to reflect this finding, although clarification is provided in the appropriate sections, and the A-II (small) this planning/design criteria is applied to the updated ALP drawing set. It is further noted that AAC A and B share common design standards for ADG II. Aside from the critical aircraft itself, the only change resulting is the "small" aircraft designation, which corresponds to aircraft 12,500 pounds and less. This change also applies to Part 77 airspace definitions, which will be based on Utility standards.

Introduction and Overview

This chapter provides updated aviation activity forecasts for Quillayute Airport (UIL) for the 20-year planning horizon (2021-2041). The most recent Federal Aviation Administration (FAA) approved aviation activity forecasts for the Airport were developed in the 2003 Airport Master Plan.[1]

The forecasts presented in this chapter are consistent with the facility's current and historical role as a local general aviation airport serving the community and surrounding area. The forecasts are unconstrained and assume the City of Forks will be able to make the facility improvements necessary to accommodate the anticipated demand unless specifically noted. The City will consider if any unconstrained demand will not or cannot be met through the evaluation of airport development alternatives later in the Airport Master Plan Report.

The 2017 Washington Aviation System Plan (WASP) assigns Quillayute Airport a "Local" airport classification. Local airports support general aviation activities including personal transportation, recreational flying, pilot training, and agricultural activities. Local airports are typically located outside of metropolitan areas and regional centers; they have paved primary runways; and 15 or fewer based aircraft.

In the federal airport system, Quillayute Airport is classified as a "Basic" general aviation airport in the *2021 National Plan of Integrated Airport Systems (2021-2025)*, report to Congress. Basic airports provide a means for general aviation flying and link the community to the national airport system. Basic airports support general aviation activities such as emergency response, air ambulance service, flight training, and personal flying.

Quillayute Airport can accommodate a full range of general aviation aircraft, including single-engine and multi-engine piston aircraft, business class turboprops, small business jets, and helicopters. The airfield was originally designed to accommodate a variety of large military aircraft.

FAA Forecasting Process

The FAA provides aviation activity forecasting guidance for airport master planning projects. *FAA Advisory Circular (AC) 150/5070-6B, Airport Master Plans*, outlines seven standard steps involved in the forecast process:

1. **Identify Aviation Activity Measures**: The level and type of aviation activities likely to impact facility needs. For general aviation, this typically includes based aircraft and operations.
2. **Previous Airport Forecasts**: May include the FAA Terminal Area Forecast (TAF), state or regional system plans, and previous master plans.
3. **Gather Data**: Determine what data are required to prepare the forecasts, identify data sources, and collect historical and forecast data.
4. **Select Forecast Methods**: Where sufficient data exist, several appropriate methodologies and techniques are available, including regression analysis, trend analysis, market share or ratio analysis, exponential smoothing, econometric modeling, comparison with other airports, survey techniques, cohort analysis, choice and distribution models, range projections, and professional judgment.
5. **Apply Forecast Methods and Evaluate Results**: Prepare the actual forecasts and evaluate for reasonableness.
6. **Summarize and Document Results**: Provide supporting text and tables, as necessary.
7. **Compare Forecast Results with FAA's Terminal Area Forecast (TAF)**: Follow guidance in *FAA Order 5090.5, Field Formulation of the National Plan of Integrated Airport Systems and Airport Capital Improvement Program*. In part, the Order indicates that forecasts should not vary significantly (more than 10%) from the TAF. When there is a greater than 10% variance, supporting documentation should be supplied to the FAA. The aviation demand forecasts are then submitted to the FAA for their approval.

1 Quillayute Airport Master Plan (Barnard Dunkelberg & Company, May 2003)

KEY ACTIVITY ELEMENTS

As noted above, general aviation airport activity forecasting focuses on two key activity segments: based aircraft and aircraft operations (takeoffs & landings). Detailed breakdowns of these activity segments include:

- Aircraft fleet mix
- Peak activity
- Distribution of local and itinerant operations
- Determination of the critical aircraft (also referred to as the design aircraft)

The critical aircraft represents the most demanding aircraft type or family of aircraft that uses an airport on a regular basis (a minimum of 500 annual takeoffs & landings). As noted earlier, the critical aircraft determinations for Quillayute Airport in this master plan maintain the ARC A/B-II designations from the 2003 Airport Master Plan.

The critical aircraft is used to establish a variety of FAA design categories, which then establish design standards for airfield facilities. FAA airport design standard groupings reflect the physical requirements of specific aircraft types and sizes. Design items, such as runway length evaluations, are determined by the requirements of current/future critical aircraft. The activity forecasts also support the evaluation of several demand-based facility requirements including runway and taxiway capacity, aircraft parking, and hangar capacity.

Population and Economic Conditions

Historically, downturns in general aviation activity often occur during periods of weak economic conditions while growth typically coincides with favorable economic conditions. The historic depth of the 2008 Great Recession dramatically impacted regions and local communities and rippled throughout general aviation for several years after the official end of the recession. Following a slow economic recovery, the 10-year period of sustained economic growth leading into 2020 significantly improved conditions in general aviation including increased flight activity, sustained growth in new aircraft deliveries, particularly in the business aviation, helicopter, light sport aircraft, and kit aircraft segments. The onset of the COVID-19 pandemic in the United States in early 2020 began a period of rapidly declining economic conditions that once again disrupted civil aviation activity. The effects of the pandemic and related impacts constrained the aviation industry over the next two years. However, signs of rebound within general aviation began to appear heading into 2021 and have been sustained despite ongoing economic challenges. This period has coincided with unprecedented levels of federal funding to facilitate economic recovery through investment in public facilities, including airports.

The FAA's long-term *Aerospace Forecast, Fiscal Years 2021-2041* was released in 2020 was referenced in this forecasting evaluation. The forecast reflects overall strength in both the U.S. and regional economies and sustained, modest growth in aviation activity over the long-term. The 2021-2041 forecasts reflect areas of depressed general aviation activity in the near term and the assumption that general aviation will return to pre-COVID activity levels later in the forecast period, before resuming previously forecast growth. It appears that long-term growth in general aviation, although positive, may be tempered by the impacts of COVID-19 for the near future. The cumulative impacts of recent domestic and global events and conditions on civil aviation activity will be addressed in the future updates of the FAA forecast.

POPULATION

The population within an airport's service area, in broad terms, affects the type and scale of aviation facilities and services that can be supported. Changes in population often reflect broader economic conditions that may also affect airport activity. The service area for Quillayute Airport includes the local community and western Clallam County. As noted in Chapter 2, Existing Conditions, the local area is characterized by several small communities in a large, sparsely populated rural setting. The use of county-wide population data and long-term forecasts is recommended for this project. City of Forks data will also be referenced where available.

Historical Population

As described in Chapter 2, Existing Conditions, Clallam County's population has grown by about 8% (net gain of 5,750 residents) since 2012. Annual county population growth (0.86% AAGR[2]) trailed the statewide population growth (1.46% AAGR) during this period, which is consistent with other rural Washington counties. Historical population data for Forks shows a decline of approximately 6% (-0.67% AAGR) between 2012 and 2021, with a net loss of 210 residents. Due to a variety of data issues, the ability to define a reliable trend from available data is limited. Clallam County population forecasts, and population projections used by the City of Forks in its comprehensive planning, will be reviewed in the following section.

Forecast Population

In Washington state, the Office of Financial Management (OFM) is responsible for developing long term population forecasts to support various local and state government programs, and postcensal estimates of population on April 1 each year to supplement available census data. OFM periodically generates 20-year population forecasts for Growth Management Act (GMA) counties for use in their comprehensive planning; the most recent GMA forecast was issued in 2017.[3] OFM also periodically prepares forecasts of Washington state population outside the GMA updates. The Washington state forecast issued in December 2021 is reviewed below.[4]

The most recent Clallam County comprehensive plan update[5] was adopted in 2007 and includes a long-term population forecast (2005-2025) for the county and its three incorporated cities. Most of the projected population growth in Clallam County is expected to occur in Port Angeles and Sequim, with lower growth expected in the western part of the county. The current City of Forks comprehensive plan[6] was adopted in 2019 and utilizes the 2020 and 2025 population forecasts contained in the 2007 Clallam County comprehensive plan update.

It is noted that the local comprehensive plans were adopted prior to the COVID-19 pandemic and their underlying projections do not necessarily reflect recent events or current conditions.

A summary of the available comprehensive plan and OFM forecasts is presented in **Table 3-1**.

TABLE 3-1: POPULATION FORECAST SUMMARY

	AAGR[1]	2020	2025	2030	2035	2040
Clallam County (2007 Comprehensive Plan)	1.16%[1]	79,416	84,130	-	-	-
City of Forks (2019 Comprehensive Plan)	-0.04%[2]	3,439	3,550	-	-	-
Other Recent Forecasts						
Clallam County (2017 GMA)[3]	0.79%	74,707	76,847	78,683	80,123	80,928
Washington (2017 GMA)[3]	0.96%	7,638,415	8,085,043	8,503,178	8,894,306	9,242,022
Washington (2021 Forecast)[4]	0.83%	7,707,047	8,041,743	8,399,102	8,749,819	9,092,210

Source: Clallam County Comprehensive Plan; City of Forks Comprehensive Plan; Washington OFM.
1. Forecast Annual Average Growth Rate: 2005-2025
2. Forecast Annual Average Growth Rate: 2015-2025
3. Washington Office of Financial Management (OFM): 2017 GMA Forecast (County) – Medium Series
4. Washington Office of Financial Management (OFM): Forecast of the State Population, December 2021

2 AAGR = Average Annual Growth Rate (compounded over time)
3 State of Washington Office of Financial Management (https://ofm.wa.gov/washington-data-research/population-demographics/population-forecasts-and-projections/growth-management-act-county-projections/growth-management-act-population-projections-counties-2010-2040-0)
4 State of Washington Forecast of the State Population, December 2021 Forecast (Forecasting and Research Division, Office of Financial Management, December 2021)
5 Clallam County's Urban Growth Area Analysis and 10-Year Review, Clallam County Department of Community Development, May 2007
6 City of Forks 2019-2039 Comprehensive Plan

Summary – Population

Long-term population growth for Forks and western Clallam County is expected to be modest during the current planning period (2021-2041). The anticipated growth in local and county population is not expected to significantly drive increases in air traffic activity at Quillayute Airport, although growth within the local economy may be expected to contribute to increased airport activity.

ECONOMY

Clallam County's leading economic sectors include government, retail trade, various service providers (education, healthcare, business, etc.), tourism, industry (mining, logging and construction), and manufacturing. Government is the largest nonfarm employment sector, which is consistent with the expansive inventory of federal and state-owned resource lands in the county. **Table 3-2** summarizes Clallam County's leading employment sectors.

Jim Vleming, regional labor economist with the Washington Employment Security Department (ESD) characterizes the Clallam County job market's historic and ongoing dependence on natural resources: *"The region's 200 miles of coastline have fostered the maritime and fishing industries. Traditionally, much of the economy of the county has reflected this natural abundance with jobs in forestry, wood products and fisheries. As demand has declined for some of the goods-producing and agricultural products in the county, the service sector, including leisure and tourism has grown in their place. The labor market continues to develop, benefiting from the region's natural resources."*

The distribution of the region's economic output distribution appears to mirror its population, with heavier concentrations of industry and employment found in more densely populated areas of the county. The western section of Clallam County is made up of several smaller communities with a narrower economic base and fewer large employers. As noted in Chapter 2, Existing Conditions, attempts to grow and diversify the local economy are ongoing, including the creation of the Emerald Coast Opportunity Zone (ECOZ), which includes the Quillayute Airport.

Washington ESD data indicate total nonfarm employment for Clallam County in May 2022 surpassed pre-COVID-19 (May 2019) employment levels, after experiencing a nearly 15% decline in 2020. The data indicate improvement across most industry sectors as employment levels gradually returned to pre-pandemic levels both locally and statewide.

TABLE 3-2: CLALLAM COUNTY NONFARM EMPLOYMENT (2021)

	Number of jobs	Share of employment
Government	8,140	33.3%
Retail trade	3,560	14.6%
Education and Health Services	3,190	13.1%
Leisure and Hospitality	2,480	10.2%
Mining, Logging, and Construction	2,240	9.2%
Professional and Business Services	1,440	5.9%
Manufacturing	1,100	4.5%
All other industries	2,280	9.3%
All other industries	31,778	28.7%
Total	**24,430**	**100%**

Source: Washington Employment Security Department Labor Area Summaries, Not Seasonally Adjusted (May 2022). Percentages may not sum due to rounding.

Personal Income

Clallam County trails state and national per capita income levels and has a higher level of poverty. The conditions are consistent with a rural economy where access to full-time year-round employment is limited. The current ESD Clallam County profile provides the following summaries related to 2020 personal income:

- Inflation-adjusted per capita income in Clallam County was $49,718 compared to the state at $67,126 and the nation at $59,510.
- Median household income in Clallam County was $55,090, 71.5% of the state's median household income of $77,006 and 84.8% of the United States at $64,994.
- Clallam County's poverty rate (13.3%) was higher than the state's (9.5%) and the nation's (11.4%) poverty rates.

Unemployment

Clallam County's resource-based economy is subject to seasonal shifts in unemployment rates. Typically, peak unemployment levels occur in the winter and the lowest unemployment levels are found during summer months. The April 2022 unemployment rate was 5.3%, down from the recent peak of 6.6% in January. The peak level of unemployment (18.8%) recorded during the COVID-19 pandemic was in April 2020. The data for 2021-22 are consistent with the pre-COVID period, indicating a re-stabilization in the local economy.

Economic Outlook

The Washington ESD generates annual short and long-term employment forecasts by region. Clallam County is in the Olympic Consortium, which also includes Jefferson and Kitsap counties. The ESD projections show expected changes in employment by industry and occupation, current and projected employment counts, estimated growth rates and average annual openings. The current five- and ten-year forecasts for the Olympic Consortium region are summarized in **Table 3-3**. Both forecasts project an increase in employment, averaging 1.6% annual through 2025, then slowing to just under 1% annually through 2030.

TABLE 3-3: OLYMPIC CONSORTIUM REGION EMPLOYMENT FORECAST BY INDUSTRY (UPDATED JULY 2022)

Job Categories	Estimated employment 2020	Estimated employment 2025	Estimated employment 2030	Average annual growth rate 2020-2025	Average annual growth rate 2025-2030
TOTAL NONFARM	123,700	133,900	140,600	1.60%	0.98%
NATURAL RESOURCES and Mining	500	500	500	0.00%	0.00%
Logging	400	400	400	0.00%	0.00%
Mining	100	100	100	0.00%	0.00%
CONSTRUCTION	7,200	7,800	8,500	1.61%	1.73%
MANUFACTURING	4,500	4,600	4,800	0.44%	0.85%
Durable Goods	3,300	3,100	3,200	-1.24%	0.64%
Wood Product Manufacturing	300	300	300	0.00%	0.00%
Nonmetallic Mineral Product Manufacturing	100	100	100	0.00%	0.00%
Primary Metal Manufacturing	0	0	0	0.00%	0.00%
Fabricated Metal Product Manufacturing	200	200	300	0.00%	8.45%
Machinery Manufacturing	100	100	100	0.00%	0.00%
Computer and Electronic Product Manufacturing	100	100	100	0.00%	0.00%
Electrical Equipment and Appliance Mfg	0	100	100	0.00%	0.00%
Aerospace Product and Parts Manufacturing	200	100	100	-12.94%	0.00%
Other Transportation Equipment	1,400	1,200	1,200	-3.04%	0.00%
Other Durable Manufacturing	900	900	900	0.00%	0.00%
Non Durable Goods	1,200	1,500	1,600	4.56%	1.30%
Food and Beverages Manufacturing	600	700	800	3.13%	2.71%
Printing and Related Support Activities	100	100	100	0.00%	0.00%
Other Non Durable	100	200	200	14.87%	0.00%
WHOLESALE TRADE	1,800	1,900	2,000	1.09%	1.03%
RETAIL TRADE	15,600	16,600	17,400	1.25%	0.95%
Food and Beverage Stores	3,500	3,800	3,900	1.66%	0.52%
Motor Vehicle and Parts Dealers	2,000	2,100	2,100	0.98%	0.00%
Other Retail Trade	10,100	10,700	11,400	1.16%	1.28%
TRANSPORTATION, WAREHOUSING AND UTILITIES	1,500	1,800	1,800	3.71%	0.00%
Utilities	200	200	200	0.00%	0.00%
Transportation and Warehousing	1,300	1,600	1,600	4.24%	0.00%
INFORMATION	800	1,000	1,000	4.56%	0.00%
Software Publishers	100	200	200	14.87%	0.00%
Other Publishing Industries	200	200	200	0.00%	0.00%
Other Information	500	600	600	3.71%	0.00%
FINANCIAL ACTIVITIES	4,300	4,400	4,500	0.46%	0.45%
Finance and Insurance	2,700	2,700	2,700	0.00%	0.00%
Real Estate, Rental and Leasing	1,600	1,700	1,800	1.22%	1.15%
PROFESSIONAL and BUSINESS SERVICES	10,400	12,000	12,900	2.90%	1.46%
Professional, Scientific and Technical Services	5,800	6,800	7,300	3.23%	1.43%
Management of Companies and Enterprises	400	500	500	4.56%	0.00%
Other Professional Services	3,300	3,800	4,100	2.86%	1.53%
Employment Services	900	900	1,000	0.00%	2.13%
EDUCATION and HEALTH SERVICES	17,200	18,600	20,500	1.58%	1.96%
Education Services	1,300	1,300	1,300	0.00%	0.00%
Health Services and Social Assistance	15,900	17,300	19,200	1.70%	2.11%
LEISURE and HOSPITALITY	11,400	15,000	15,800	5.64%	1.04%
Arts, Entertainment and Recreation	1,200	1,500	1,700	4.56%	2.53%
Accommodation and Food Services	10,200	13,500	14,100	5.77%	0.87%
OTHER SERVICES	4,900	5,200	5,500	1.20%	1.13%
GOVERNMENT	43,600	44,500	45,400	0.41%	0.40%
Federal Government	21,600	21,500	21,800	-0.09%	0.28%
State and Local Government Other	13,700	14,700	15,500	1.42%	1.07%
Government Educational Services	8,300	8,300	8,100	0.00%	-0.49%

Source: Employment Security Department/DATA[1]

[1]Data Architecture Transformation and Analytics. Formerly LMEA and LMPA.

Woods & Poole Forecasts

A review of Woods & Poole Economics, Inc., population and economic forecasts for the region reflect similar long-term growth expectations. Woods & Poole forecasts are recognized nationally for the demographic detail provided down to the county level, with additional breakouts provided for a variety of defined place designations.

The *Woods & Poole 2021 State Profile Series*[7] forecast for Washington state contains regional data and projections for all Combined Statistical Areas (CSAs), Metropolitan Statistical Areas (MSAs), Micropolitan Statistical Areas (MICROs), Metropolitan Divisions (MDIVs), and counties in the state. The current forecasts extend to 2050 and provide a useful comparison to shorter term projections developed by state or local government. Although some differences in data organization may exist from the forecasts noted earlier, the overall growth rates within the forecasts provide relevant evaluations of long-term economic growth for comparison. **Table 3-4** summarizes key growth rates for Clallam County from the Woods & Poole 2021-2050 forecasts. The economic data are presented in 2012 dollars, referred to as "constant" dollars, which are used to measure real change in earnings and income when inflation is considered.

TABLE 3-4: CLALLAM COUNTY DEMOGRAPHICS - FORECAST ANNUAL GROWTH RATES (2021-2050)

Data Category	Average
Total Population	0.66%
Total Employment (includes farm employment)	0.76%
Total Earnings (2012 $)	1.52%
Personal Income (2012 $)	2.03%
Income Per Capita (2012 $)	1.41%
Mean Household Income (2012 $)	1.43%
Gross Regional Product (2012 $)	1.55%

Source: Woods & Poole Economics, 2021 State Profile Series (Idaho, Washington, Oregon)
2012 referenced data represents "constant" dollars used to measure real change over time when inflation is considered.

Summary – Economic Outlook

Population growth for Clallam County, particularly the western end of the county, is expected to be modest during the Airport Master Plan's 20-year planning horizon. The projected growth is just under 1% annually over this period, which is comparable to the historical growth experienced over the last 20 years. The most recent City of Forks comprehensive plan projection anticipates annual growth of about 0.6% between 2020 and 2025. As with historical population trends, local and county growth is expected to be slower than statewide growth.

Long term economic forecasts project more robust growth in terms of employment levels and measures of economic output (post-COVID-19 pandemic recovery). The Woods & Poole 2021-2050 forecast for Clallam County indicates that per capita income, household income, and gross regional product is expected to outpace employment and population growth through 2050. This suggests a long-term strengthening in the economy that will generate demand for services and transportation.

The anticipated growth in local population and economic output is expected to be modest during the current planning period. However, the underlying growth provides a foundation for generating additional air traffic demand at Quillayute Airport that is consistent with overall expectations for the community and region.

7 2021 State Profile – Idaho, Oregon, and Washington. Copyright 2021, Woods & Poole Economics, Inc. Washington, D.C.

Historical Aviation Activity

Historical activity data for Quillayute Airport is limited to estimates on FAA Airport Record Forms (5010-1), the FAA Terminal Area Forecast (TAF), and the 2003 Airport Master Plan baseline data (based aircraft and estimated annual operations). As noted earlier in this chapter, the primary data used in general aviation airport planning includes based aircraft and annual aircraft operations.

The current 5010 (data for 12 months ending 12/31/2018) and TAF (2020) for Quillayute Airport report identical data (based aircraft and annual aircraft operations totals) representing current activity: 0 based aircraft and 6,700 annual aircraft operations. The based aircraft total has recently been verified by airport management, although the source of the annual operations totals is unknown. It is noted that the TAF lists the same operations totals dating back to 2008 while the based aircraft totals have fluctuated from 0 to 6. Although the operations data cannot be documented, the overall activity level is not uncommon for small GA airports.

A review of Quillayute Airport's TAF historical data (1990 forward) indicates that the 2003 Airport Master Plan's baseline activity data were partially incorporated into the TAF. The baseline annual aircraft operations total (500) was entered in the TAF for the year 2000; the TAF's based aircraft total was also updated from 0 to 3 aircraft, although the forecast's baseline level was 2 aircraft. The FAA National Based Aircraft Inventory Program for Quillayute Airport was recently verified by airport management: (Validated Count: 0 aircraft).

A summary of historical activity data for the Airport is presented in **Figure 3-1**.

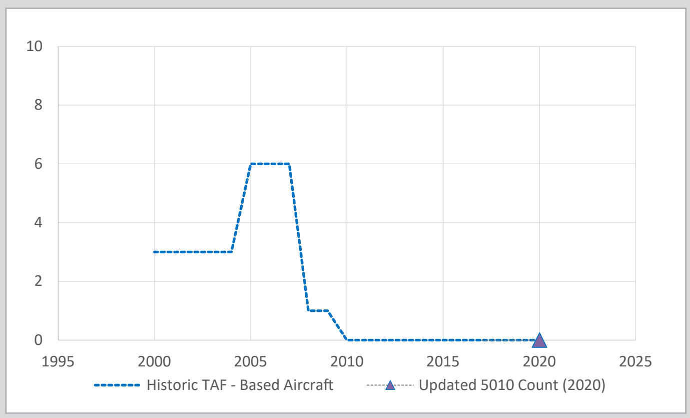
FIGURE: 3-1: ACTIVITY SUMMARY – FAA TAF, FAA 5010 AIRPORT RECORD FORM; 2003 AMP REPORT

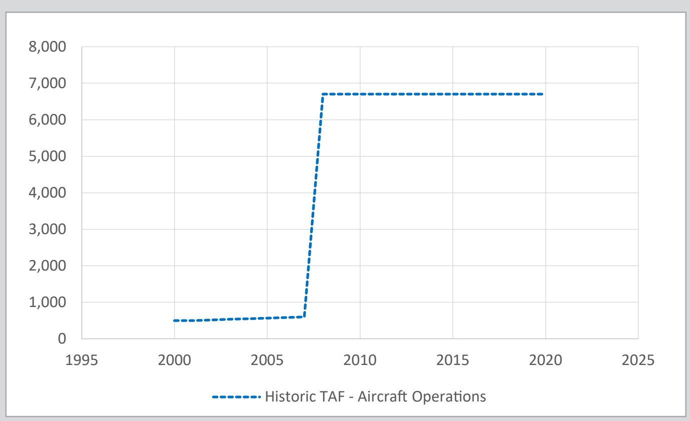
Available activity estimates for Quillayute Airport from FAA Terminal Area Forecast (TAF), Airport Record Form (5010-1), the 2003 AMP Report, and the Airport's 2021 validated based aircraft count are summarized below.

Based Aircraft and Operations

Aircraft Type	Updated Airport Count[1] (2021)	Airport Master Record[2] (12 months ending 12/31/18)	2003 AMP[3] (2000 Baseline)
Single Engine	0	0	0
Multi Engine	0	0	0
Jet	0	0	2
Helicopter	0	0	0
Glider	0	0	0
Military	0	0	0
Ultra-Light	0	0	0
Total Based Aircraft	0	0	2
Annual Operations	**570**	**6,700**	**500**

1. www.BasedAircraft.com (Validated January 2022)
2. Airport Master Record (5010) July 29, 2020
3. Quillayute Airport Master Plan (Final Report, May 2003)





Current Aviation Activity

The updated estimate of current activity at Quillayute Airport is 0 based aircraft and 570 annual aircraft operations. The aircraft operations estimate was developed through direct contacts with known airport users including local EMS/Hospital (medevac activity), area flight schools and Part 135 on-demand air charters, U.S. Coast Guard flight operations, and a survey of aircraft owners at nearby Forks Municipal Airport. This activity is used as the 2021 baseline for the Airport Master Plan's 2021-2041 aviation activity forecasts. It is noted that current activity at the Airport is comparable to the baseline activity documented in the 2003 Airport Master Plan.

Aircraft takeoffs and landings are defined as operations by FAA, with a single takeoff or landing counted as one operation. A touch-and-go landing is counted as two operations since it involves both a takeoff and landing. Since there are currently no based aircraft at the Airport, FAA-recommended operations per based aircraft (OPBA) formula defined in *FAA Order 5090.5 Formulation of the NPIAS and ACIP*, commonly used at non-towered GA airports, could not be used to estimate current air traffic levels.

With no based aircraft, 100% of air traffic at Quillayute Airport is currently generated by transient general aviation and military aircraft including:

- General Aviation (GA) flight training, personal, and business travel.
- Weather diversions due to local weather conditions (reported by aircraft owners based at Forks Municipal Airport) and area weather affecting flights transiting the Western Olympic Peninsula.
- Medical evacuation flights (fixed wing and helicopter).
- U.S. Coast Guard routine patrol, search and rescue, and training flights (helicopters).
- Military (USAF, Army, Navy, Air National Guard) operations support and flight training (primarily helicopters, with limited fixed wing transport and fighter jet operations).
- On-demand air charter flights.
- State, federal, and tribal government related flights.

The activity for these segments is summarized below and in **Table 3-5**. Once the updated activity forecasts are accepted and approved by FAA, the 5010 for the Airport should be updated for consistency. The FAA will determine if any adjustments are required to the current Terminal Area Forecast (TAF).

Air Ambulance (MEDEVAC)

Air ambulance operators (Life Flight and Air Lift Northwest) serve Forks and the surrounding area with fixed-wing aircraft and helicopters. The operators provide critical patient transports from Forks Community Hospital, an Adult Trauma Level IV facility.[8] Critical patient transports are performed when life threatening conditions require emergency treatment at higher level trauma care facilities, typically located in larger population centers.

All current medevac flights serving Forks are limited to visual flight rules (VFR) weather conditions based on existing facilities capabilities, although the air ambulance operators have a variety of aircraft that are certified for operation under instrument flight rules (IFR). The air ambulance aircraft types currently stationed in the region include the Pilatus PC-12 (pressurized single engine turboprop, IFR certified), the Agusta AW109 (single-engine turbine helicopter, VFR certified), and the Eurocopter EC-135 (twin-engine turbine helicopter, IFR certified). Life Flight's nearest base (fixed-wing and helicopter) is in Port Angeles, and Air Lift Northwest's nearest base (helicopter) is located in Bremerton.

Quillayute Airport accommodates fixed wing and helicopter air ambulance flights, although local officials report the hospital helipad located in Forks accommodates most helicopter flights. Local emergency medical service (EMS) staff confirm that the absence of day/night all weather access (lighted runway with instrument approach) limits current use of Quillayute Airport for air ambulance flights, particularly for fixed wing aircraft. Adverse weather conditions on the Olympic Peninsula frequently limits VFR medevac flights to Forks, which then may require a lengthy ambulance transport to Olympic Medical Center in Port Angeles (Trauma Level III facility).

8 Trauma Level IV defined by WA. Department of Health.

Due to limited EMS staff and equipment resources, the emergency response level in the community is reduced by roughly 1/3 during a typical 3-hour ambulance roundtrip to Port Angeles.

Based on data provided by local hospital and EMS staff, there is an average of one critical patient transport per week from the Forks area by helicopter, fixed-wing aircraft, and ambulance. Weekly demand levels can vary and are often higher during peak periods. Quillayute Airport currently accommodates approximately 15 transports per year (30 operations). The current flight activity is limited to VFR operations.

It is anticipated that future demand for critical patient transports will increase as the local community and surrounding area grows, and visitor numbers increase. It is reasonable to assume that fixed wing and helicopter medevac activity Quillayute Airport may increase if specific facility improvements (e.g., instrumentation and lighting) are made. The ability to accommodate aircraft in instrument weather conditions would significantly expand current critical patient transport options and reduce the frequency of ground-based transports.

The Pilatus PC-12 is included in Aircraft Approach Category A (Approach Speed in landing configuration: 87 knots) and Airplane Design Group II (wingspan 53' 3"; tail height 14'). The PC-12 has a maximum takeoff weight below 12,500 pounds and is included in the small aircraft category. These design components correspond to **RDC A-II (Small Aircraft)**. The air ambulance helicopters are also included in Aircraft Approach Category A.

Source: Google Images

MILITARY/U.S. COAST GUARD

Quillayute Airport currently accommodates a variety of military flight training activity ranging from helicopters to high performance fighter jets. This activity can vary from year to year but is estimated to average 50 fixed wing operations and 250 helicopter operations annually.

Military aircraft from Joint Base Lewis McChord (JBLM) and Naval Air Station Whidbey Island conduct periodic flight training at the Airport, the majority of which is helicopter. A review of FAA instrument flight plan (TFMSC) data identifies a small number of military aircraft over the last 10 years including a variety of performance fixed wing aircraft (Boeing FA-18 Hornet, Lockheed F-117 Nighthawk, and F-16 Falcon). The nature of their flight operations at the Airport is unknown, although IFR flight plan filings would not typically include low-altitude training flights. With the absence of instrument approach and departure procedures at the Airport, any takeoff or landing on either end of an IFR flight plan must be conducted under visual flight rules (VFR).

The U.S. Coast Guard (USCG) Air Station Port Angeles operates helicopters at Quillayute Airport, including the Eurocopter MH-65 Dolphin, a twin-engine turbine aircraft. The USCG activity has been limited in the past to about 50 to 60 operations per year. However, USCG reports that flight activity is expected to increase to approximately 200 annual operations with the addition of a jet fuel storage cache recently installed at the Airport. USGG staff indicate that the addition of fuel at Quillayute Airport will expand mission capabilities throughout the north coast region, and its support capabilities for USGG Station Quillayute River in LaPush.

The current combined total of transient USGG and military aircraft air traffic at Quillayute Airport is approximately 300 annual operations. Military (U.S. Air Force, Navy, Army, and Washington National Guard) flight activity is estimated at 250 annual operations (200 helicopter/50 fixed wing) with a variety of aircraft types. The USCG activity is predominantly helicopter (50 annual operations). Military/USCG activity at the Airport is expected to increase to about 450 operations annually through the planning period based on increased USCG activity. This level of flight activity is expected to remain stable through the 20-year planning period.

OTHER GENERAL AVIATION ACTIVITY

Quillayute Airport accommodates a variety of general aviation users with aircraft ranging from single-engine piston aircraft to small jets and helicopters. This activity includes aircraft located at nearby Forks Municipal Airport (weather and flight training related) and a variety of transient aircraft (flight training, on-demand air charter, personal and business travel, and state/federal/tribal government agencies and related flights).

Area flight schools report their activity at Quillayute Airport is limited based on flight distances (from Port Angeles, Port Townsend), quickly changing local weather conditions, and the lack of fuel. A local area Part 135 charter operator (Rite Brothers Aviation) based in Port Angeles, reports a limited number of charter flights with Cessna 172 and 206 single-engine piston aircraft at both Quillayute Airport and Forks Municipal Airport. The convenience of flying into Forks Municipal is often cited as a customer choice. The absence of an instrument approach and a lighted runway were identified as factors limiting current flight activity at Quillayute Airport.

The current level of general aviation air traffic at Quillayute Airport is estimated at approximately 350 annual operations (100% transient). This aircraft activity includes primarily single engine and multi engine piston, turboprops, small jets, and helicopters, although most of the activity is generated by small ADG I single-engine piston aircraft. This activity could increase during the planning period depending on facility improvements such as runway instrumentation and lighting upgrades. The availability of hangar rental space in the future could be a significant factor in attracting based aircraft to the Airport. Without reasonably priced hangar rental space, the Airport's ability to attract based aircraft will continue to be limited.

TABLE 3-5: AIRPORT ACTIVITY SUMMARY (2021)

Operator	A/C Type	ARC	Annual Operations[1]
Medevac	Pilatus PC-12	A-II	20
	Agusta Westland AW119Kx (typ.)	Heli	10
Military Flight Training & Operations	Helicopter	Heli	150
	Turboprop/Jet	B-II+	50
Other Local & Transient Activity	SE Piston	A/B-I	300
	ME Piston	A/B-I	10
	Turboprop	B-II	10
	Jet	B-II	10
	Helicopter	Heli	10
TOTAL OPS – ALL			570
TOTAL OPS – A/B-I			310
TOTAL OPS – A/B-II+			90
TOTAL OPS – HELI			170
Based Aircraft			0

1. Operations estimates based on user data assembled by Century West Engineering.

Summary – Current Activity

The current air traffic at Quillayute Airport is generated exclusively by transient aircraft, including air ambulance flights, U.S. Coast Guard and military aircraft, and aircraft used for personal and business travel. **Table 3-5** summarizes the current level of aircraft activity for Quillayute Airport that will be the baseline for the new aviation activity forecasts developed in the 2021-2041 Airport Master Plan.

Existing Aviation Activity Forecasts

Existing forecasts for Quillayute Airport include the FAA Terminal Area Forecast (TAF), the 2003 Airport Master Plan, and an outdated Washington aviation system plan completed in 2007. Each of these forecasts have relevancy issues that limit valid comparisons with current activity or updated forecasts presented later in this chapter.

FAA TERMINAL AREA FORECAST (TAF)

The March 2022 TAF lists 0 based aircraft for Quillayute Airport in its most recent historical year (2020). The TAF maintains a 0 based aircraft total unchanged through 2045. The TAF lists 6,700 annual aircraft operations for 2020 and projects a moderate increase to 12,347 operations in 2045. **Table 3-6** summarizes the TAF for the 2020-2040 period and notes the updated based aircraft data, which represents 2021 activity.

TABLE 3-6: FAA TAF SUMMARY

Forecast	AAGR	2020	2025	2030	2035	2040
Based Aircraft	0.00%	0	0	0	0	0
Annual Aircraft Operations	2.48%	6,700	7,642	8,610	9,704	10,942
FAA National Based Aircraft Inventory Program		0*	-	-	-	-
* December 2021 Validated Count						

Source: FAA Terminal Area Forecast (UIL) Issued March 2022; National Based Aircraft Inventory Validated Based Aircraft Count, December 2021 AAGR: Average Annual Growth Rate (2020-2040)

2003 AIRPORT MASTER PLAN FORECASTS

The 2003 Airport Master Plan provided aviation activity forecasts for the 2000-2021 planning period. The forecast projected based aircraft to increase from 2 to 15, which represents an average annual growth rate of 10.1%. Annual aircraft operations were projected to increase from 500 to 19,088, which represents an average annual growth rate of 18.9%.

As noted earlier, the 2003 Airport Master Plan forecasts were based on a key assumption that was not ultimately realized:

> *"…in efforts to ensure eligibility for federal funding of future airport development projects at Quillayute Airport through the Federal Aviation Administration (FAA), the City of Forks was required to transfer the National Plan of Integrated Airport Systems (NPIAS) designation from Forks Municipal Airport to Quillayute. This transfer discontinues the federal funding of airport projects at Forks, and ultimately dictates the transfer of most, if not all fixed wing aircraft operations to the Quillayute facility. Therefore, the projections at Quillayute Airport were calculated with the premise of a total transition of aircraft operations and based aircraft from Forks Municipal Airport, precluding helicopter operations, by the year 2010."*

Table 3-7 summarizes the 2003 Airport Master Plan forecasts and notes the updated baseline activity, which represents 2021 activity. Based on the events occurring since the master plan was completed in 2003, forecast activity levels exceed actual activity by a wide margin. As a result, no current comparison with the 2003 forecast is relevant.

TABLE 3-7: 2003 AMP – FORECAST SUMMARY

Forecast	AAGR	2000	2006	2011	2016	2021
Based Aircraft	10.1%	2	7	10	12	15
Annual Aircraft Operations	18.9%	500	8,482	14,216	16,472	19,088
2021 Baseline (Based Aircraft)	-	-	-	-	-	0
2021 Baseline (Aircraft Operations)	-	-	-	-	-	570

Source: Barnard Dunkelberg (2003); AAGR: Average Annual Growth Rate

WASHINGTON STATE AVIATION SYSTEM PLAN FORECAST

The 2017 WASP does not include individual airport activity forecasts. The most recent system plan forecasts prepared for individual airports were included in the 2007 Long Term Air Transportation Study (LATS). The LATS was replaced with the 2017 WASP, although no new airport specific forecasts were included. The LATS forecasts are considered obsolete and are not currently used by WSDOT to support its system planning analyses.

Updated Aviation Activity Forecasts

Updated aviation activity forecasts developed for the Airport Master Plan's 20-year planning period (2021-2041) are presented in this section. The updated activity forecasts use the common baseline activity data presented earlier in **Table 3-5**. The based aircraft forecast models are summarized in **Table 3-8** and depicted on **Figure 3-2**. A review of the preliminary based aircraft and annual aircraft operations models presented is provided at the end of this section, with recommended forecasts identified for each. The aircraft operations forecasts are presented later in this section.

The recommended Master Plan forecasts are compared to the TAF (APO TAF Detail Report 2020-2045, issued March 2022) and presented to the FAA for review and approval. FAA approval letter is included in **Appendix D**. Additional information about the TAF based aircraft and operations comparison is presented at the end of the chapter.

BASED AIRCRAFT

The absence of an established growth trend over the last 20 years eliminates the ability to develop reliable projections that depend on historical data. Based on these data constraints, four scenario-dependent forecasts were developed for based aircraft, each using the 2021 baseline of 0 based aircraft to generate 20-year forecasts. The scenarios reflect a range of assumptions related to future facility improvements at Quillayute Airport that would be expected to contribute to airport activity. Varying levels of aircraft relocation from Forks Municipal Airport to Quillayute Airport were also assumed for each forecast scenario.

Scenario 1 – Status Quo

Assumes maintenance only mode for existing airfield facilities. No significant facility improvements made during planning period. No hangar rental or public aviation fuel availability. Forks Municipal Airport remains open and maintained at current facility level. The projection assumes based aircraft at Quillayute Airport increase from 0 to 1 aircraft by 2041.

Scenario 2 – Basic Facility Improvements

Assumes basic airfield facility improvements including new runway edge lighting, instrument capabilities, and limited rental hangar availability (renovation of existing large hangar) in place by 2031. Facility improvements assumed to attract new to area aircraft and existing aircraft located at Forks Municipal Airport. The projection assumes based aircraft at Quillayute Airport increase from 0 to 4 aircraft by 2041.

Scenario 3 – Moderate Facility Improvements

Assumes all improvements included in Scenario 2, plus additional rental hangar availability (new construction) in place by 2031. Facility improvements assumed to attract new to area and additional based aircraft located at Forks Municipal Airport. Based aircraft at Quillayute Airport increase from 0 to 6 aircraft by 2041.

Scenario 4 – Full Facility Improvements, Closure of Forks Municipal Airport

Assumes all improvements included in Scenario 3 by 2041, plus closure of Forks Municipal Airport by 2035. Consolidation of local airport facilities is assumed to result in relocation of a 6 aircraft from Forks Municipal Airport to Quillayute Airport, with the remaining aircraft relocating outside the local area or becoming inactive due to fleet attrition. The projection assumes based aircraft at Quillayute Airport increase from 0 to 12 aircraft by 2041.

RECOMMENDED BASED AIRCRAFT FORECAST SUMMARY

Scenario 3 – Moderate Facility Improvements is the recommended based aircraft forecast model for use in the 2021-2041 Quillayute Airport Master Plan. The recommended forecast results in an increase from **0 to 6 based aircraft** at Quillayute Airport by 2041.

This projection assumes that facility improvements completed at Quillayute Airport will contribute to the growth in based aircraft due to improved operational capabilities and convenience provided by upgraded airfield facilities. The projection also assumes continued operation of Forks Municipal Airport during the 20-year planning period.

With a starting point of 0 based aircraft, it is important to note that any resulting growth rates for these projections are skewed. 15-year average annual growth rates are calculated for each forecast model based on the first forecast year (2026) with a listed based aircraft, projected to the end of the 20-year planning period (2026-2041). The actual growth rates may be different depending on the year when the first based aircraft is added after the 2021 baseline, which could effectively reduce the equivalent 20-year average annual growth rate.

The based aircraft forecast models are summarized in **Table 3-8** and depicted on **Figure 3-2**.

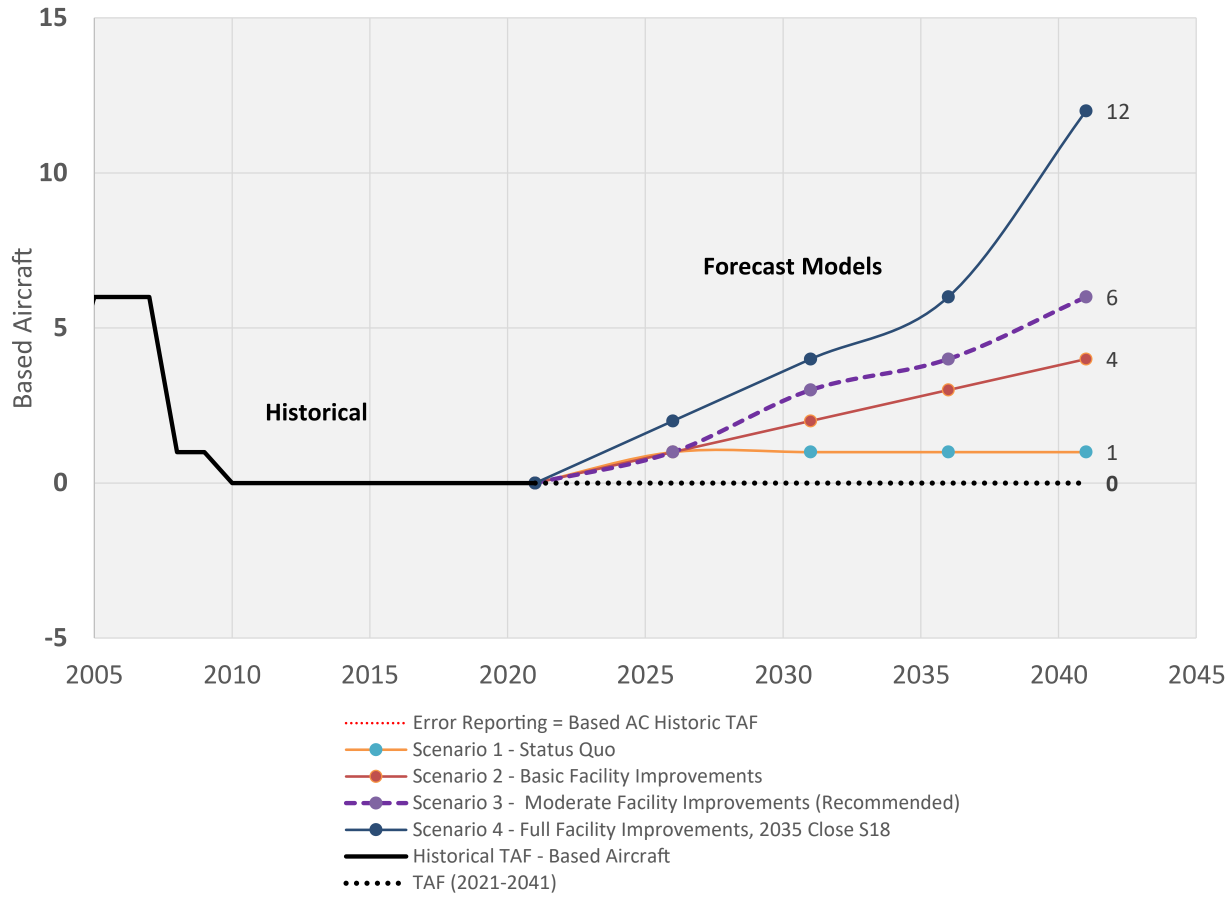
TABLE 3-8: BASED AIRCRAFT FORECAST MODELS (UIL)

Forecast	AAGR[1]	2021	2026	2031	2036	2041
Scenario 1 – Status Quo	0.0%	0	1	1	1	1
Scenario 2 – Basic Facility Improvements	9.7%	0	1	2	3	4
Scenario 3 – Moderate Facility Improvements (Recommended)	**12.6%**	**0**	**1**	**3**	**4**	**6**
Scenario 4 – Full Facility Improvements; Forks Municipal Airport Closed by 2035	12.6%	0	2	4	6	12

Source: Century West Engineering; AAGR: Average Annual Growth Rate
1. 15-year Average Annual Growth Rate calculated based on first year with based aircraft (2026) to 2041.

Based aircraft forecasts are primarily intended to identify future facility needs in forthcoming sections of the Airport Master Plan, particularly aircraft storage – apron parking and hangar space. The use of development reserves is recommended for defining activity-dependent facility needs that may exceed forecasted growth. The proposed development reserve should have the capacity to accommodate 100% of the projected net increase (+6) of based aircraft over the planning period. Accordingly, the long-term planning of landside facilities at Quillayute Airport should be capable of accommodating 12 additional based aircraft over the next 20 years.

FIGURE 3-2: BASED AIRCRAFT FORECAST (UIL)



BASED AIRCRAFT FLEET MIX

Table 3-9 summarizes the based aircraft fleet mix forecast for the planning period. The fleet mix at Quillayute Airport is expected to consist of single-engine piston aircraft and light sport aircraft (LSA)/experimental home-built aircraft, consistent with long term national general aviation fleet trends.

TABLE 3-9: FORECAST BASED AIRCRAFT FLEET MIX (UIL)

Aircraft Type	2021	2026	2031	2036	2041
Single Engine Piston	0	1	2	2	3
Multi Engine Piston	0	0	0	0	0
Turboprop	0	0	0	0	0
Jet	0	0	0	0	0
Helicopter	0	0	0	0	0
LSA / Experimental	0	0	1	2	3
TOTAL	**0**	**1**	**3**	**4**	**6**

Source: Century West Engineering

AIRCRAFT OPERATIONS

The absence of verifiable aircraft operations data at Quillayute Airport over the last 20 years eliminates the ability to develop reliable projections that depend on historical trends. Based on data constraints, aircraft operations projections were developed for each of the four scenario-dependent based aircraft forecasts:

- Each forecast uses a common baseline of 570 annual operations (2021).
- The anticipated increase of approximately 150 U.S. Coast Guard (USCG) annual helicopter operations at the Airport related to new jet fuel storage, is assumed to be fully realized in 2022 and 2023 as USCG operational missions are defined. This level of activity (200 annual operations) is maintained through the 20-year planning period.
- Annual operations associated with the projected number of based aircraft in each model are estimated using an FAA-defined operations per based aircraft (OPBA) ratio common to small general aviation (GA) airports (see note below).
- The existing baseline activity (570 annual operations, less USCG activity noted above) is projected to increase at an average annual rate of 1%, comparable to FAA Aerospace Forecast 2021-2041 growth rates for GA and Air Taxi operations at towered airports and hours flown for all GA aircraft.

Bullet #3 Note:
FAA Order 5090.5 Formulation of the NPIAS and ACIP, suggests a methodology for non-towered airports that relies on a general formula for estimating operations by utilizing an activity ratio that is applied to based aircraft. The Order identifies a typical range of 250 to 450 OPBA for distinct types of general aviation airports depending on the airport's role in the NPIAS. Consistent with FAA NPIAS guidance, the recommended multiplier (250 OPBA) for a Basic General Aviation airport was used.

The scenarios reflect a range of assumptions related to future facility improvements at Quillayute Airport that contribute to airport activity. Varying levels of aircraft relocation from Forks Municipal Airport to Quillayute Airport are also assumed for each forecast scenario.

Scenario 1 – Status Quo

Forecast aircraft operations are consistent with the Scenario 1 based aircraft forecast assumptions. Aircraft operations increase due to the boosted USCG utilization of the Airport, growth in other existing user activity that is consistent with long-term economic growth in the area, and the addition of one based aircraft by the end of the planning period. Forks Municipal Airport continues to accommodate most of the air traffic generated at the two City of Forks airports. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 1,085 in the 2021-2041 planning period. This scenario maintains the existing emergency response capabilities at Quillayute Airport based on current airfield facilities.

Scenario 2 – Basic Facility Improvements

Forecast aircraft operations are consistent with the Scenario 2 based aircraft forecast assumptions. The anticipated facility improvements are expected to increase Airport utilization for both locally based aircraft and transient aircraft. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 1,835 in the 2021-2041 planning period. This scenario provides improved emergency response capabilities at Quillayute Airport that includes day/night operations in poor weather conditions.

Scenario 3 – Moderate Facility Improvements

Forecast aircraft operations are consistent with the Scenario 3 based aircraft forecast assumptions. More robust facility improvements are expected to increase the number of locally based aircraft that will generate increased aircraft operations levels. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 2,235 in the 2021-2041 planning period. This scenario also provides improved emergency response capabilities at Quillayute Airport.

Scenario 4 – Full Facility Improvements, Closure of Forks Municipal Airport

Forecast aircraft operations are consistent with the Scenario 4 based aircraft forecast assumptions. The closure of Forks Municipal Airport and consolidation of local aircraft at Quillayute Airport is expected to drive additional facility improvements and services that will in turn increase aircraft operations levels. The projection assumes annual aircraft operations at Quillayute Airport increase from 570 to 3,835 in the 2021-2041 planning period. This scenario also provides improved emergency response capabilities at Quillayute Airport.

FAA Terminal Area Forecast (TAF) – Quillayute Airport

The current TAF operations projection (APO TAF Detail Report 2021-2046, Issued March 2022) for Quillayute Airport is provided for comparison to the operations forecast models. The current TAF (APO TAF Detail Report 2021-2046, Issued March 2022) projects annual aircraft operations to increase from a 2020 base of 6,700 to 11,208 by 2041, and to 12,347 in 2045.

Although the current TAF does not correlate to the baseline activity estimate developed in the Airport Master Plan, it provides a projection that could represent the upper range for activity that could be realized at the Airport if activity deviates well outside the defined forecast scenarios.

RECOMMENDED AIRCRAFT OPERATIONS FORECAST

Scenario 3 – Moderate Facility Improvements is the recommended aircraft operations forecast model for use in the 2021-2041 Quillayute Airport Master Plan. The recommended forecast results in an increase from **570 to 2,235 annual aircraft operations** at Quillayute Airport by 2041. The projected increase in aircraft operations reflects a combination of increased USCG flight activity and increases in transient and based aircraft activity over the 20-year planning period. The recommended forecast model reflects an average annual growth rate (compounded) of 7.07%. As noted earlier, the resulting growth rate is above average for most GA airports, but should be viewed in the context of very low levels of flight activity expected during the planning period.

This projection assumes that facility improvements will be completed at Quillayute Airport contributing to the increased aircraft utilization and allow the Airport to attract based aircraft. The projection also assumes continued operation of Forks Municipal Airport during the 20-year planning period.

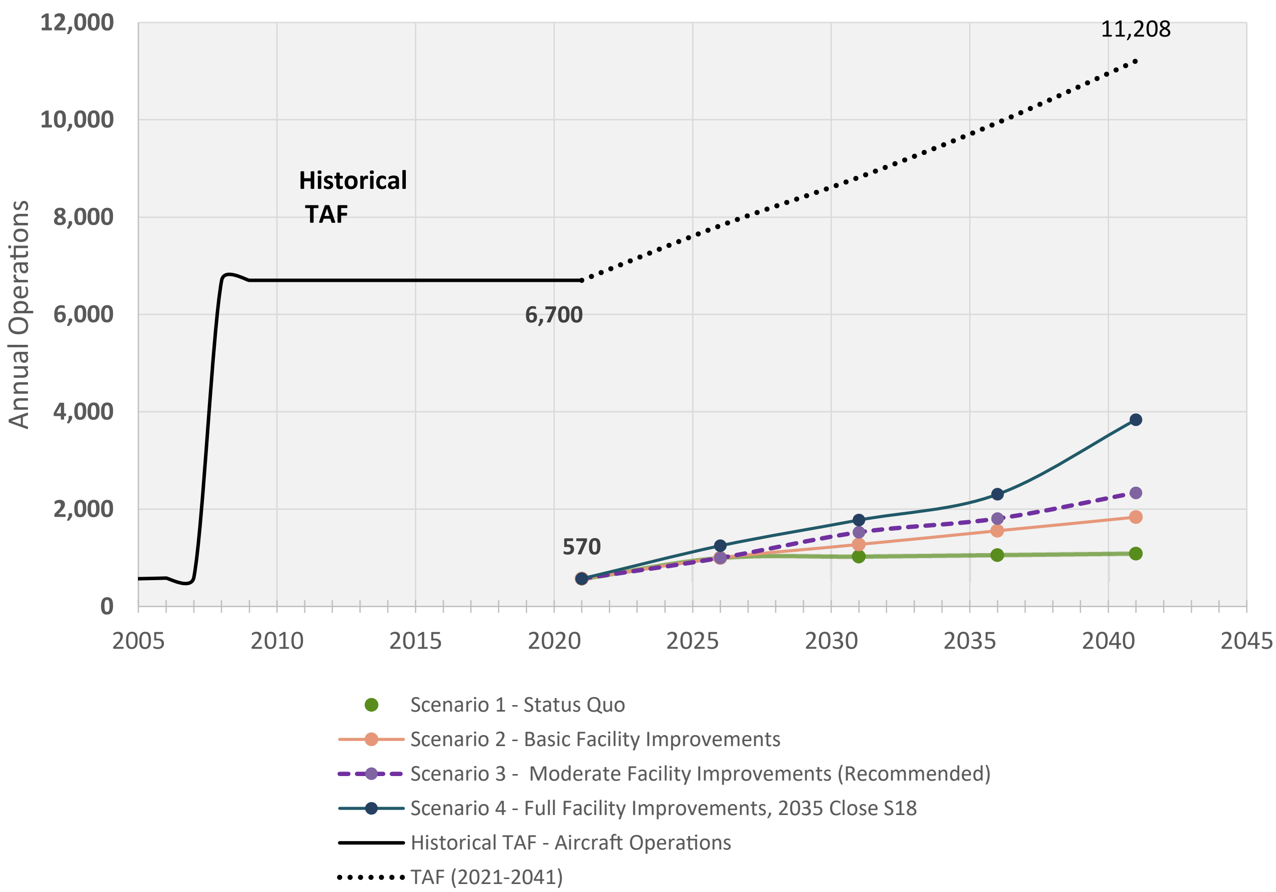
The new aircraft operations forecast models evaluated, including the recommended model and the current FAA TAF for the Airport, are summarized in **Table 3-10** and depicted in **Figure 3-3**.

TABLE 3-10: FORECAST ANNUAL AIRCRAFT OPERATIONS (UIL)

Forecast	AAGR	2021	2026	2031	2036	2041
Scenario 1 – Status Quo	3.27%	570	997	1,024	1,054	1,085
Scenario 2 – Basic Facility Improvements	6.02%	570	997	1,274	1,554	1,835
Scenario 3 – Moderate Facility Improvements (Recommended)	**7.07%**	**570**	**997**	**1,524**	**1,804**	**2,235**
Scenario 4 – Full Facility Improvements; Forks Municipal Airport Closed by 2035	10.00%	570	1,247	1,774	2,304	3,835
UIL TAF (2021-2041)	2.48%	6,905	7,826	8,818	9,939	11,208

Source: Century West Engineering

FIGURE 3-3: AIRCRAFT OPERATIONS FORECAST MODELS (UIL)



LOCAL AND ITINERANT OPERATIONS

Aircraft operations are classified by FAA as local or itinerant. Local operations are conducted in the vicinity of an airport and include flights that begin and end at the airport. These include flight training, flights within the airport traffic pattern such as touch and go landings, and other flights that do not involve a landing at another airport. Itinerant operations include flights between airports such as air ambulance medevac flights, on-demand air charter, air cargo/express, cross-country flight training, and personal or business travel. By FAA definition, a transient aircraft flying to Quillayute Airport that conducts more than one landing and one takeoff (e.g., touch and go landings), generates both itinerant and local operations.

The current FAA Terminal Area Forecast (TAF) estimates the local/itinerant operations split at Quillayute Airport to be 48%/52%. This operational split appears to be high for an airport with no based aircraft and minimal flight training activity. However, since current and forecast air traffic volumes at the Airport are low, the local/itinerant split is reasonable for use in the forecast. The local and itinerant distribution for each forecast year is summarized in **Table 3-11**.

TABLE 3-11: FORECAST LOCAL & ITINERANT OPERATIONS (UIL)

Activity	2021	2026	2031	2036	2041
Itinerant Operations (48%)	274	479	732	866	1,073
Local Operations (52%)	296	518	792	938	1,162
Total Local & Itinerant Operations	570	997	1,524	1,804	2,235

Source: Century West Engineering

AIRCRAFT OPERATIONS FLEET MIX

As noted previously in **Table 3-5**, fixed wing aircraft currently account for just over 70% of operations at Quillayute Airport, with helicopters accounting for 30%. The operations fleet mix distribution at Quillayute Airport is expected to gradually change during the 20-year planning period, although the type of aircraft operating at the Airport is not. By 2041, fixed wing aircraft are projected to accommodate about 84% of operations at the Airport. The shift is attributed to an increase in based aircraft and transient flight activity demand related to facility upgrades including runway lighting and instrument approach capabilities.

Most current helicopter activity at the Airport is generated by various military users and the U.S. Coast Guard. Current fixed wing activity is predominantly civilian-generated. Most civilian fixed wing activity is generated by single engine piston aircraft, with multi-engine piston, single- and multi-engine turboprops, business jets, and helicopters generating the remaining flight activity. Military fixed wing traffic ranges from small piston aircraft to larger military transport and fighter aircraft.

The anticipated increase in USCG helicopter flights at the Airport is related to the addition of on-site fueling capabilities that allows more mission flexibility in the area. Helicopter operations are projected to increase during the planning period, although their share of total operations is projected to decrease to 15% by 2041. The future addition of instrument approach and departure procedures and runway lighting will improve all-weather access to the Airport for air ambulance operators and other general aviation users. The aircraft operations fleet mix forecast is summarized in **Table 3-12**.

TABLE 3-12: FORECAST AIRCRAFT OPERATIONS FLEET MIX (UIL)

Activity	2021	2026	2031	2036	2041
Single Engine Piston[1]	300	537	1,024	1,274	1,665
Multi Engine Piston	10	20	30	30	30
Turbo Prop	55	80	100	120	140
Jet	35	40	40	40	50
Helicopters	170	320	330	340	350
Total Operations	570	997	1,524	1,804	2,235

1. Includes light sport aircraft (LSA) and single engine piston experimental
Source: Century West Engineering

Critical Aircraft

The selection of design standards for airfield facilities is based upon the characteristics of the most demanding aircraft that are expected to use an airport, which is designated as the "critical aircraft." The FAA provides the following definition:

> *"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."* (FAA AC 150/5000-17)

The FAA groups aircraft into five categories (A-E) based upon their approach speeds. Aircraft Approach Categories (AAC) A and B include small propeller aircraft, many small or medium business jet aircraft, and some larger aircraft with approach speeds of less than 121 knots (nautical miles per hour). Categories C, D, and E consist of the remaining business jets, and larger jet and propeller aircraft associated with commercial and military use with approach speeds of 121 knots or more. The FAA also establishes six airplane design groups (I-VI), based on the wingspan and tail height of the aircraft. The categories range from Airplane Design Group (ADG) I, for aircraft with wingspans of less than 49 feet, to ADG VI for the largest commercial and military aircraft. The combination of airplane design group and aircraft approach speed for the critical aircraft creates the **Runway Design Code (RDC)**, which is used to define applicable airfield design standards. This designation was formerly defined as the Airport Reference Code (ARC)

CURRENT AND FUTURE CRITICAL AIRCRAFT

As noted in the chapter introduction, the recommended planning criteria for Quillayute Airport supported by FAA maintains the standards identified on the 2003 Airport Layout Plan as an effective way to preserve existing airport capabilities. This approach reflects the importance of maintaining the Airport's existing emergency response capabilities based on the unusual risk exposure to outer Olympic Peninsula coastal areas.

The **existing and future RDC for Runway 4/22 is B-II**, which is representative of a large multi-engine turboprop or medium business jet. A Beechcraft 300 series King Air is identified as the current and future critical aircraft.

The **RDC for the Airport's second (closed) runway, if reopened in the future, is A-I (small)**, which is representative of a small single-engine piston aircraft. A Cessna 182 is identified as the potential future critical aircraft for Runway 12/30. This selection is consistent with the 2003 Airport Layout Plan "future" ARC designation for the runway.

Table 3-13 summarizes current and forecast aircraft operations at Quillayute Airport by aircraft RDC.

Source: Textron Aviation

TABLE 3-13: FORECAST AIRCRAFT OPERATIONS FLEET MIX BY RDC (UIL)

Activity	2021	2026	2031	2036	2041
TOTAL OPS - A-I	300	537	1,024	1,274	1,665
TOTAL OPS - B-I	30	40	50	60	80
TOTAL OPS - A-II/B-II	50	80	100	110	120
TOTAL OPS - > B-II	20	20	20	20	20
TOTAL OPS - HELI	170	320	330	340	350
TOTAL OPS - ALL A/C	570	997	1,524	1,804	2,235

Source: Century West Engineering

Specific taxiway standards are defined by Taxiway Design Group (TDG), which are driven by the landing gear configuration of the critical aircraft. The TDG for both the Beechcraft King Air 200 and 300 series models is TDG 2.

It is noted that the runway length requirements for the current and future critical aircraft (multi engine turboprop) may be less demanding than for smaller aircraft that also use the runway, such as multi-engine piston aircraft. Consistent with FAA guidance on critical aircraft and RDC discussed earlier, the existing length of Runway 4/22 will be maintained; options for maintaining previously recommended runway extensions are evaluated in the facility requirements chapter.

Figure 3-4 depicts the aircraft design criteria used to define RDC, and representative aircraft in each RDC category. The applicable dimensional standards for Quillayute Airport are shown in bold.

FIGURE 3-4: CRITICAL AIRCRAFT & RUNWAY DESIGN CODE (RDC)

Aircraft Approach Category	Aircraft Approach Speed knots	Airplane Design Group	Aircraft Wingspan
A	less than or equal to 91	I	less than or equal to 49’
B	**92 to 121 Existing/Future**	**II - Existing/Future**	**50’ to 79’**
C	122 to 141	III	80’ to 118’
D	142 to 166	IV	119’ to 171’

A-I
12,500 lbs. or less

Beech Baron 55
Beech Bonanza
Cessna 182
Piper Archer

B-I(small)
12,500 lbs. or less

Beech Baron 58
Beech King Air C90
Cessna 402
Cessna 421

A-II, B-II
12,500 lbs. or less

Super King Air 200
Pilatus PC-12
DHC-6 Twin Otter
Cessna Caravan

ARC - B-II
Greater than 12,500 lbs.

Super King Air 300, 350
Beech 1900
Cessna Citation
Falcon 20, 50

A-III, B-III
Greater than 12,500 lbs.

DHC Dash 7, Dash 8
Q-200, Q-300
DC-3
Convair 580

C-I, D-I

Lear 25, 35, 55, 60
Israeli Westwind
HS 125-700

C-II, D-II

Gulfstream II, III, IV
Canadair 600
Canadair Regional Jet
Lockheed JetStar

C-III, D-III

Boeing Business Jet
Gulfstream 650
B 737-300 Series
MD-80, DC-9

C-IV, D-IV

B - 757
B - 767
DC - 8-70
DC - 10

Source: Century West Engineering

Operational Peaks

Airport activity peaking is evaluated to identify potential capacity related issues that may need to be addressed through facility improvements or operational changes. Based on the airfield configuration and forecast air traffic at Quillayute Airport, no operational peaking issues are anticipated. The following summary of peaking gauges typical conditions at the Airport.

The Peak Month represents the month of the year with the greatest number of aircraft operations (takeoffs and landings). The peak month for most general aviation airports occurs during the summer when weather conditions and daylight are optimal. For planning purposes, the peak month for aircraft operations at Quillayute Airport is assumed to account for 30% of annual operations, which effectively captures increased summer (July or August) flight activity and concentrated periods of military flight training.

Peak Day operations are defined by the average day in the peak month (Design Day) and the busy day in the typical week during peak month (Busy Day). The Design Day is calculated by dividing peak month operations by 30. For planning purposes, the Busy Day is estimated to be 50% higher than the average day in the peak month (Design Day x 1.5), based on common activities generating significant surges in flight activity.

Design Hour is the peak activity period in the Design Day. For planning purposes, the Design Hour operations are estimated to account for 25% of Design Day operations (Design Day x 0.25).

The operational peaks for each forecast year are summarized in **Table 3-14**. This level of peaking is consistent with the mix of airport traffic and is expected to remain unchanged during the planning period. These measures of activity are considered when calculating runway/taxiway capacity and transient aircraft parking requirements. No significant runway or taxiway capacity issues have been identified at the Airport based on current or forecast activity levels.

TABLE 3-14: PEAK AIRCRAFT OPERATIONS (UIL)

Aircraft Type	2021	2026	2031	2036	2041
Annual Operations	570	997	1,524	1,804	2,235
Peak Month Operations (30%)	171	300	457	541	670
Design Day Operations (average day in peak month)	6	10	15	18	22
Busy Day Operations (assumed 150% of design day)	9	15	23	27	34
Design Hour Operations (assumed 25% of design day)	2	3	4	5	6

Source: Century West Engineering

Air Taxi Activity

Air taxi activity includes for-hire charter flights, medevac flights, and some scheduled commercial air carriers operating under 14 CFR, Part 135. The current FAA TAF and 5010 Airport Record Form lists a 0 air taxi operations at Quillayute Airport. Air taxi activity at the Airport includes flights by the two area Medevac providers (LifeFlight and Airlift NW), that operate under Part 135. Other air taxi activity may include on-demand charter flights.

Air Taxi operations for 2021 are estimated at 20 operations, which includes all medevac flights and a small number of charter flights. Future air taxi activity is projected to increase above current levels in conjunction with the addition of instrument capabilities at the Airport. For planning purposes, future air taxi activity at Quillayute Airport is estimated at 50 annual operations.

Forecast Summary

A summary of the based aircraft and annual aircraft operations forecast is presented in **Table 3-15**. These forecasts project modest growth over the 20-year planning period that is consistent with local conditions and anticipated improvements in facilities at Quillayute Airport that encourage airport activity.

TABLE 3-15: FORECAST SUMMARY

Activity	2021	2026	2031	2036	2041
Itinerant Operations					
General Aviation	204	379	632	766	973
Air Taxi (On-Demand & Medevac)	20	50	50	50	50
Military	50	50	50	50	50
Total Itinerant Operations	**274**	**479**	**732**	**866**	**1,073**
Local Operations (Civil & Military)	296	518	792	938	1,162
Total Local & Itinerant Operations	**570**	**997**	**1,524**	**1,804**	**2,235**
Based Aircraft	0	1	3	4	6
Operations per Based Aircraft	-	997	508	451	373

Source: Century West Engineering

The average annual growth rate for aircraft operations at the Airport is 7.1% between 2021 and 2041. This rate of growth exceeds typical annualized growth rates commonly found at general aviation airports. However, the structural changes in activity attributed to adding based aircraft (increase from 0 to 6) in the 20-year planning period create more dramatic percentage increases than would otherwise be found with incremental growth on an established activity base.

TERMINAL AREA FORECAST COMPARISON

FAA review is required for both the based aircraft and the aircraft operations forecast for comparison to the current TAF, as presented in **Table 3-16** and **Figure 3-5**. As noted below, the current TAF aircraft operations data is not considered reliable, which limits the ability to effectively compare updated master plan forecasts with the TAF.

TABLE 3-16: TAF COMPARISON

Based Aircraft	2021	2026	2031	2036	2041
AMP Recommended Forecast	0	2	4	5	6
TAF	0	0	0	0	0
Percent Difference	**0.0%**	**≈200%**	**≈400%**	**≈500%**	**≈600%**

Aircraft Operations	2021	2026	2031	2036	2041
AMP Recommended Forecast	570	997	1,524	1,804	2,235
TAF	6,905	7,826	8,818	9,939	11,208
Percent Difference	**-91.8%**	**-87.3%**	**-82.7%**	**-81.9%**	**-80.1%**

Source: Century West Engineering

FIGURE 3-5: FAA TAF AND ALP FORECAST COMPARISON

Forecast Summary

UIL — Base Year: 2021

	Base Yr. Level	Base Yr.+1yr.	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+15yrs.	Average Annual Compound Growth Rates: Base Yr. to +1	Base Yr. to +5	Base Yr. to +10	Base Yr. to +15
Passenger Enplanements									
Air Carrier	0	0	0	0	0	N/A	N/A	N/A	N/A
Commuter	0	0	0	0	0	N/A	N/A	N/A	N/A
TOTAL	0	0	0	0	0	N/A	N/A	N/A	N/A
Operations									
Itinerant									
Air carrier	0	0	0	0	0	N/A	N/A	N/A	N/A
Commuter/air taxi	20	20	50	50	50	0.0%	20.1%	9.6%	6.3%
Total Commercial Operations	20	20	50	50	50	0.0%	20.1%	9.6%	6.3%
General aviation	170	175	287	544	674	2.9%	11.0%	12.3%	9.6%
Military	20	20	20	20	20	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	180	190	310	580	730	5.6%	11.5%	12.4%	9.8%
Military	180	330	330	330	330	83.3%	12.9%	6.2%	4.1%
TOTAL OPERATIONS	570	735	997	1,524	1,804	28.9%	11.8%	10.3%	8.0%
Instrument Operations	0	0	50	50	50	N/A	N/A	N/A	N/A
Peak Hour Operations	2	3	3	4	5	50.0%	8.4%	7.2%	6.3%
Cargo/mail (enplaned + deplaned tons)	0	0	0	0	0	N/A	N/A	N/A	N/A
Based Aircraft									
Single Engine (Nonjet)	0	0	1	3	4	N/A	N/A	N/A	N/A
Multi Engine (Nonjet)	0	0	0	0	0	N/A	N/A	N/A	N/A
Jet Engine	0	0	0	0	0	N/A	N/A	N/A	N/A
Helicopter	0	0	0	0	0	N/A	N/A	N/A	N/A
Other	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
TOTAL	0	0	1	3	4	N/A	N/A	N/A	N/A
GA Operations Per Based Aircraft	N/A	N/A	997	508	451	N/A	N/A	N/A	N/A

Note: Rate of growth calculations can not be based off a zero base.

Airport Planning and TAF Forecast Comparison

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2021	0	0	0.0%
Base yr. + 5yrs.	2026	0	0	0.0%
Base yr. + 10yrs.	2031	0	0	0.0%
Base yr. + 15yrs.	2036	0	0	0.0%
Commercial Operations				
Base yr.	2021	20	0	N/A
Base yr. + 5yrs.	2026	50	0	N/A
Base yr. + 10yrs.	2031	50	0	N/A
Base yr. + 15yrs.	2036	50	0	N/A
Total Operations				
Base yr.	2021	570	6,700	-91.5%
Base yr. + 5yrs.	2026	997	7,826	-87.3%
Base yr. + 10yrs.	2031	1,524	8,818	-82.7%
Base yr. + 15yrs.	2036	1,804	9,939	-81.8%

Note: TAF data is a on a U.S. government fiscal year basis (October through September).

FIFTY-YEAR FORECAST

Fifty-year demand forecasts were prepared as required in the FAA-approved scope of work by extrapolating the average annual growth rates (AAGR) for the based aircraft and aircraft operations 20-year forecasts. The recommended aircraft operations forecast growth rate is extrapolated to 2071. The current FAA Aerospace Forecast long term projection for the national general aviation fleet (2021-2041: 0.1% Avg. Annual Growth) was used beyond the 2041 Airport Master Plan forecast. This adjustment is intended to temper the projected growth rate for based aircraft at the Airport that skews upward due to the forecast net increase from zero aircraft in the 20-year planning period. The purpose of the 50-year projection is to provide an estimate of demand to approximate long-term aviation land use requirements for the Airport. **Table 3-17** summarizes the 50-year forecast including the intermediate 30- and 40-year projections.

TABLE 3-17: 50-YEAR FORECAST (UIL)

	2021	2041	2051	2061	2071
Annual Operations (1.04%AAGR)	570	2,235	3,451	5,329	8,228
Based Aircraft (1.04%AAGR)	0	6	6	6	7

Source: Century West Engineering

Chapter 4
Airport Facility Requirements

The evaluation of airport facility requirements is intended to determine the facility needs for Quillayute Airport (UIL) for the current 20-year planning period based on updated aviation activity forecasts and conformance to established FAA airport design criteria.

Introduction

The evaluation of airport facility requirements combines the results of the inventory and forecasts contained in Chapters 2 and 3, and established planning criteria to determine the future facility needs for the Airport during the current 20-year planning period. Airside facilities include the runways, taxiways, navigational aids, and lighting systems. Airside facilities are often protected by airspace or clear areas that are defined by applicable Federal Aviation Administration (FAA) standards.

Landside facilities include hangars, terminal/fixed base operator (FBO) facilities, aircraft parking apron(s), aircraft fueling facilities, and aerial applicator facilities. Surface access roads, automobile parking, security/perimeter fencing, and utilities are generally identified as support facilities. All airfield items are evaluated based on established FAA standards and the functional role of the Airport.

The facility requirements evaluation identifies the adequacy or inadequacy of existing facilities and identifies new facilities that may be needed during the planning period based on forecast demand or conformance to FAA standards. The evaluation of demand-driven elements quantify facility needs such as runway length requirements, hangar space, and aircraft parking positions based on forecast demand and the type of aircraft being accommodated. Items such as lighting, navigational aids, and approach capabilities are evaluated based on overall airport activity and facility classification. Options for accommodating current and future facility needs are evaluated in the Airport Development Alternatives (Chapter 5). A summary of the facility requirements defined for the current 20-year planning period is provided at the end of this chapter (See **Table 4-6**).

Demand/Capacity Analysis

The evaluation of runway capacity is used to identify existing or future operational constraints that may require specific facility improvements such as taxiways, aircraft hold areas, etc. Runway 4/22 is served by taxiways that provide access to the full runway with operational functionality that provides for effective movement between the runway and adjacent landside facilities. The existing taxiway configuration essentially serves as a full-length parallel taxiway for Runway 4/22, although some sections of the taxiway are angled and the east connecting taxiway is located approximately 410 feet west of the Runway 22 threshold. However, the runway-taxiway system appears to provide ample capacity for both current and forecast aircraft operations levels.

Annual service volume (ASV) is a broad measure of airport capacity and delay used for long-term planning as defined in *FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay*. Although the generic ASV calculation assumes optimal conditions (air traffic control, radar, the ability to operate in both visual flight rules (VFR) and instrument flight rules (IFR) conditions, etc.) that do not exist at Quillayute Airport, it provides a reasonable basis for approximating existing and future capacity for planning purposes.

The FAA estimates the ASV for a single runway with no air carrier traffic is approximately 230,000 annual operations. Hourly capacity is estimated to be 98 operations during VFR conditions and 59 operations during IFR conditions (assuming the runway supports instrument operations). The existing and future demand-capacity ratios for Runway 4/22 presented below are based on the aviation forecasts presented in Chapter 3.

- *Existing Capacity: 570 Annual Operations / 230,000 ASV = <1% (demand/capacity ratio)*
- *Future Capacity: 2,235 Annual Operations / 230,000 ASV = <1% (demand/capacity ratio)*

Based on these ratios, the annual capacity of Runway 4/22 exceeds demand through the current 20-year planning period. Hourly capacity is also expected to be adequate to accommodate normal demand. The average delay per aircraft is expected to remain below one minute through the planning period.

Critical Aircraft and Airport Design Standards Discussion

The existing and future critical aircraft are determined based on the current and projected level of activity described in the airport master plan's 20-year aviation activity forecasts. FAA design criteria are determined by the physical characteristics of the critical aircraft. The critical aircraft establishes airport planning & design standards organized in series of FAA-defined categories. The groupings are applied to specific runways, taxiways and taxilanes to guide future planning, design, and development of the Airport. Definitions for the applicable FAA design standards are provided throughout the chapter.

CRITICAL AIRCRAFT

The critical aircraft is intended to represent the most demanding aircraft using the Airport on a regular basis (defined by FAA as ≥ 500 annual operations). This designation does not mean that larger aircraft cannot operate on the runway, but it does define the design guidance to be used for FAA-funded improvements.

The FAA Seattle Airports District Office (ADO) completed its review of Chapter 3, Aviation Activity Forecasts and determined that a change in the recommended critical aircraft designation, from B-II to A-II (small aircraft) was appropriate based on its updated planning guidance.

The change in ARC does not significantly alter the planning defined in the previous airport master plan since Aircraft Approach Category A and B are interchangeable in the FAA airport design standards matrices for Airplane Design Group II (ADG II). However, the "small" aircraft designation with ARC A/B-II does affect some airfield design and airspace planning standards that are described in this chapter.

The Beechcraft King Air 300 Series multi-engine turboprop aircraft (AAC/ADG B-II) was identified in the draft aviation activity forecast (Chapter 3) as a representative aircraft for both the current and future critical aircraft. This designation was intended to maintain prior (2003) Airport Master Plan assumptions and existing facility capabilities (see below).

> (Page 3-2): The FAA supports maintaining the critical aircraft, Airport Reference Code (ARC) (now RDC = AAC/ADG), and design standards previously defined in the 2003 Airport Master Plan. These elements will be applied in the forecast and facility requirements analyses prepared in this master plan, and the planning criteria designations from the 2003 Airport Layout Plan (ALP) drawing are maintained.

However, per the 8/19/2022 forecast approval letter, the FAA approved the A-II (small) family of aircraft for the existing and future critical aircraft. Based on this guidance, the Pilatus PC-12, a single-engine turboprop, commonly used by air ambulance providers, is identified as a representative A-II (small) critical aircraft. As noted earlier, the 2003 ALP lists the Beechcraft Super King Air (multi-engine turboprop) as the existing and future critical aircraft with ARC B-II. See **Appendix D** for FAA approval letter.

AIRPORT REFERENCE CODE (ARC)

The FAA formerly used ARC as the primary designation to categorize design standards for runways. The current version of the FAA airport design advisory circular (AC 150/5300-13B) has eliminated ARC and replaced it with designations derived from a combination of Runway Design Code (RDC), which includes Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Approach Visibility Minimums. The runway design standards incorporate different combinations of aircraft elements including approach speed, wingspan, and weight with approach visibility criteria. Taxiway design standards are organized by both Airplane Design Group (ADG) and Taxiway Design Group (TDG). These standards are determined by the physical characteristics (dimensions) of aircraft, including wingspan, tail height, and landing gear. Additional information is provided in the sections below.

As noted earlier, the existing and future ARC for Runway 4/22 noted on the 2003 ALP was B-II, which corresponds to RDC B-II/NPI based on current FAA design guidance and airspace planning criteria.

It is recognized that many existing facilities at the Airport exceed A-II (small) standards. The City of Forks' preference is to maintain existing airfield capabilities to the extent feasible, which involves preserving pavements, prepared surfaces, and development setbacks already in place that do not require reconstruction. Although the current FAA airport design standards recommendations differ from both the forecast recommendation and the 2003 ALP, it is worth noting that the recommended A-II or B-II vs. A-II (small) design standards only differ for two design standards and affect airspace planning criteria:

- Obstacle Free Zone (OFZ) (width)
- Runway Protection Zone (RPZ) (inner/outer width dimensions)
- Part 77 (Utility vs. Larger-Than-Utility runway standards)

It is also noted that RDC A-II and B-II standards (for regular or small aircraft) are identical. As a result, the FAA's support of ARC A-II for Quillayute Airport will not affect most design standards previously defined for ARC B-II. Specific items such as runway length justification are tied to specific critical aircraft (or family of aircraft) requirements, rather than to design category. For more information see FAA AC 150/5000-17, Critical Aircraft and Regular Use Determination.

2003 ALP/Airport Master Plan

The existing and future ARC noted on the 2003 ALP is B-II. The corresponding Part 77 runway designation is consistent with a critical aircraft that weighs above 12,500 pounds (i.e., Larger than Utility).

2022 ALP/Airport Master Plan

Based on the August 2022 FAA forecast approval letter, ARC A-II (small) is applicable for Runway 4/22, both for current and future planning. Airspace planning criteria for utility runways is applicable based on the critical aircraft's maximum operating weight below 12,500 pounds.

For planning purposes, approach visibility minimums were assumed to be 1-mile or visual, based on future visual and non-precision instrument approach capabilities. Applicable airport planning & design standards are summarized in greater detail below.

RUNWAY DESIGN CODE (RDC)

The RDC is comprised of the selected AAC, ADG, and the approach visibility minimums of a specific runway end. The RDC provides the information needed to determine specific runway design standards. The approach visibility minimums refer to the visibility minimums expressed by runway visual range (RVR) values in feet.

The existing RDC for Runway 4/22 is A/B-II-VIS; the future RDC is A/B-II-4000. The future RDC assumes development of a non-precision instrument (NPI) approach and NPI runway designation. For more detailed information on determining RDC see *FAA AC 150/5300-13B, Airport Design*.

APPROACH AND DEPARTURE REFERENCE CODE (APRC AND DPRC)

The APRC and DPRC represent the current operational capabilities of each specific runway end and adjacent taxiways. For detailed information on determining APRC and DPRC see *FAA AC 150/5300-13B, Airport Design*.

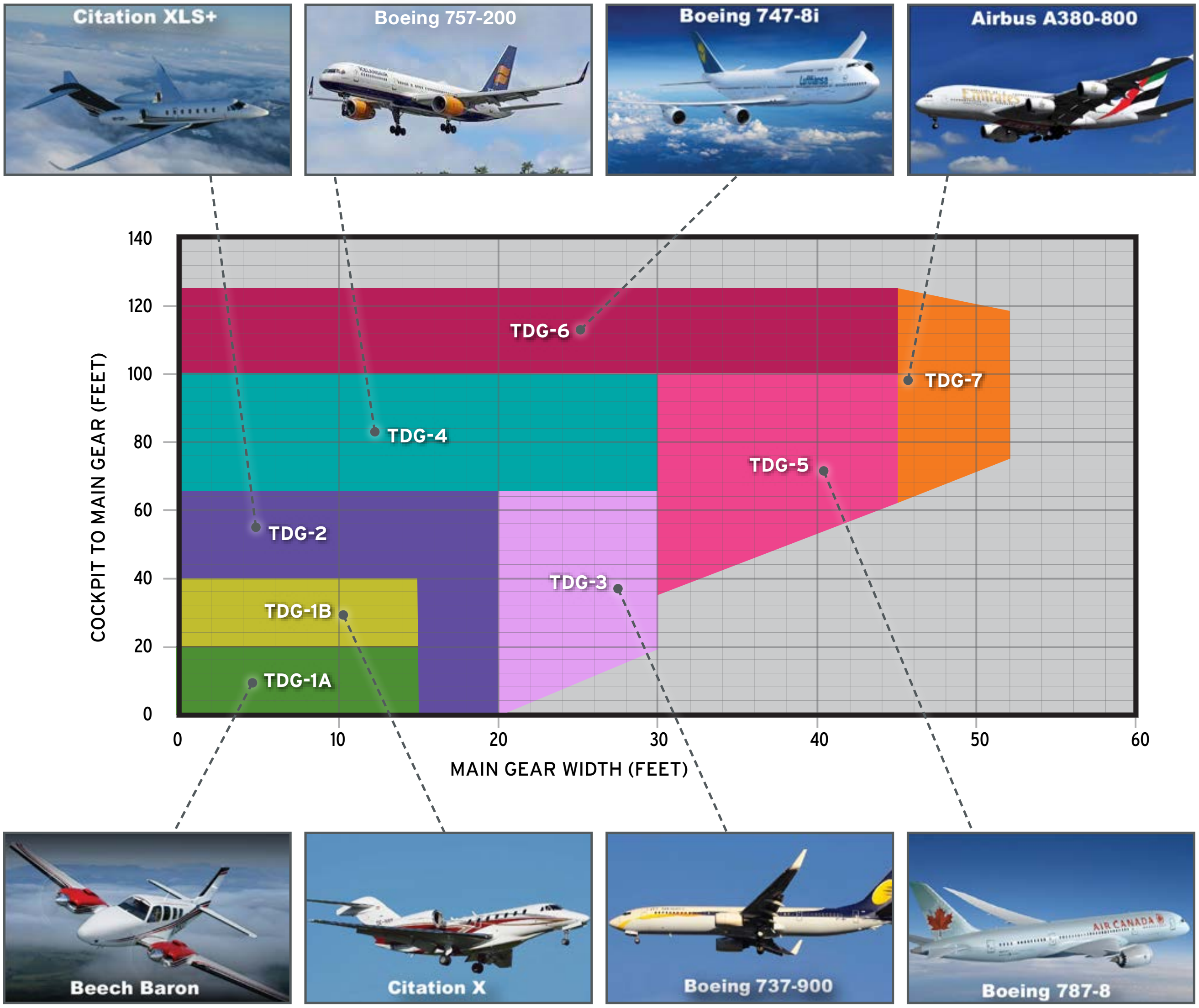
The APRC uses the performance characteristics of the critical aircraft (approach speed and wingspan/tail height), the approach visibility minimums (expressed in RVR values), and runway-to-taxiway separation on the airfield to define specific standards. The APRC table in the AC (Table L-1) is limited in its direct application to Runway 4/22 and the critical aircraft designation. The table creates a matrix of runway-to-taxiway separations and approach visibility minimums. Unfortunately, the table does not list any APRCs with Approach Category A, nor does it include any ADG II combinations for small aircraft. Small aircraft designations (S) are only presented for two ADG I examples. In addition, the existing runway-taxiway separation is approximately 535 feet, which corresponds to ADG V aircraft in the table.

Since AAC A and B are interchangeable in the AC's runway design standards tables (**Appendix G**), it appears reasonable to substitute based on the nearest common design criteria. Based on this, **the existing and future APRC for Runway 4/22 is B/II/4000**. This is the nearest APRC definition listed in the AC for A-II (small) aircraft.[1] In this case, precedence in design criteria would favor airplane design group (ADG II vs. ADG I) over a "large" or "small" aircraft weight distinction. The runway-taxiway separation is not relevant as a guide in selecting the appropriate design standards since the existing separation exceeds all dimensions listed in the table.

The DPRC uses only the physical characteristics of the design aircraft and runway-to-taxiway separation. The existing and future DPRC for Runway 4/22 is B/II for a runway-to-taxiway separation ≥ 240 feet. As with APRC, this is the nearest DPRC definition in the AC for A-II (small) aircraft.[2]

1 AC 150/5300-13B, Appendix L, Table L-1.
2 AC 150/5300-13B, Appendix L, Table L-2.

FIGURE 4-1: TAXIWAY DESIGN GROUP COMPONENTS



Source: Century West Engineering

FAA DESIGN STANDARDS

FAA AC 150/5300-13B, Airport Design, serves as the primary reference in establishing the geometry of airfield facilities at Quillayute Airport.

Existing conditions (dimensions) related to Runway 4/22 and the design standards based on the critical aircraft determination are summarized in **Table 4-1**. The existing conditions reflect a combination of built items and the FAA-defined surfaces depicted on the 2003 ALP drawing. As noted earlier, the design standards associated with the FAA's updated critical aircraft determination (A-II small) reflect some changes compared to the 2003 ALP.

A second set of dimensional standards is also provided to represent the FAA RDG B-II design standards historically applied to the runway, as reflected on the 2003 ALP. These dimensions and development setbacks effectively provide a baseline for preserving existing facility capabilities, where feasible. This information is provided for reference only, recognizing that maintaining some existing airfield facility dimensions may not be eligible for conventional FAA funding.

Dimensional standards are not provided for the former north-south runway since the runway has been out of service since before the last master plan. As previously planned as an ADG I runway, applicable design standards may be found in *FAA AC 150/5300-13B, Airport Design* if needed.

A summary of taxiway and taxilane design standards for the Airport is provided in **Table 4-2**. As noted earlier, these standards are determined by the critical aircraft for major facilities used by all aircraft operating at the Airport. For facilities intended for use by a specific aircraft type (e.g., small airplane tiedowns) the aircraft-appropriate standard is used.

FAA DESIGN STANDARDS

Specific design standards and conditions applicable to Quillayute Airport facilities are presented in the following sections of this chapter within the sidebar "FAA Design Standards" text box. For additional information reference appropriate sections within AC 150/5300-13B.

AC 150/5300-13B, recently updated by FAA, has eliminated Airport Reference Code (ARC) as the primary design standard designation applied to runways. The updated equivalent is Runway Design Group (RDG), which also includes a visibility component. As such, previously used ARC definitions and current-use RDC designations are comparable.

TABLE 4-1: RUNWAY 4/22 - FAA AIRPORT DESIGN STANDARDS SUMMARY (DIMENSIONS IN FEET)

FAA STANDARD	RUNWAY 4/22 EXISTING CONDITIONS[1]	RUNWAY 4/22 (CRITICAL AC STANDARD)[8] RDC A/B-II (Small) VISUAL OR NOT LOWER THAN 1-MILE	RUNWAY 4/22 (PRESERVATION STANDARD)[11] RDC A/B-II NOT LOWER THAN 1-MILE
Runway Length	4,210	See Runway Analysis Discussion	
Runway Width	100	75	75
Runway Shoulder Width	>10[2]	10	10
Runway Blast Pads • Width • Length	none[3]	95 150	95 150
Runway Safety Area • Width • Beyond RWY End • Prior to Landing Threshold	150 300 300	150 300 300	150 300 300
Runway Obstacle Free Zone • Width • Beyond RWY End • Prior to Landing Threshold	400[4] 200 200	250 200 200	400 200 200
Object Free Area • Width • Beyond RWY End • Prior to Landing Threshold	500 300 300	500 300 300	500 300 300
Runway Protection Zone Length	RWY 4: 1,000 RWY 22: 1,000	RWY 4: 1,000 RWY 22: 1,000	RWY 4: 1,000 RWY 22: 1,000
Runway Protection Zone Inner Width	RWY 4: 500 RWY 22: 500	RWY 4: 250 RWY 22: 250	RWY 4: 500 RWY 22: 500
Runway Protection Zone Outer Width	RWY 4: 700 RWY 22: 700	RWY 4: 450 RWY 22: 450	RWY 4: 700 RWY 22: 700
Runway Centerline to: Parallel Taxiway/Taxilane CL Aircraft Hold Position Aircraft Parking Area 20’ Building Restriction Line (BRL) Nearest Building to Runway	535[5] 200 650[6] 650[6] 980[7]	240 125 597/302[9] 597/390[10] 980	535 200 650 650 980

Source: FAA AC 150/5300-13B, Airport Design

Table 4-1 Notes:

1. Dimensions based on 2003 FAA-approved ALP drawing; actual conditions updated based on facility inventory (2022).
2. The existing runway width is 100 feet. The runway width is defined by painted edge stripes within the 150-foot-wide pavement area (previous runway width). The 25 feet of pavement remaining along both sides of the runway effectively serve as paved shoulders and runway safety area.
3. The area beyond the Runway 22 end consists of original runway pavement (780’ x 150’) that was closed as part of a threshold relocation following the 2003 AMP. This pavement is currently closed to aircraft use (marked with yellow chevrons) but exceeds the dimensional requirements for a blast pad.
4. Runway 4/22 has been historically maintained to meet standards consistent with large airplanes (>12,500 pounds).
5. Parallel section of taxiway abutting main apron.
6. As depicted on 2003 ALP drawing.
7. Runway centerline to north wall of Large Hangar.
8. Based on updated existing and future critical aircraft (A-II small).
9. Distance from existing parallel taxiway centerline required to locate parked aircraft outside ADG II taxiway OFA. The Part 77 transitional surface elevation at this location is approximately 49 feet above the ground surface. / The generic FAA ADG II standard assumes a 240-foot parallel taxiway separation and a 62-foot OFA clearance from the taxiway centerline (302 feet). At this distance, the maximum aircraft tail height permitted without penetrating the NPI transitional surface is 7.4 feet.
10. Distance required to clear existing parallel taxiway ADG II OFA / Distance required for 20’ structure to avoid penetrating the NPI transitional surface.
11. Maintains ARC/RDG B-II, Large Airplanes (>12,500#) standards and/or existing facility configurations.

TABLE 4-2: QUILLAYUTE AIRPORT – TAXIWAY AND TAXILANE STANDARDS (CURRENT/FUTURE)

DESIGN STANDARD	AIRPLANE DESIGN GROUP (ADG) STANDARDS	TAXIWAY DESIGN GROUP STANDARD
Design Standard		
Main Taxiway	**ADG II**	**TDG 1A**
Taxiway Safety Area (width)[1]	79 feet	-
Taxiway Object Free Area (width)[1]	124 feet	-
Taxiway centerline to fixed or moveable object	62 feet	-
Taxiway Width	-	25 feet
Taxiway Shoulder Width	-	10 feet
Transient Drive-Thru Parking Main Apron	**ADG II**	**TDG 1B**
Taxilane Width	-	25 feet
Taxilane Object Free Area (width)[1]	110 feet	
Taxilane centerline to fixed or moveable object	55 feet	-
Small Airplane Tiedown Apron	**ADG I**	**TDG 1A**
Taxilane Width	-	25 feet
Taxilane Object Free Area (width) [1]	79 feet	-
Taxilane centerline to fixed or moveable object	39.5 feet	-

Source: FAA AC 150/5300-13B (Table 4-1, 4-2)

Airport Facilities Analysis

Based on the updated inventory of facilities presented in Chapter 2, Existing Conditions, airfield facilities were evaluated for their conformance with applicable FAA standards. Additionally, any other airport facility issues and/or opportunities that may have been identified or need to be addressed during the planning process are discussed further within this chapter.

The use of RDC A-II (small aircraft) standards will apply to existing and future facilities, consistent with the FAA forecast approval letter issued August 19, 2022. As noted earlier, airfield facilities at Quillayute Airport have been maintained to Airplane Design Group II (ADG II) standards or better, since prior to the transfer of ownership from the State of Washington Department of Transportation (WSDOT) to the City of Forks more than 20 years ago. Much of the current airfield footprint is unchanged from its original 1942-43 U.S. Navy construction. As a result, all existing runway and taxiway sections meet or exceed A-II (small) dimensional standards. Some facilities, such as the western and mid-runway taxiways with acute angle connections to the runway are not consistent with current FAA design guidance that recommends 90-degree taxiway connections to a runway.

Quillayute Airport currently operates exclusively under visual flight rules (VFR), with no instrument capabilities. Based on current capabilities, Runway 4/22 is defined as a "visual" runway in 14 Code of Federal Regulations (CFR) Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace.

The 2003 ALP identifies Runway 4/22 (existing and future) as a Precision Instrument Runway (PIR). A future GPS approach with vertical guidance and 1/2-mile approach visibility minimums was recommended for Runway 22 in conjunction with a future runway extension (reclaiming the existing runway pavement from the previous 780-foot relocated threshold). The ALP also identified a future approach lighting system (ALS) for Runway 22, which is typically required to reduce approach visibility minimums below 1-mile. These improvements have not been implemented.

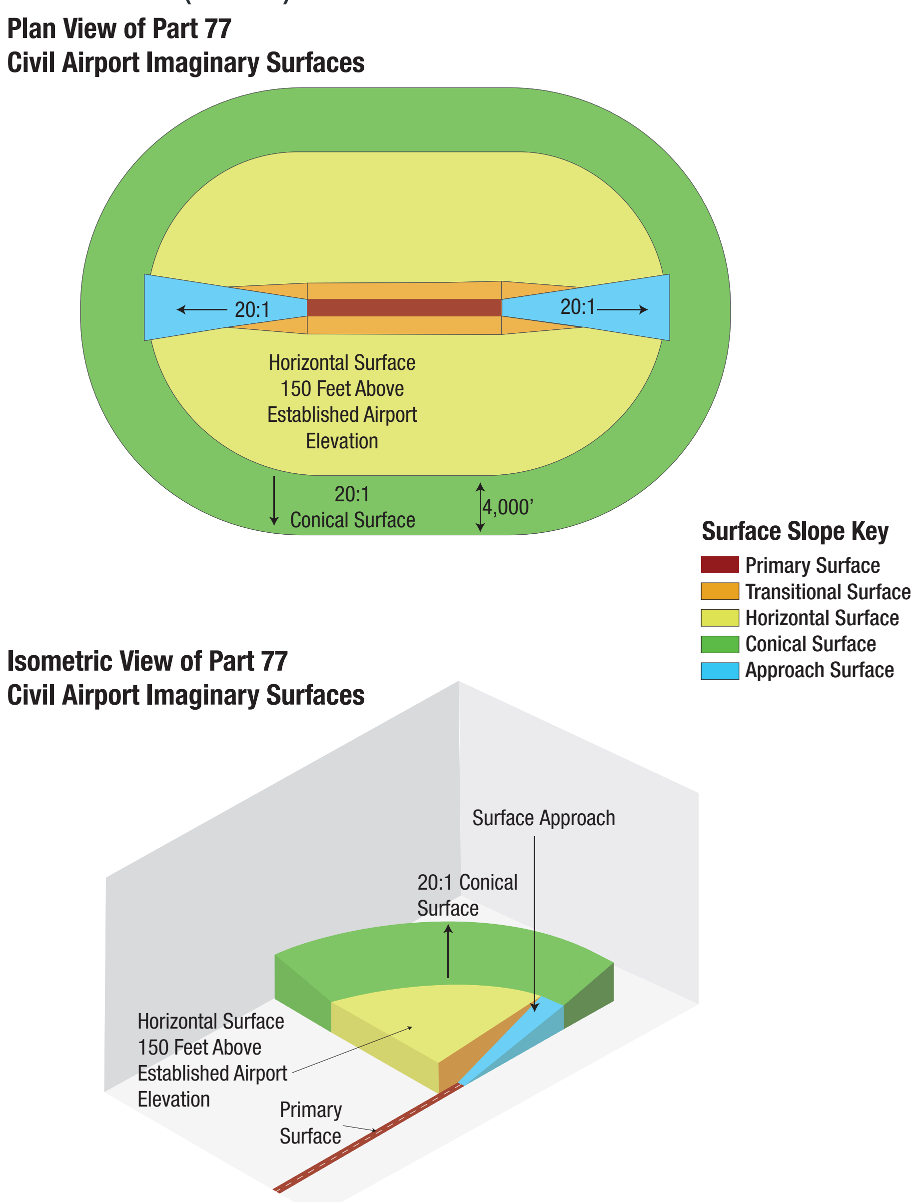
The addition of an instrument approach is identified as a high priority improvement at Quillayute Airport. The previous airspace-related planning assumptions are updated to reflect current FAA navigational system development programs.

Airside Facility Requirements

PART 77 AIRSPACE

U.S. airport airspace is defined by Title 14, Code of Federal Regulations (CFR) Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace.[3] Part 77 defines five types of airport imaginary surfaces that are established to protect the airspace immediately surrounding a runway. The airspace surfaces should be free of obstructions (i.e., terrain, structures, parked aircraft, trees, etc.) to the maximum extent possible to provide a safe aircraft operating environment. Runways that support instrument operations typically have larger or more demanding surfaces that protect aircraft operating closer to the ground without visual references. A generic Part 77 diagram illustrating each type of airspace surface is provided in **Figure 4-2**. Note: the generic runway configuration and depicted surfaces are for reference only and may not apply to Runway 4/22.

FIGURE 4-2: PART 77 AIRSPACE (GENERIC)



Source: Century West Engineering, Airspace Plan; 14 CFR, Part 77
Note: Generic precision approach airspace is provided for reference and is not applicable to Runway 4/22 at UIL.

3 Part 77 is contained in Code of Federal Regulations (CFR), Title 14 – Aeronautics and Space, Chapter 1, Subchapter E, Part 77.

RUNWAY 4/22 AIRSPACE PLANNING CRITERIA

The definition of Part 77 surfaces at an airport reflects a variety of factors, but a primary defining factor is runway category (visual, non-precision instrument, or precision instrument) which reflects approach capabilities. Runway 4/22 is currently designated as a visual runway. It does not currently support existing instrument procedures.

Developing instrument approach capabilities at Quillayute Airport has been identified as a high priority, particularly to support emergency response and air ambulance flights. The airports geographic information systems (AGIS) survey, completed as part of the master plan update, provides obstruction data required to support the feasibility analysis and subsequent design of instrument procedures. Adding instrument capabilities to the Airport maintains a similar recommendation from the 2003 Quillayute Airport Master Plan, highlighting the importance of adding instrument capabilities for the benefit of public safety.

Preliminary instrument procedure coordination with FAA has been initiated within the airport master plan update project. Early technical evaluations of feasibility performed by FAA indicate that surrounding terrain and restricted airspace have a significant effect on instrument approach, missed approach, and departure procedure development and routings, although viable options appear to exist. At this time, detailed technical analyses of straight-in or circling non-precision instrument (NPI) procedure options have not been completed, nor have any final determinations been made about airspace use. Since there are several critical path design decisions that will not be made until project implementation, the master plan define and preserve the facility requirements needed to support a future NPI approach for both ends of Runway 4/22 on the updated ALP drawing set. This approach will provide design flexibility while protecting long-term options for the Airport.

A future approach visibility standard of 1-mile is assumed, which is consistent with instrument approaches currently being developed for general aviation airports in the region. This type of GPS approach does not require onsite electronic navigational aids or an ALS. Specific runway lighting improvements are required to support 24-hour day/night use of a future approach. The addition of NPI runway markings is assumed for both runway ends, although a final determination will be made during project pre-coordination in formal FAA design of the future approach(es).

The FAA critical aircraft designation (A-II Small) noted earlier in this chapter is consistent with aircraft weighing less than 12,500 pounds. This corresponds to the Utility runway designation in Part 77. A summary of visual and NPI Part 77 surface requirements for Runway 4/22 is provided in **Table 4-3**. The previous ALP airspace recommendation is also summarized for reference.

Instrument Procedure Development

For general aviation (GA) airports, non-precision instrument (NPI) approaches are the most common. Most new instrument procedures developed by FAA now utilize satellite navigation (SATNAV) technology with global positioning system (GPS) platforms. The most common NPI approach is an RNAV (GPS).[4] This type of approach provides electronic course guidance to the runway environment or a specific runway end. Pilots are responsible for maintaining prescribed altitudes during each stage of the procedure.

NPI approaches can be developed at airports with instrument or visual airspace defined for their runway(s). From a Part 77 airspace perspective, an NPI approach to a runway end (e.g., RNAV GPS Rwy 22) will require NPI airspace surfaces, whereas an approach to the Airport is designated as a circling (or circle-to-land) procedure that can be designed with visual airspace surfaces. The key distinction with a circling procedure is that the pilot must maintain visual contact with the existing runway environment after reaching the missed approach point (MAP), when proceeding to a runway end for landing. For a straight-in procedure, the pilot is guided electronically to the designated MAP. If visual contact with the airport environment is not established before reaching the MAP, the pilot is required to execute a missed approach procedure.

4 RNAV is an FAA acronym for “Area Navigation”

Both straight-in and circling RNAV GPS procedures typically require at least one-mile of visibility unless the runway is equipped with an approach lighting system (ALS). Instrument departure procedures are designed based on required aircraft climb gradients and obstruction clearance standards. An NPI circling procedure can be accommodated with visual existing airspace and runway markings. An NPI straight-in procedure requires NPI airspace and NPI runway markings.

TABLE 4-3: RUNWAY 4/22 - FAA AIRPORT DESIGN STANDARDS SUMMARY (DIMENSIONS IN FEET)

	EXISTING STANDARD	FUTURE STANDARD	2003 ALP PLANNING STANDARD
PART 77 SURFACE	Utility Visual (VIS)	Utility Non-Precision Instrument Visibility Not Lower than 1-Mile	Larger than Utility Rwy 4:Non-Precision Instrument (NPI) Visibility ≥3/4-Mile Rwy 22: Precision Instrument (PIR) Visibility 1/2-Mile
Width of Primary Surface	250 feet	500 feet	1,000 feet
Approach Surface Length	5,000 feet	5,000 feet	Rwy 4: 10,000 feet/ Rwy 22: 50,000 feet
Approach Surface Width (Outer End)	1,250 feet	2,000 feet	Rwy 4: 4,000 feet/ Rwy 22: 16,000 feet
Approach Surface Slope	20:1	20:1	Rwy 4: 34:1/ Rwy 22: 50:1-40:1
Transitional Surface	7:1 Slope to 150 feet above runway	7:1 Slope to 150 feet above runway	Same
Horizontal Surface Elevation	150 feet above airport elevation	150 feet above airport elevation	Same
Horizontal Surface Radius	5,000 feet	5,000 feet	10,000 feet
Conical Surface	20:1 for 4,000 feet	20:1 for 4,000 feet	Same

Source: Code of Federal Regulations (CFR), Title 14, Subpart E, Part 77

RUNWAY 4/22 AIRSPACE SURFACES AND OBSTRUCTIONS

This section describes the Part 77 airspace surfaces for Runway 4/22 based on future Utility runway and NPI standards.

The 2003 ALP airspace plan (Figure E2) listed a total of 8 obstructions (all trees) in the approaches for Runway 4, 22 and 12; and the primary surface for the closed Runway 12/30. The corresponding approach profile drawings depict large areas of trees for the identified obstructions, suggesting large groups of trees rather than a single obstruction. The drawings also depicted but did not define terrain penetrations in the future Runway 22 approach surface. The data source for the obstructions is not provided, but the identifications appear to be based on previous limited surveys or estimates. Based on these limitations, there is no value in evaluating obstructions depicted on the 2003 airspace plan drawings. An updated, detailed obstruction evaluation was performed and the AGIS data is incorporated into the updated ALP set. The AGIS data is used to populate obstruction tables in the updated Part 77 Airspace Plan, and related drawings in the ALP set (see Chapter 7). Part 77 obstruction clearing standards also apply to any future changes in runway configuration. Any obstacles identified in the AGIS are noted with recommended mitigation to the extent required by FAA for the current and future runway configuration.

This section describes the applicable airspace surface dimensions and slopes. The updated ALP drawing set depicts the recommended future runway configuration and serves as the primary reference for future obstacle removal projects in the Capital Improvement Plan (CIP) (Chapter 6).

Approach Surfaces

Approach surfaces provide defined descent paths for landing aircraft on runways (and helipads). The approach surface extends outward and upward from each runway end (at the end of the primary surface) along the extended runway centerline. The surface slope and dimensions are determined by the type of aircraft intended to use the runway, the most demanding approach planned for the runway, and the minimum visibility required for the approach.

The future NPI approach surfaces for Runway 4/22 are 5,000 feet long with a slope of 20:1. The inner width of the approach surfaces is 500 feet, which coincides with the width of the runway primary surface. The outer width of the approach surfaces is 2,000 feet.

Any approach surface penetrations identified in the AGIS for both the existing runway and any recommended future runway configuration are noted with recommended mitigation to the extent required by FAA. This may include removing, lowering, or lighting the object. Part 77 surfaces cannot be modified, although the FAA recognizes use of design features such as displaced thresholds and threshold siting surfaces/obstacle clearance surfaces to mitigate airspace penetrations.

Primary Surface

The primary surface is a flat rectangular plane of airspace longitudinally centered on the runway, extending 200 feet beyond each runway end (for hard surfaced runways). The primary surface has the same elevation as the runway centerline at its nearest point. The outer ends of the primary surface connect to the inner portion of the runway approach surfaces and the edges connect to the runway transitional surfaces.

The primary surface should be free of terrain or built item penetrations, except items with locations fixed-by-function (e.g., approach lighting, runway or taxiway edge lights, visual guidance indicators, airfield signs, etc.). Those items are required to be mounted on break-away (frangible) mounts. Other common items such as wind cones require a red obstruction light at the top of the mounting pole if it penetrates Part 77 airspace.

The primary surface for Runway 4/22 is 500 feet wide (Utility, NPI standard). No obstructions were listed for the future Runway 4/22 PIR primary surface on the 2003 airspace plan. If any primary surface obstructions are identified in the AGIS should be removed, lighted, or lowered to a height where it no longer penetrates the surface where feasible.

Transitional Surface

The runway transitional surface is located along the lateral edges of the primary surface and is represented by two planes rising perpendicularly to the runway centerline at a slope of 7 to 1. The transitional surface extends outward and upward to an elevation 150 feet above the airport elevation. The outer edges of the transitional surface connect with the horizontal surface (see below).

The transitional surface should be free of obstructions (i.e., parked aircraft, structures, trees, terrain, etc.). Common facilities located adjacent to runways such as hangars and parked aircraft are located to avoid transitional surface penetrations. When penetrations exist, the FAA typically requires removal or lowering when possible; fixed objects penetrations such as buildings may also be identified with roof-mounted obstruction lighting, although long-term removal is generally expected by FAA.

The transitional surfaces for Runway 4/22 begin 250 feet from runway centerline (Utility, NPI standard). No obstructions were listed for the future Runway 4/22 PIR transitional surfaces on the 2003 airspace plan. If any transitional surface obstructions identified in the AGIS, the object should be removed, lighted, or lowered to a height where it no longer penetrates the surface where feasible.

Horizontal Surface

The Horizontal Surface is a flat plane located 150 feet above the airport elevation. The horizontal surface boundaries for Utility runways are defined by 5,000-foot radii extending from each end of the runway primary surface. The outer edges of the radii for each runway end are connected with tangent lines, which taken together, define the outer boundary of the horizontal surface.

The horizontal surface for Runway 4/22 extends 5,000 feet from each runway end (200 feet beyond, on runway centerline) (Utility, NPI standard). No obstructions were listed for the future 10,000-foot Runway 4/22 PIR horizontal surface on the 2003 airspace plan. If any horizontal surface obstructions are identified in the AGIS, the object should be removed, lighted, or lowered to a height where it no longer penetrates the surface where feasible.

Conical Surface

The conical surface is an outer band of airspace that encircles the horizontal surface. The conical surface begins at the outer edge of the horizontal surface and extends outward 4,000 feet and upward at a slope of 20:1. The outer edge of the conical surface is 350 feet above airport elevation.

No obstructions were listed for the future Runway 4/22 PIR conical surface on the 2003 airspace plan. If any conical surface obstruction identified in the AGIS should be removed, lighted, or lowered to a height where it no longer penetrates the surface where feasible.

Airfield Pavement Strength and Condition

Airfield pavements are the single most important asset on an airport. Monitoring and planning for future improvements to the strength and condition of airfield pavements is critical to satisfying existing and future aeronautical demand.

AIRFIELD PAVEMENT STRENGTH

The published pavement strength rating for Runway 4/22 is 30,000 pounds for aircraft equipped with single-wheel landing gear (SW) and 50,000 pounds for aircraft with dual wheel landing gear (DW). The critical aircraft, Pilatus PC-12 NGX, has a maximum takeoff weight (MTOW) of 10,450 pounds on a single-wheel configuration landing gear. The pavement sections used for all taxiway and apron pavements are identical to the runway. It is recommended that the existing airfield pavements be maintained to preserve current capabilities. No options exist, short of reconstruction, to reduce the pavement strength provided by the original Portland Cement Concrete (PCC) sections.

AIRFIELD PAVEMENT CONDITION

The most recent WSDOT Aviation airfield pavement management system (APMS) inspection at Quillayute Airport was completed in 2018. The study provides predicted conditions for existing pavement, assuming no intervening maintenance, through 2025. **Figure 4-3** depicts the pavement condition for 2018 and 2025 on a scale of 0-100. The APMS does not recommend any pavement-related maintenance & repair work for the Airport in the 2019-2025 period. WSDOT Aviation reports that updated pavement inspections will be conducted statewide in the 2023-24 time period.

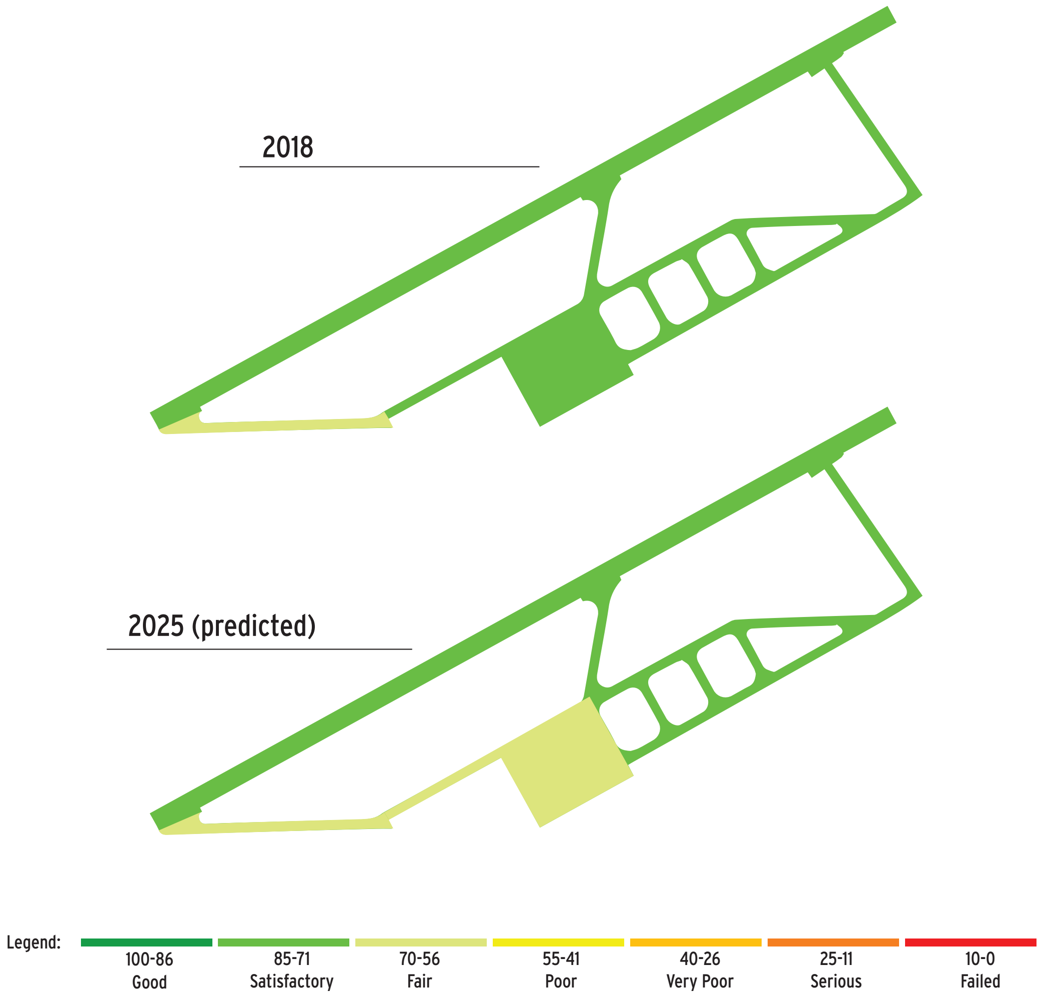
Major rehabilitation of concrete pavements (joint repair, corner repairs, spalling repair, etc.) is typically programmed on a 15 to 20-year cycle for planning purposes, depending on use and pavement design. The most recent airfield pavement maintenance project was complete in 2017 on Runway 4/22. This project included joint seal replacements, PCC partial depth patching, and crack sealing. The APMS work history indicates that the pavement repairs were previously completed on the runway in 2002, including slab replacement, joint seal replacements, and PCC partial depth patching.

A regular schedule of vegetation removal and joint repair should be periodically performed for all concrete pavement sections to maximize useful life. The required change in airfield design standards noted earlier may result in some existing pavements being reconstructed or modified before the end of their useful life to meet FAA standards. A prioritized list of pavement rehabilitation or reconstruction projects, and any recommended new pavements, will be provided in the updated capital improvement program.

The existing airfield pavements are in good condition overall, considering their age (80+ years). The taxiway system and eastern section of the main apron would benefit from vegetation removal, joint seal repairs, and crack filling. The runway will likely require similar restoration late in the current planning period. Photographs of several existing pavement sections are provided below.

Source: Century West Engineering

FIGURE 4-3: PAVEMENT CONDITIONS



Source: Washington State Department of Transportation Aviation
2018 Pavement Management Program Update

Source: Century West Engineering

FAA Design Standards

The airport design standards depicted on the 2003 ALP are summarized in this section to represent existing conditions. As noted earlier, the applicable airport design standards defined in this study are based on the critical aircraft identified in the updated aviation activity forecasts, which effectively maintains the ADG II planning guidance provided in the previous master plan. Non-standard facility conditions, and conditions that exceed the applicable standards will be been noted. These items will be addressed in the airfield development alternatives evaluations (Chapter 5) to ensure that all facilities meet or exceed FAA standards.

RUNWAY 4/22

Runway 4/22 was analyzed relative to runway orientation, runway length and width, and FAA design standards.

Runway Orientation and Crosswind Coverage

The preferred orientation of runways is a function of wind velocity, combined with the ability of aircraft to operate under given conditions. FAA has defined the maximum allowable direct crosswind (90-degrees) for small aircraft as 10.5 knots and 13 knots for larger general aviation aircraft. The FAA recommends an allowable crosswind component of 13 knots for Runway Design Code (RDC) A-II , which corresponds to the current and future critical aircraft. Current FAA guidance (AC 150/5300-13B, Table B-1) does not distinguish between large and small aircraft for RDC A-II and B-II. The FAA recommends that primary runways accommodate at least 95% of wind conditions. When this level of wind coverage is not provided, the FAA recommends consideration of a crosswind runway.

An updated evaluation of wind data was performed for Runway 4/22 based on the most recent ten years (2011-2020) of on-site observations. A new all-weather wind rose will be added to the updated ALP drawing. **Table 4-4** summarizes wind coverages for visual, instrument, and (combined) all-weather conditions for both small and large GA aircraft (10.5 and 13 knots). The wind analyses indicate that Runway 4/22 exceeds the FAA-recommended threshold of 95% coverage for a single runway configuration in each of the conditions and speed groupings listed. Based on current FAA criteria, the 2003 ALP recommendation to reactivate Runway 12/30 would no longer be eligible for FAA funding based on the wind coverage provided by Runway 4/22.

TABLE 4-4: WIND ANALYSIS (UIL DATA)

Runway 4/22	
All Weather	
10.5 KNOTS	97.01%
13 KNOTS	98.55%
VFR	
10.5 KNOTS	97.62%
13 KNOTS	98.78%
IFR	
10.5 KNOTS	96.10%
13 KNOTS	98.25%

Source: Quillayute Airport (2003) ALP Wind Rose. National Climatic Data Center Station 94240 (1986-1995)

Runway Length

The FAA recommends using a "family of design aircraft" approach for defining runway length requirements at general aviation airports. *FAA AC 150/5325-4B, Runway Length Requirements for Airport Design* provides design guidance based on three families of aircraft differentiated by certificated maximum takeoff weights (MTOW): small airplanes (≤ 12,500 pounds), large airplanes (12,501 to 60,000 pounds); and regional jets and other large airplanes (> 60,000 pounds).

The aircraft most consistent with the FAA's August 2022 forecast approval letter for Quillayute Airport is the Pilatus PC-12 NGX, a single-engine turboprop commonly used by air ambulance operators and a variety of other general aviation users. The PC-12 NGX has a MTOW of 10,450 pounds and is included in the A-II small airplane category. This aircraft is consistent with runway length curves for small airplanes with a MTOW of 12,500 pounds or less (AC 150/5325-4B, Chapter 2, Figure 2-1). The small airplane grouping also captures most of the single-engine and multi-engine piston activity at the Airport. The standard for small airplanes with approach speeds of 50 knots or more and seating capacity of 10 or fewer seats (95% of the general aviation fleet) is appropriate for long term planning at Quillayute Airport.

The FAA provides the following information regarding percentage of fleet: *"This category applies to airports that are primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities.* ***Also included in this category are those airports that are primarily intended to serve low-activity locations, small population centers, and remote recreational areas."***

Utilizing the FAA runway length curves with the airfield elevation (194 feet MSL) and mean daily maximum temperature (69 degrees F) for Quillayute Airport, a recommended runway length of 2,900 feet is calculated. However, other FAA design guidance[5] recommends a minimum runway length of 3,200 feet for development of straight-in or circling instrument approaches with 1-mile or greater visibility minimums.

The existing runway is 4,210 feet long, which exceeds the 3,200-foot length recommended by FAA for instrument approach development by 1,010 feet. It is recommended that the current length of 4,210 feet be maintained in its current configuration, consistent with the FAA Seattle ADO support for maintaining existing capabilities at Quillayute Airport.

Runway length evaluations conducted in the 2003 Airport Master Plan were based on an existing 4,980-foot length of Runway 4/22. These evaluations were completed prior to the threshold relocation for Runway 22, which reduced usable runway length to the current 4,210 feet. The analyses concluded that 4,980 feet was adequate to accommodate the current fleet of aircraft using the runway, although *"a runway length of approximately 5,500 feet would provide better operational capabilities for the larger business jet aircraft that would use the airport in the future."* The recommended runway configuration depicted on the ALP was to return the usable runway eliminated by the threshold relocation for Runway 22, which would result in a future runway length of 4,980 feet. No additional pavement construction is required to restore the original runway length.

The City also has the option of identifying a runway extension reserve on the ALP, consistent with the future 4,980-foot length identified on the 2003 ALP. However, based on current and forecast activity, it appears that converting the runway reserve to active runway would not be eligible for FAA funding.

5 AC 150/5300-13B, Appendix K, Table K-1

FAA DESIGN STANDARDS

Runway Length

Standards: 2,900/3,200 feet – FAA-defined length required to accommodate 95% of small airplane fleet based on local airport conditions/ FAA recommended minimum length for instrument approach development.

Condition: Runway 4/22 (4,210 feet) exceeds the FAA defined length required to accommodate 95% of the small aircraft fleet and to support instrument approach development. The current length accommodates this category of use and is appropriate for a wide range of business class aircraft in most conditions.

Runway Safety Area (RSA)

Standards: A-II (Small Aircraft) standard is 150 feet wide or 75 feet each side of runway centerline and 300 feet beyond runway ends. Additional FAA standards include gradient, object clearing, and surface compaction.

Condition: The current RSA for Runway 4/22 meets ADG II (Small Aircraft) dimensional and condition standards. The outer edges of the RSA coincide with the pavement edges for the original 150-foot-wide runway. The eastern end of the RSA (Rwy 22 end) extends over the paved overrun (former runway section).

Runway Object Free Area (OFA)

Standards: A-II (Small Aircraft) standard is 500 feet wide or 250 feet each side of runway centerline and 300 feet beyond runway ends. Additional FAA standards include gradient and object clearing.

Condition: The current OFA for Runway 4/22 meets ADG II (Small Aircraft) dimensional and condition standards.

Runway Obstacle Free Zone (OFZ)

Standards: A-II (Small Aircraft) standard for small airplanes is 250 wide or 125 feet each side of runway centerline, and 200 feet beyond runway ends. Additional FAA standards include object clearing and aircraft hold lines for taxiway connections to the runway.

Condition: The current OFZ for Runway 4/22 meets ADG II (Small Aircraft) dimensional standards The OFZ has historically been maintained to meet large airplane dimensional and condition standards (400 feet wide), consistent with ADG II.

Runway Protection Zones (RPZ)

Runway 4/22 currently supports visual approaches on both ends. Current approach capabilities are consistent the RPZ dimensions based on "visual and not lower than 1-mile" approach visibility minimums. Based on surrounding terrain and available instrument approach design options, future approaches are assumed to have visibility minimums not lower than 1-mile. As a result, existing and future Runway 4 and 22 RPZ dimensions for runway design code (RDC) A/B-II (small) are 250 x 450 x 1,000 feet. These RPZs are contained entirely within airport property, although Quillayute Airport Road traverses the outer section of the Runway 4 RPZ. The inner section of the Runway 22 RPZ falls over the paved overrun (former runway section) that extends 780 feet beyond the Runway 22 threshold.

The 2003 ALP depicts existing RPZs for both ends of Runway 4/22 based on ARC A & B-II dimensional standards. However, the "existing" RPZs represent future (planned), rather than existing approach visibility criteria. There have been no changes in the runway's visual approach capabilities since the 2003 ALP was approved by FAA.

The RPZs depicted on the 2003 ALP are noted below:

- The Runway 4 RPZ is 500 x 700 x 1,000 feet with a "Future 1-Mile Approach Visibility Minimums" notation. Although no "existing" RPZ visibility is noted, the RPZ dimensions are consistent with the approach visibility standard "Visual and Not Lower than 1-Mile" defined by FAA at the time. The ALP depicts the existing RPZ being contained entirely within airport property. A north-south section of Quillayute Airport Road traverses the outer one-third of the RPZ. The ALP depicts a future realignment of this road "...outside the Runway 4 RPZ" that shifts the roadway west, while remaining on airport property. No future RPZ is depicted for Runway 4.
- The existing Runway 22 RPZ is 1,000 x 1,750 x 2,500 feet with a "Precision Approach ½-Mile Visibility Minimums." This approach criteria is consistent with the future GPS approach with vertical guidance reflected on the 2003 Airport Airspace Plan drawing. The future Runway 22 RPZ duplicates the existing RPZ dimensions, applied to the future 4,980-foot-long runway that relocates the Runway 22 threshold approximately 800 feet east of its current location. Small portions of these RPZs extend off airport property along their outer corners.

FAA DESIGN STANDARDS

Runway Protection Zone (RPZ)

Standards: A/B-II (small airplanes) standard for runway ends with visual or not lower than 1-mile visibility minimums is 250 x 450 x 1,000 feet (8.035 acres). RPZs should be owned by the Airport or under control by easement and should be clear of incompatible land uses such as roads and buildings, where feasible.

FAA Advisory Circular 150/5300-13B, Appendix I (section I.3; I.3.1-I.3.3) defines permissible land uses within RPZs, which include farming activities that meet other design clearance requirements, compliant irrigation channels, and non-public airport service roads that are under airport control. Incompatible land uses are defined by FAA in a 2012 interim guidance memorandum.

FAA DESIGN STANDARDS

Runway Width/Shoulders

Standards: A/B-II Small Aircraft standard width for runways with visual or not lower than 1-mile visibility is 75 feet. The standard for shoulders is 10 feet.

Condition: Existing Runway 4/22 width is 100 feet, which exceeds FAA standards. The runway width is defined by painted edge stripes within the original 150-foot-wide runway pavement section. The outer 25 feet on each side of the runway serve as paved shoulders. If future FAA funding is limited to the ADG II standard of 75 feet, it is recommended that new edge striping be used to define the active runway without removing excess PCC pavement slabs.

Runway Width/Shoulders

Runway 4 /22 is 100 feet wide with 25-foot-wide paved shoulders. The A/B-II (small airplanes) dimensional standard for runways with visual or not lower than 1-mile approach visibility minimums is 75 feet with 10-foot shoulders.

As noted in the existing conditions chapter, the existing 100-foot runway is marked within the original 150-foot-wide runway constructed in 1943. A project that narrowed the runway from 150 to 100 feet was accomplished by painting runway edge stripes within the paved surface and did not remove any original pavement. The quantity, size, and depth of the Portland Cement Concrete (PCC) slabs makes any pavement removal significantly more costly and complicated.

Runway Blast Pads

Runway 4/22 does not accommodate significant jet operations and therefore does not require blast pads, per FAA design guidance. The paved overrun beyond the Runway 22 end (150 feet wide) effectively serves as a blast pad, which exceeds FAA dimensional standards. If significant propellor wash is generated beyond the Runway 4 end, a surface treatment may be considered to stabilize loose material within a standard blast pad footprint in the extended runway safety area.

FAA DESIGN STANDARDS

Taxiway Width/Shoulders

Standards: Taxiway Design Group 1 (TDG 1A and 1B) standard width is 25 feet with 10-foot shoulders, which corresponds to the representative existing and future critical aircraft. This standard is recommended for all major taxiways at the Airport. TDG 1A standards are recommended for taxiways/taxilanes used exclusively by small aircraft (small airplane tiedown aprons, T-Hangar access). TDG 1A and 1B standards are identical.

Condition: All existing major taxiways at the Airport are 50 feet wide, which exceeds standards. Installing taxiway edge striping is recommended to define the active taxiways without removing excess PCC pavement slabs. The full width pavement effectively provides 7.5- or 12.5-foot-wide paved shoulders for 35 and 25-foot taxiways. The previous FAA design standard for ADG II taxiway width was 35 feet.

TAXIWAYS AND TAXILANES

The PCC taxiways and taxilanes on the Airport were designed and constructed in 1943 to accommodate large military aircraft. All major taxiways are 50 feet wide. Taxiway and taxilanes sections located within, or directly abutting the main apron are generally defined by the apron pavement itself, but are typically 50 feet wide.

Based on current standards and planning criteria, major taxiways and taxilanes at the Airport should be maintained to ADG II and TDG 1A/1B standards. Painted taxiway edge stripes are recommended to define usable areas of taxiway within their larger 50-foot-wide pavement sections, rather than removing or cutting pavement slabs for the purpose of narrowing. The edge markings would also define the limits of taxiway hold lines and related markings, and pavement maintenance.

The existing taxiway and taxilane components are described below.

Main Taxiway (Partial Parallel)

The main taxiway includes a center parallel section (approximately 2,100 feet long) and three angled sections of taxiway that connect at or near each runway end. The total taxiing distance from the western-most and eastern-most connections on the runway, is approximately 4,800 feet. The ADG II taxiway safety area (TSA) and taxiway object free area (TOFA) for the main taxiway are free of obstructions and meet FAA standards.

The three connecting taxiways for Runway 4/22 have acute angles that are less than the FAA-recommended 90-degree offset from the runway centerline. The connecting taxiways include one end taxiway (Rwy 4); one exit located near mid-runway (connects to the parallel taxiway near the northeast corner of the main apron); and one taxiway located near the end of Runway 22. The eastern taxiway uses the south section of the closed Runway 12/30 that connects approximately 410 feet west of the Runway 22 end. This taxiway requires aircraft back-taxiing on the runway for full-length departures on Runway 22. A closed taxiway continues past (east) the main taxiway's eastern-most connection to the runway to the east end of the 780-foot paved overrun at the Runway 22 end. The overrun is a non-movement area (marked with chevrons) and is not intended to support regular aircraft use.

The three taxiway connections to the runway do not have aircraft hold line markings. Based on the A-II small aircraft runway obstacle free zone (OFZ), aircraft hold positions (markings and signs) should be located 125 feet from the runway centerline, which coincides with the outer edge of the OFZ. Based on the previous ADG II large airplane standards established on the 2003 ALP, a 400-foot-wide OFZ would have been established with aircraft hold lines located 200 feet from runway centerline.

Taxilanes

The Airport has several taxilanes located within its landside area on the south side of Runway 4/22.

The main apron has a defined loop taxilane that provides access to a row of 15 small airplane tiedowns. The existing aircraft tiedowns are configured to meet ADG I standards for small airplanes (as depicted on in the 2003 ALP). The use of ADG II taxilane standards for portions of the main apron is appropriate to accommodate transient ADG II aircraft, consistent with the current and future critical aircraft.

A remnant of an original diagonal taxilane (unmarked) within the main apron provides a path between the main taxiway and the aircraft fueling area. However, a portion of this unmarked taxilane travels directly through the small airplane tiedown row. A reconfigured taxilane is recommended between the main taxiway and the fueling area that does not impact aircraft parking. Other areas of the main apron are accessed through unmarked routes. The sole aircraft storage hangar at the Airport is located near the back edge of the apron. Providing a defined ADG II taxilane to access the hangar area is recommended.

A series of taxilanes are located east of the main apron (south of the main taxiway), including four north-south stub taxilanes and a longer east-west taxilane. The unpaved areas bordered by the taxilanes are currently undeveloped but are depicted on the 2003 ALP as future hangar areas. The taxilanes are 50 feet wide.

FAA DESIGN STANDARDS

Runway – Parallel Taxiway/Taxilane Separation
Standards: A/B-II standard is 240 feet centerline-to-centerline separation between runway and parallel taxiway for visual runways and runways with visibility minimums not lower than 1-mile.

Condition: The separation between the runway and the parallel section of the main taxiway is 535 feet, which exceeds all ADG II standards (AAC: A-E). The 2003 ALP depicts a future south parallel taxiway for Runway 4/22 with a 300-foot runway separation. Based on planned approach visibility criteria, the applicable ADG II standard is 240 feet. The existing main taxiway system provides adequate service for Runway 4/22. The existing taxiway should be maintained until all higher priority improvements are completed.

Taxiway Safety Area (TSA)
Standards: The ADG II standard is 79 feet wide, or 39.5 feet each side of taxiway centerline along the sides the taxiway. Additional gradient standards apply.

Condition: All major taxiways at the Airport meet ADG II TSA gradient and clearance standards.

Taxiway Object Free Area (TOFA)
Standards: The ADG II standard is 124 feet wide, or 62 feet each side of taxiway centerline.

Condition: All major taxiways at the Airport meet ADG II TOFA clearance standards.

Taxilane Object Free Area (TOFA) Standards: The ADG II standard A/B-II standard is 110 feet wide, or 55 feet each side of taxilane centerline. This standard will be applied to all aprons that serve ADG II aircraft.

Condition: The terminal apron does not meet ADG II TLOFA clearance standards due to obstructions (aircraft parking, hangars, fuel equipment, fences, and crops). The east apron internal taxilanes also have the OFA clearance issue described for the parallel taxiway. Although the clear dimension (approximately 80 feet) between the adjacent “T” markings meets the 79-foot TLOFA standard, the clear opening is reduced to less than 79 feet when aircraft occupy the adjacent rows.

Landside Facility Requirements

Landside facilities at airports typically include aircraft parking apron(s), hangars, terminal, fixed base operator (FBO) facilities, aircraft fueling, surface access and automobile parking. Existing landside facilities at Quillayute Airport were analyzed based on conformance to current FAA design standards, condition, and their ability to meet future demand. Future facility demand is derived from the updated aviation activity forecasts presented in Chapter 3.

There are currently no based aircraft at Quillayute Airport. The Airport has one large hangar (historic WWII Quonset) that is not currently in service. Historically, most locally based aircraft were stored in the large hangar. The 2003 Airport Master Plan documented 2 based aircraft (antique military jets), and previous tenants (the Waco Aircraft Company) that occupied the hangar. It is anticipated that forecast growth in based aircraft in part will correspond to specific events, particularly the availability of hangar space for rent. The City of Forks' plan to restore the historic hangar and return it to service, is intended to provide secure aircraft storage at the Airport. Based on the area's exposure to severe weather and the distance to the Airport from the local community, the availability of secure aircraft storage is considered to be a critical factor in attracting local aircraft to Quillayute Airport. Longer term opportunities including the availability of buildable hangar sites are also considered to be important factors in attracting new aircraft to the Airport.

Overall, hangar improvements, the addition of airfield lighting and instrument capabilities, combined with existing airfield capabilities (e.g., runway length) are expected to increase utilization of the Airport for both local and transient aircraft during the current 20-year planning period. There are approximately 9 aircraft currently based at nearby Forks Municipal Airport. Landside Facility needs are summarized in **Table 4-5**, later in this section.

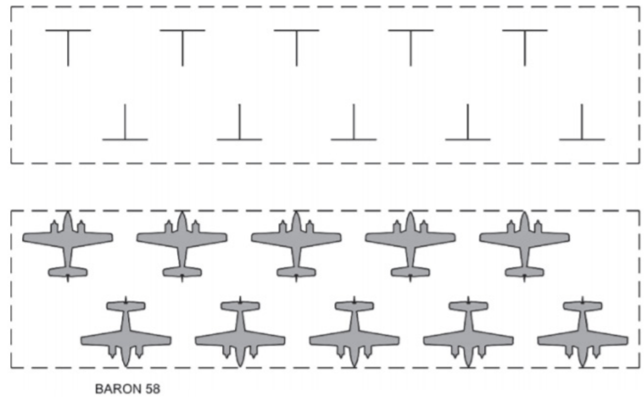
AIRCRAFT PARKING APRON

The evaluation of current and future apron requirements consider the type of aircraft to be accommodated. The main apron (approximately 469,000 sf/52,100 sy) provides access to aircraft parking, fueling, a building enclosure for a portable toilet, and one aircraft hangar. Currently, only the eastern section of the main apron is included in the WSDOT IDEA pavement inventory database and is maintained. The database lists the apron (A01-QU-01) at 273,402 square feet. However, a 1,250 x 50-foot section of the main taxiway that abuts the apron is included in the area calculation, which reduces the useable apron area to approximately 211,000 square feet (23,444 sy).

The existing apron is constructed of PCC that has significant service life remaining, including the sections that are not currently utilized or recently maintained. The overall apron area has adequate space to accommodate all forecast demand related to aircraft parking and fueling through targeted reconfigurations/rehabilitation of facilities and access taxilanes. The apron can also accommodate significant demand beyond the 20-year forecast through development reserves. In addition, the unused (excess) apron areas provide opportunities to accommodate future hangar construction. Based on these factors, it is anticipated that the future aircraft-specific landside improvements at Quillayute Airport such as parking, fueling, and hangar storage will not require new apron or taxilane pavements. Consolidating future landside improvements in the terminal area provides the most cost-efficient development opportunities for incremental or phased facility development.

Local and Transient Small Aircraft Parking (tiedowns)

Small airplane tiedown aprons are typically designed to meet ADG I standards, whereas GA aprons that accommodate both ADG I and ADG II aircraft, or a combination of fixed wing aircraft and helicopters, should be designed to meet the most applicable standard for each use. The existing double row of small airplane tiedowns (15 tail-in positions) is configured based on ADG I standards. A review of tiedown clearances to the adjacent taxilanes and taxiways is included in the landside alternatives evaluation. Since the tiedowns are located within a larger area of apron pavement no physical relocation of tiedown anchors is anticipated. New (repainted) taxiway centerlines will be established, as required based on FAA taxilane OFA clearing standards.



Source: Delta Airport Consultants, Inc.
Parking area for 10 Beech Baron 58 tie-down positions.

Transient GA Aircraft Parking

ADG II standards should be used for the main apron taxilanes and for a portion of transient parking spaces for ADG II aircraft. Fixed wing aircraft commonly used by regional air ambulance operators include single-engine and multi-engine turbine ADG II aircraft. The Pilatus PC-12 is representative of existing and future critical aircraft (A-II small) noted in the FAA forecast approval letter provided for this master plan update. It is recommended that ADG II parking positions be configured to facilitate drive-through parking with taxilane access connections to the main taxiway.

Transient Helicopter Parking

Helicopter parking spaces should be configured based on the most common size of aircraft anticipated. U.S. Coast Guard (USCG) Air Station / SFO Port Angeles regularly operates MH-65 Dolphin helicopters at Quillayute Airport. Technical specifications[6] for the MH-65 Dolphin (USCG Short Range Recovery Helicopter) are summarized here. The recent addition of USCG jet fuel storage at Quillayute Airport enables aircraft dispatched to support USCG Station Quillayute River, in LaPush, the outer Olympic Peninsula, and the northern Washington coast to extend their missions. This activity is expected to represent most helicopter operations at the Airport during the current planning period. The MH-65 Dolphin is recommended for sizing designated helicopter parking positions at the Airport. It is anticipated that most of the transient USCG helicopter activity at the Airport will involve aircraft re-fueling. For this reason, options for co-locating defined helicopter parking positions with existing jet fuel storage facilities on the main apron should be considered in the landside alternatives evaluation.

USCG HELICOPTER MH-65 DOLPHIN SPECIFICATIONS

- Length (with rotor blades): 44’ 5”
- Rotor Diameter: 39’ 2”
- Height: 13’ 3”
- Maximum Weight : 9480 pounds
- Range: 350 nautical miles

Based and Itinerant Aircraft Parking

The aircraft parking apron facility requirements for the current planning period were analyzed relative to existing FAA apron and aircraft parking analysis provided in *FAA AC 150/5300-13B, Airport Design*.

Although not specifically defined in current FAA general aviation apron design guidance, the FAA’s previous planning standard of 300 square yards for each based aircraft and 360 square yards for transient aircraft was used to calculate apron space requirements for long-term planning purposes. Space requirements for transient business aircraft and helicopter parking were estimated based on typical configurations. The evaluation of apron configurations in the Airport Development Alternatives (Chapter 5) reflect the aircraft using the facility, consistent with current FAA design guidance:

6 USCG Acquisition Directorate (dcmc.uscg.mil)

AC 150/5300-13B, Appendix E Section E.2.1. General aviation Apron, General Design Considerations.

1. *Evaluate apron parking positions and tie-downs for aircraft entry and exit under self-power and by tow.*
2. *Segregate parking areas for small aircraft (e.g., ADG I) from larger aircraft (e.g., ADG II) to optimize utility and efficiency of apron space.*
3. *Design separate apron areas to accommodate the critical aircraft intended to use the segment of apron.*
4. *Account for the effects of jet blast and propeller wash on adjacent aircraft and facilities…"*

Local and Transient GA Aircraft Parking

For planning purposes, it is estimated that 5% of future based aircraft would be parked on the apron full-time and 95% stored in hangars. Using this ratio (rounded) with the updated based aircraft forecast, it is estimated the Airport will require 1 small airplane tiedown position for based aircraft during the 20-year planning period.

Currently, 100% of flight activity at the Airport is generated by transient aircraft. Based on the updated forecast presented in Chapter 3, the share of transient activity is expected to be reduced to approximately 80% by the end of the planning period. Transient aircraft parking demand was calculated using a method described in *Airport Cooperative Research Program (ACRP) Report 113*. The ACRP method applies the following formula to the updated operations forecast to estimate future demand for transient aircraft parking:

$$(X/2 * T)/365 * P = \text{Number of Transient Parking Positions}$$

Where:
X = number of operations

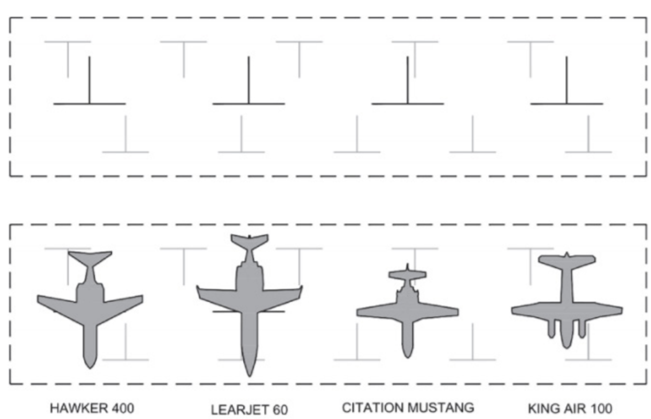
T = percent of operations that are transient (variable: 100%/80% estimated)

P = percent of transient aircraft that are parked on the apron at the same time (50% estimated)

A review of the 2021 aircraft operations presented in Table 3-15 in the Aviation Activity Forecast chapter, provides an indication of parking demand by aircraft type. The current operational split for aircraft is estimated to be 30% helicopters and 70% fixed wing aircraft. Since there are currently no locally based aircraft, current aircraft storage needs are assumed to be entirely for transient aircraft. For this exercise, current peak activity measures reflect 100% transient activity; the long-term forecast (2041) will include an 80%/20% split between transient and locally based aircraft. The projected transient aircraft parking requirements based on forecast busy day operations ranges from 3 to 9 during the current planning period.

Transient ADG II aircraft, primarily air ambulance and business aircraft (Pilatus PC-12 is typical) use the main apron for short-term loading/unloading and parking.

Development options for the main apron are included in the landside alternatives evaluation with the intent to meet applicable FAA standards.



Note: The lighter lines depict the nested tiedown positions available for small aircraft Source: Delta Airport Consultants, Inc.

It is noted that the standard parking area layout dimensions for ADG I aircraft provided in *FAA AC 150/5300-13B, Airport Design*, would accommodate larger and small transient aircraft, although the TLOFA clearances may create practical limitations for larger aircraft movement in and out of the parking areas. Conceptual parking area configurations capable of accommodating larger business or medevac aircraft within small aircraft parking areas are depicted in the diagram to the right.

Transient Helicopter Parking

Based on current and forecast activity, it is recommended that 2 transient helicopter parking positions be designated to accommodate a variety of users including air ambulance operators, USCG, military, and others.

Summary of Aircraft Parking Recommendations

Based on the overall demand projections, aircraft parking requirements for the current 20-year planning period include 5 small aircraft tiedowns for locally based and transient aircraft; 2 positions for larger transient fixed wing airplanes (drive-through parking); and 2 positions for transient helicopters. The balance of transient parking needs will be accommodated in small airplane tiedowns or in other unmarked areas on the main apron. For long-term planning purposes, a development reserve equal to 100% of the 20-year demand projection is recommended.

Aircraft Fueling Apron

The main apron currently accommodates two above-ground fuel storage systems (one active, one inactive) located near its southeast corner. The active facility was installed in 2022 by the U.S. Coast Guard (USCG) as a jet fuel storage cache to support its Port Angeles-based rescue helicopters. The inactive fuel system consists of two aviation gasoline (AVGAS) tanks owned by the City of Forks. The long-term plans for the city-owned fueling facilities are unknown, although local officials indicate that demand for AVGAS in the past was not sufficient to justify operating the system.

For long term planning, it appears reasonable to protect the existing fueling area to accommodate current and future needs. Future facility planning should define adequate area for multiple aircraft fueling positions and defined taxilane to/from adjacent taxiways and the fueling area. A common GA fueling area capable of accommodating above-ground tanks and two small aircraft fueling positions is approximately 600 square yards (5,400 sf). An area defined for two helicopter fueling positions and above ground storage tanks (approximately 1,050 square yards/9,450 square feet) is recommended to accommodate transient helicopter needs. As noted earlier, defining these areas will be accomplished by pavement markings and other modifications (bollards, etc.) within the main apron.

AIRCRAFT HANGARS

As noted earlier, there are currently no based aircraft at the Airport. For planning purposes, it is assumed that 95% of the Airport's future based aircraft will be stored in hangars with the remaining 5% parked on the apron. Due to small numbers involved combined with rounding, the 95% threshold for 6 based aircraft (5.7 aircraft) is roughly equivalent to 6 aircraft.

A planning standard of 1,500 square feet per based aircraft stored in hangars is used to project gross hangar space requirements (6 aircraft = 9,000 sf). The 2003 Airport Master Plan estimated that the existing Quonset hangar provided approximately 8,100 square feet of aircraft storage area. Based on the current plan for the City of Forks to restore the hangar in the early part of the planning period, it appears that the majority of the projected space requirements can be accommodated within the existing hangar. However, it is recommended that terminal area planning should also anticipate demand for new construction of both conventional and multi-unit hangars in the alternatives evaluation since individual aircraft owners' preferences vary. In addition, it is recommended that space be reserved for commercial hangars and mixed use buildings that could support prospective aeronautical, and aviation-related tenants.

It is recommended that space adequate to accommodate forecast demand for general aviation hangars, and 100% hangar development reserve be defined during the landside development alternatives process.

TABLE 4-5: APRON AND HANGAR FACILITY REQUIREMENTS SUMMARY

ITEM	BASE YEAR (2021)	2026	2031	2036	2041
Based Aircraft Forecast	0	1	3	4	6
Aircraft Parking Apron - Existing Aircraft Parking Type/Capacity					
Existing Tiedown Apron[1]	52,100 sy				
Aircraft Fuel Apron[2]	1,600 sy				
Small Aircraft Parking	15 Tiedowns				
Large Aircraft & Helicopter Parking[3]	0				
Projected Needs (Gross Demand)[3, 4]					
Locally Based Small Airplane Tiedowns (@ 300 SY each)	0 space / 0 sy	1 space / 300 sy	1 space / 300 sy	1 space / 300 sy	1 space / 300 sy
Small Airplane Itinerant Tiedowns (@ 360 SY each)	3 spaces / 1,080 sy	3 spaces / 1,080 sy	3 spaces / 1,080 sy	4 spaces / 1,440 sy	5 spaces / 1,800 sy
Large Aircraft Parking Positions (@ 625 SY each)	1 space / 625 sy	2 spaces / 1,250 sy	2 spaces / 1,250 sy	2 spaces / 1,250 sy	2 spaces / 1,250 sy
Transient Helicopter Parking / Fueling Positions (@ 525 SY each)7	2 spaces / 1,050 sy	2 spaces / 1,050 sy	2 spaces / 1,050 sy	2 spaces / 1,050 sy	2 spaces / 1,050 sy
GA Fueling Apron (@ 300 SY per position)	1 space / 300 sy	1 space / 300 sy	1 space / 300 sy	2 spaces / 600 sy	2 spaces / 600 sy
Total Apron Needs	**7 spaces / 3,055 sy**	**9 spaces / 3,980 sy**	**9 spaces / 3,980 sy**	**11 spaces / 4,640 sy**	**11 spaces/ 4,700 sy**
Aircraft Hangars (Existing Facilities)					
Existing Hangar Units/Aircraft Storage Capacity (≈8,100 SF)[5]	4-8 Small Aircraft				
Projected Needs (Net Increase in Demand)[6]					
Hangar Space Demand (@ 1,500 SF per space)[6] *(Cumulative twenty-year projected demand: 6 Units / 9,000 SF)*		1 Unit / 1,500 sf	2 Units / 3,000 sf	1 Unit / 1,500 sf	2 Units / 3,000 sf
Hangar Development Reserve		1 Unit / 1,500 sf	2 Units / 3,000 sf	1 Unit / 1,500 sf	2 Units / 3,000 sf
Total Hangar Units Forecast and Reserve *(Cumulative projected Demand and Reserve: 12 Units / 18,000 SF)*		2 Units / 3,000 sf	6 Units / 6,000 sf	2 Units / 3,000 sf	4 Units / 6,000 sf

Source: Century West Engineering
SY = Square yards, SF = Square Feet
Table 4-5 Notes:
1. Apron (A01-QU-01) pavement area as defined in WSDOT Airport Pavement Database (IDEA), less the area within the defined main taxiway.
2. Fueling area included in main apron area. The unmarked fueling area (approx. 1,600 SY) is adjacent to the existing above ground fuel tanks.
3. Parking for helicopters and large airplanes is accommodated in unmarked areas of the apron.
4. Apron parking demand levels identified for each forecast year represents estimated gross demand.
5. One (1) existing hangars included large Quonset conventional hangar. Total hangar area is estimated at 8,100 square feet (2003 AMP, Page A.6). This hangar is not currently in service.
6. Aircraft hangar demand levels identified for each forecast year represent forecast cumulative demand; assumed 95% of new based aircraft will be stored in hangars.
7. Transient helicopter parking and fueling positions assumed to be co-located adjacent to fuel tank.

GA TERMINAL/PILOT LOUNGE

The Airport does not currently have indoor facilities for pilots. An open front structure provides an enclosure for a portable toilet, garbage collection, vending machine, and an information board. Currently installed facilities vary.

The City of Forks plan to restore the existing WWII Quonset hangar to create rentable hangar storage may also provide an opportunity to provide basic facilities such as an indoor restroom and a pilot lounge. Options for these types of improvements can be determined as part of the building updates.

AIRFIELD INSTRUMENTATION, SIGNAGE, LIGHTING, AND MARKINGS

Airfield Lighting

Quillayute Airport is currently unlighted. Original runway edge lighting was reportedly decommissioned about 50 years ago and the fixtures were removed. The condition of the 80-year-old underground wiring, conduit, and electrical service lines cannot be determined without a detailed system assessment. For planning purposes, it is assumed that any new conventionally powered airfield lighting system will require installation of new service lines (trenching) fixtures, and a regulator building.

The installation of solar-powered airfield lighting systems has been identified by the Airport sponsor as viable alternative to conventional airfield lighting systems. The use of solar-powered lighting systems at airports has increased significantly in recent years. Based on the ongoing advances in solar technology and battery storage, it appears likely that broad use of solar powered airfield lighting will increase within the current 20-year planning period, in conjunction with FAA development of technical specifications for individual lighting systems (MIRL, PAPI, REIL, beacon, etc.) for eligibility for FAA funding. Cost estimates will be developed for conventional and solar lighting options in the master plan's updated capital improvement program (CIP) to allow a full comparison of costs and benefits when project implementation occurs.

The useful life for conventional airfield lighting systems is assumed to be 20 years, although some systems remain reliable and functional for longer periods. Solar-powered airfield lighting systems are currently performing with a typical 8-to-10-year replacement cycle. Based on local marine conditions, all airfield lighting systems should be marine grade to maximize useful life.

Runway & Taxiway Lighting

The planned development of instrument approach capabilities for the Airport requires the addition of runway lighting to support day/night operations. The 2003 master plan recommended installation of the lighting systems, similar to those described below, in addition to a full approach lighting system (ALS) For the future Runway 22 (in conjunction with a future precision instrument approach).

The airfield is currently unlighted. A basic lighting package is recommended for Runway 4/22 based on planned development of non-precision instrument approach capabilities. All new lighting systems will be LED, which provides superior bulb life and reduced energy consumption. It is recommended that all runway lighting be pilot-activated (CTAF radio frequency) with a shut off timer to reduce wear on the systems and to maximize battery life if solar-powered systems are used. The following lighting systems are recommended:

- **Medium Intensity Runway Lighting (MIRL)** consists of runway edge and threshold lights. MIRLs provide pilots with visual recognition of the runway when operating in dark or low visibility conditions.
- **Visual Glide Slope Indicators (VGSI)**. 4-Box Precision Approach Path Indicators (PAPI) are the FAA's current VGSI standard at GA Airports. PAPIs should be planned for both ends of Runway 4/22. PAPIs project red and white light beams outward and upward along the inner approach path to a runway end. The projected lights provide pilots with a visual indication of their vertical position relative to a defined standard glide path to provide more consistent approaches and landings. PAPI certification is required to meet FAA standards for providing an unobstructed glide path to a runway end, which is particularly important during dark conditions.
- **Runway End Identifier Lights (REIL)**. A REIL system consists of two sequenced strobes located at the outer corners of a runway end. REILs increase runway end recognition during darkness and periods of low visibility. REILs should be planned for both ends of Runway 4/22.

Airport Rotating Beacon. A rotating beacon is intended to indicate to pilots the location of an airport at night and to indicate reduced visibility or ceiling conditions during daytime hours. The beacon for land airports provides a 360-degree green and white flashes at regular intervals. The location and height of the rotating beacon on an airfield requires adequate clearance from nearby trees or built objects to avoid obstructing its visibility from the air. Beacons are designed to provide optimal visibility from 1 to 10 degrees above the horizon.

Airfield Signage. Mandatory airfield signs should be installed for Runway 4/22 at all taxiway connections to the runway. These signs may be internally illuminated or retroreflective. See the Airfield Signage section for additional information about recommended signage.

Note: Runway 4/22 and MIRL. As noted in the Existing Conditions Chapter, Runway 4/22 is 100 feet wide, with painted edge stripes defining usable runway within the original 150-foot-wide PCC pavement section. FAA design standards require edge lighting systems to be installed within a specific distance of the defined runway edges. The FAA standard width for Approach Category A/B-II runways is 75 feet. Installation of a wired MIRL system for either the current 100-foot, or a reduced 75-foot-wide runway will require extensive modification (e.g., trenching, conduit runs, etc.) to the existing concrete slabs. The WSDOT IDEA pavement database indicates the 1943 PCC surface course for the runway is 6 inches thick, although the actual slab depth has not been verified. The required pavement trenching (approximately 8,400 linear feet) for a wired MIRL system will significantly increase the cost of a standard MIRL installation. Benefits of current technology solar powered MIRL systems include simplified installation, field serviceable units, independent fixtures allow for simple replacement, and a high level of emergency readiness with no required wired backup power requirements. A final decision regarding wired or solar-powered lighting systems will be made by the Airport Sponsor at the time of project formulation. Cost estimates for both types of systems will be included in the update capital improvement program (CIP) for reference.

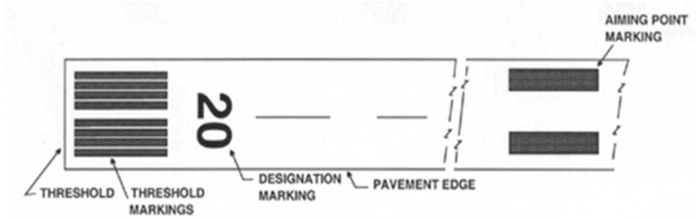
The 2003 Airport Master Plan recommendation to install an approach lighting system (ALS) for Runway 22 is no longer considered appropriate for the future instrument approach type FAA would typically develop for Quillayute Airport. The REILs noted above are effective in increasing runway recognition for aircraft in both visual and instrument weather conditions.

The taxiways at the Airport are not equipped with edge lighting or reflective markers. Based on the low volume of night operations at the Airport, installation of blue retroreflective edge markers for major taxiways is recommended in conjunction with airfield lighting projects. Regular replacement of reflective markers should be assumed as units are damaged or fade.

Runway Markings

The markings on Runway 4/22 are consistent with FAA standards for color (white), configuration, and current approach type (visual), and they are in good condition (repainted with previous runway project). The existing markings are also consistent with FAA requirements for non-precision instrument (NPI) approaches with circling (or circle-to-land) procedures. As such, this type of NPI approach can be developed with existing runway markings.

A future NPI approach with a straight-in procedure to Runway 4 or 22 would require NPI runway markings (threshold and aiming point markings) at the appropriate runway end(s). Standard markings including threshold and aiming point markings located approximately 1,000 feet from the landing threshold, in addition to runway end numbers and centerline stripe. All runway markings are white.



NONPRECISION INSTRUMENT RUNWAY MARKINGS

Future approach options will be determined during formal procedure design by FAA. The general need is for a basic NPI approach that provides approach visibility minimums not lower than 1-mile. The minimum descent altitude (MDA) for the approach will be determined by FAA during formal procedure design, based on vertical and lateral clearances from terrain and the ability to navigate in the vicinity of restricted airspace, for both inbound (approach) and outbound segments (missed approach and departures).

For airspace planning purposes, NPI markings are recommended for Runways 4 and 22. The updated ALP drawing set will depict future airspace required for NPI approaches to both ends of Runway 4/22 in order to protect for the best available instrument procedure. Early airport sponsor coordination with FAA will be required to ensure that the appropriate runway markings are in place in advance of actual procedure development, to meet FAA procedure design and programming criteria.

Taxiway Markings

The existing taxiway markings at the Airport are consistent with FAA standards for color (yellow) and configuration, except for the three existing taxiway connections to the runway, which do not have aircraft hold line markings. The major taxiways have centerline and edge striping (significantly faded). Several sections of the major taxiways have edge and centerline stripes that define a 35-foot-wide taxiway within a larger (50 feet wide) pavement area.

New taxiway markings are recommended for the major taxiways and connectors, including centerline and edge stripes, and aircraft hold lines for the three active taxiway connections on the south side of the runway. It is recommended taxiway markings be maintained consistent with the WSDOT Pavement Maintenance Program.

Aircraft Hold Line Marking (Generic)

To meet minimum FAA standards based on the current and forecast critical aircraft (Pilatus PC-12 – Taxiway Design Group 1A), the taxiway edge stripes should define a 25-foot-wide taxiway. Historically, 35-foot-wide taxiways have been defined at the Airport, which are consistent with long-observed FAA standards for ADG II airplanes. Similarly, the aircraft hold lines should be located at least 125 feet from the runway centerline to allow holding aircraft to remain outside the RDC A-II small airplane OFZ defined earlier in the chapter. Historically, a 400-foot wide OFZ has been protected for the runway (200-foot aircraft hold lines), which is consistent with RDC A/B-II for both small and large airplanes.

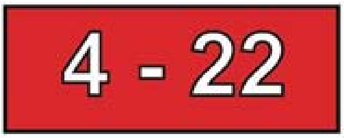
Airfield Signage

Quillayute Airport is not currently equipped with airfield signage.

Mandatory airfield signs should be installed for Runway 4/22 at all taxiway connection to the runway; additional signage is recommended for the major taxiway system. Airfield signage may be illuminated or reflective. The following signs are recommended for the airfield:

- (Mandatory) **Hold Position** signs [4-22] and [22-4] for each taxiway/runway intersection. Hold position signs should be co-located with aircraft hold lines at the outer edge of the runway obstacle free zone (OFZ). The FAA standard for this sign requires a red background with white numerals.
- **Taxiway Location** and **Inbound Destination** signs (directional guidance to the terminal area). The FAA standard for taxiway location signs requires a black background with yellow letters/numerals. Destination signs require a yellow background with black letters/numerals.

- **Runway Distance Remaining** signs. The signs mark 1,000-foot increments of runway length remaining in both directions for takeoff and landing rolls. The FAA standard for this sign requires a black background with white numerals.



Airfield Instrumentation

The Automated Surface Observation System (ASOS) is located on the south side of Runway 4/22, east of the main apron. The ASOS is located adjacent to the east section of the main taxiway that connects to the runway, near the Runway 22 end. The ASOS is approximately 83 feet north of the taxiway centerline at its nearest point, clear of both ADG I and II taxiway object free area (TOFA) setback requirements. The ASOS reportedly operates normally and provides the onsite weather observation data required by FAA to support a future instrument approach.

The 2003 ALP depicts a future relocation of the ASOS, related to a proposed development of a new section of parallel taxilane that would connect to a new (replacement) full length south parallel taxiway for Runway 4/22 (with a 300-foot runway separation). The ALP also depicts future multi-unit hangars in this area which would be partially located with the FAA-defined critical area (500-foot radius) for airfield weather observation units. The 500-foot ASOS critical area is not depicted on the 2003 ALP drawing but will be added to the updated drawing. The previous recommendations related to the future ASOS, taxilane/taxiway, and hangar locations will be reviewed in the updated development alternatives evaluation, although there are no pressing needs for these projects at present. Replacement of ASOS/AWOS units should be assumed on a 20-year schedule.

SURFACE ACCESS AND VEHICLE PARKING

The airport entrance road provides public vehicle access to the Airport's south landside facilities from a direct connection to Quillayute Road. The entrance has swing gate that can be locked. A small hard surfaced vehicle parking area (≈200 square feet) is located outside the gate. Additional parking is available on unused sections of the original apron pavement and building pads. It is anticipated that future hangar activity at the Airport will be consolidated within the expansive main apron area. Existing access and parking appear adequate to serve future needs. Upgrading the vehicle access gate to an automated controlled access gate (keypad or card swipe system) may be considered to increase overall security within the terminal area.

A second access road in the terminal area serves the National Weather Service (NWS) facilities at the Airport. The road currently provides access to an operations building, vehicle parking area, and a weather balloon launch facility located adjacent to the southeast corner of the main apron. NWS facility modernization may eliminate the operations building and allow an automated launch facility to remain. Public access on this road should also be secured.

It is recommended that the existing vehicle access points and parking facilities be maintained and improved as required to serve developed areas of the Airport. The Airport has the ability to accommodate compatible non-aeronautical development in areas not required for the Airport's aeronautical function. Any future development should include fencing and gates to control access to the airfield. Potential non-aeronautical development will be addressed in the alternatives evaluation.

Support Facilities Requirements

Support Facilities such as aircraft fueling, security/perimeter fencing, and utilities were also examined.

FUEL FACILITIES

As described in Chapter 2 –Existing Conditions, the Airport has two aboveground fuel tanks that are not are not currently in service. The long-term plans for the city-owned fueling facilities are unknown. Options for updating or replacing fuel storage at the Airport will depend on market conditions and overall demand.

The U.S. Coast Guard installed an aboveground tank on the main apron for jet fuel storage in 2022. This facility is intended to support USCG helicopters operating in the outer portion of the Olympic Peninsula.

For planning purposes, an aircraft fueling area capable of accommodating both fixed wing aircraft and helicopters should be identified in the main apron area.

UTILITIES

The existing airport utilities discussed in Chapter 2 –Existing Conditions, may require upgrades to support basic development of landside facilities in the terminal area. An updated evaluation of existing utility systems (water and sewer) is recommended to evaluate current capabilities and potential upgrades for both aeronautical and potential non-aeronautical users. Water system improvements may include well, water storage, and distribution lines for both fire protection and general use. An evaluation of existing septic/drain field systems may be appropriate to determine facility capacity and future needs. Electrical service on the airfield is limited, although underground service is extended to the ASOS located on the south side of Runway 4/22. It is recommended the existing utilities be updated and extended as required to facilitate new development.

PERIMETER FENCING/GATES

The perimeter of Quillayute Airport has areas of fencing including range fencing and chain link. A 2008 project added 2,500 feet of 7-foot chain link fencing along the south edge of the Airport bordering Quillayute Prairie Road. The fence was designed to encourage elk to migrate through the area diverting past Runway 4/22 and avoiding the adjacent road. Two manual swing gates were installed in the new fence section. The main airport gate is located at the entrance to the main apron; additional gates are located on the entrance to the NOAA weather station and near the south end of the closed runway (12/30).

Fencing should be added along the airfield perimeter, or the active airfield operations area, consistent with general security and elk migration requirements. An upgrade to the main airport access gate is recommended to include an electronic controlled (keypad or card swipe) automatic gate and a manual key pad pedestrian gate.

ON-AIRPORT LAND USE

Land use at Quillayute Airport includes both aeronautical and non-aeronautical uses. The Airport Land Use drawing in the 2003 ALP set (Figure E11) depicts five land use categories:

- Aeronautical Development
- Aeronautical Compatible Non-Aviation Facilities
- Aviation or Aviation-Related Development Sensitive Zone
- Airport Operations Protected Area
- Runway Protection Zone

This drawing will be updated as part of the development of the new ALP drawing set, to reflect current and planned facilities and uses. The updated land use plan will depict aeronautical facilities, development reserves, FAA-defined protected areas, and areas suitable for airport-compatible commercial or light industrial users. Future non-aeronautical land uses are consistent with the Rural Center and Limited Areas of More Intensive Rural Development (LAMIRD) designation assigned to Quillayute Airport by Clallam County. LAMIRDs are intended to support employment-related uses in rural areas.

The 2007 Quillayute Airport Forest Plan[7] defines approximately 429 acres of forestland within the overall airport boundary. The purpose of the forest plan is to provide sustainable management of the resource that includes "timber harvest and application of silvicultural systems and treatments to timber stands." Timber harvesting provides the majority of airport-generated revenue available for maintenance, operations, and capital projects at the Airport. Timber harvesting at the Airport is under the jurisdiction of Washington Department of Natural Resources (DNR).

SUMMARY OF FACILITY REQUIREMENTS

A summary of facility requirements for the 20-year planning period is presented in **Table 4-6**. Development reserves are recommended for all demand-driven facility needs such as aircraft parking and hangars.

TABLE 4-6: FACILITY REQUIREMENTS SUMMARY

Facility	Short Term (0-10 years)	Long Term (10-20 years)
Runway 4/22	ARC A-II Maintain existing length; preserve paved overrun (Rwy 22 end) for future use. Width: 75 feet/100 feet (if sponsor maintained) Repaint Edge Stripes NPI runway markings	ARC A-II Pavement Maintenance
Runway 12/30 (closed)	Preserve for emergency use	Same
Navigational Aids and Lighting	MIRL – Rwy 4/22 (LED) PAPI – Rwy 4/22 (LED) REIL – Rwy 4/22 (LED) Airport Beacon (LED)	System Replacement (as needed)
Main Taxiway	TDG 1A/1B Pavement Maintenance Install aircraft hold line markings/signs (clear of OFZ) on all taxiway connections to the runway Edge Reflectors Reflective Signage	Pavement Maintenance 90-degree connectors for exit taxiways
Main Apron	Reconfigure Apron and Taxilanes to meet ADG I & II standards: • Small Airplane Tiedowns • Business class airplane parking (drive-thru) • Helicopter Parking • Define Aircraft Fueling Areas Pavement Maintenance	Pavement Maintenance
Aircraft Fueling	Define Aircraft Fueling Area on Main Apron with Taxilane Access	Reserve for additional tanks
Weather	None	Replace ASOS at end of useful life
Hangars	Restore Historic WWII Hangar Define Additional Hanger Sites and Reserves	Same
Surface Access	Upgrade Main Airport Entrance Gate • Electronic Controlled Access (keypad or swipe)	Same
Security	Upgrade Airport Perimeter/Airport Operating Area (AOA) and Terminal Area Frontage Fencing Automated Vehicle Gates (Main Apron, Landside Developments) as needed, consistent with Elk management plan	Same Upgraded Exterior Lighting (with cutoff fixtures to control glare)
Utilities	Evaluate existing water and septic systems (capacity, service, condition) Extend Electrical to New Hangar Sites and other future development	Same
Property	None	Same

7 Quillayute Forest Plan (Pacific Forest Management, 2007)

Chapter 5

Alternatives Analysis

The evaluation of future development alternatives represents a critical step in the airport master planning process. The primary goal is to define a path for future development that provides an efficient use of resources, while accommodating forecast demand and the facility needs defined in the master plan. All project elements are consistent with the requirements of the Federal Aviation Administration (FAA).

Introduction

The current and long-term planning for Quillayute Airport (UIL) is based on improving the Airport's ability to support its core general aviation and public safety functions. Among the most important ongoing aviation activities at Quillayute Airport are U.S. Coast Guard training and search and rescue missions, and critical patient air ambulance transports for western Clallam County.

In addition, Quillayute Airport is an emergency response asset for the Olympic Peninsula and northwest Washington. At an elevation of nearly 200 feet above mean sea level (MSL), Quillayute Airport provides critical access and support capabilities for emergency operations in the event of a major natural or maritime disaster that could severely impact nearby coastal areas. The Airport also provides an important transportation link for major weather events such as wind or winter storms that can cut off surface access routes and power throughout the peninsula for extended periods. The operational side of these emergency response scenarios is comparable to a typical military or national guard response to a major event (earthquake, flood, etc.) in remote regions with limited facilities. Significant resources are rapidly mobilized as part of incident command systems, rather than maintained onsite in advance. Based on this "contingency" model, the master plan's alternatives evaluations are not driven by potential emergency response needs. The overall intent of the airport master plan is to address non-emergency facility needs for the current planning period while preserving emergency response capabilities to the extent feasible.

The primary airfield components at Quillayute Airport –runway, taxiways, apron, etc.— remain largely unchanged since their construction in 1943, and are able to satisfy the basic airfield needs associated with the most common emergency response functions described earlier. Although the airfield pavements have aged and some are currently not in use, virtually all original pavement remains intact and serviceable. The quality of the original airfield construction (military grade Portland Cement Concrete [PCC]), low accumulated historical air traffic (minimal pavement wear and tear), and the temperate maritime climate (minimal pavement stress due to freeze/thaw cycles or extended exposure to extreme temperatures), results in an existing facility that retains most of its original operational capabilities with minimal refitting or restoration required.

Development Alternatives Analysis Process

The facility requirements analysis defined a variety of aeronautical needs, including instrument approach development, new airfield lighting systems, hangar and aircraft parking improvements, new airfield signage and pavement markings, and ongoing pavement maintenance.

It is recognized that the Airport's emergency response capabilities are not duplicated in the region and cannot be easily replaced. It is recommended that the application of FAA dimensional standards driven by the current and future critical aircraft, is accomplished through marking and lighting installations within the existing runway/taxiway system. This approach, rather than removal of existing pavement to meet current FAA standards (e.g., runway or taxiway narrowing), allows underlying capabilities to be preserved.

As a result, the need for new airfield pavement construction during the current 20-year planning period is expected to be minimal. It is also noted that many of the future improvements reflected on the 2003 ALP (runway extension, new parallel taxiway, approach lighting system, etc.), are not consistent with the facility needs associated with long-term forecasts of aviation activity presented in this master plan update.

The master plan's development priorities focuses on redeveloping and reconfiguring existing paved areas to meet current and future needs. Modifications intended to meet current FAA design guidance for items like taxiway connections with runways, may require new construction to implement the desired geometry. In general, the runway and taxiway system meets or exceeds applicable FAA design standards for dimensions. As noted in Table 2-4 (Chapter 2), the original airfield pavement totaled approximately 2.5 million square feet (58 acres ±) of 6-inch thick reinforced PCC slabs. The process for improving facilities to meet future needs will involve adaptive redesign without physically removing obsolete facilities unless there are significant maintenance issues such as foreign object debris (FOD) generated by deteriorated pavements.

MASTER PLAN AREAS OF EMPHASIS

Table 5-1 summarizes the primary demand factors and corresponding facility needs that will be evaluated in the alternatives analysis. Individual facility development reserves are defined as 100% of the net forecast to account for uncertainty in predicting demand for new hangars and aircraft parking.

TABLE 5-1: SUMMARY OF FACILITY DEVELOPMENT NEEDS

Item	Defined Facility Needs in Current 20-year Planning Period
Runway 4/22	• Maintain existing length; determine future width (75'/100') during runway lighting project. • Upgrade Markings to NPI - Rwy 4 & 22
Instrument Approach	• Begin formal design process with FAA for development of non-precision instrument (NPI) approach procedure, consistent with ALP and AGIS data
Airfield Lighting	• Medium Intensity Runway Edge Lighting (MIRL) – Rwy 4/22 • Visual Glide Slope Indicators (VGSI) – Rwy 4 & 22 • Runway End Identifier Lights (REIL) – Rwy 4 & 22 • Airport Rotating Beacon
Major Taxiways	• Maintain Existing Taxiway (A) » Centerline and edge stripes » Aircraft Hold Lines for all runway-taxiway connections (Taxiways A1-A3) » Reflective Edge Markers » Mandatory and Directional Signs (Reflective) • Add new taxiway (A4) to Runway 22 end • Add 90-degree connections for Taxiways A1, A2, and A3
Terminal Area Facilities	• Define taxilane access required for planned aircraft use » Small Airplane Tiedowns » Transient Large Airplane Parking » Transient Helicopter Parking » Aircraft Fueling Area
Hangar Development	• Restore Existing WWII Hangar and Define/Protect Taxilane Access • Define New Hangar Sites and Taxilane Access

Overview

Terminal Area/Landside Facilities. The main apron provides approximately 10 acres of readily developable space for a wide range of aeronautical facilities and related support uses that includes aircraft parking, new hangar development, aircraft fuel, and other services. The western section (±211,000 square feet) of the apron has been removed from the WSDOT IDEA active pavement database. At Quillayute Airport, this is common for pavements that have been decommissioned, regardless of condition. The unused section of apron provides an economical redevelopment opportunity to accommodate future aircraft hangars with minimal site preparation. The concrete apron will provide a paved floor and foundation for new hangars, which normally represents a significant portion of new construction cost. The eastern section (±225,000 square feet) of the apron has ample space to accommodate aircraft parking and fueling needs. The development of hangars and related buildings outside of the main apron, similar to what is depicted on the 2003 ALP, can be accommodated through development reserves.

Airside Facilities. The preliminary airside alternatives focus primarily on the improvements needed to support a future instrument approach at the Airport. The original runway and taxiway pavements have significant service life remaining with dimensions that meet or exceed the applicable FAA design standards.

- Runway Dimensions. Maintain existing length, determine future width in conjunction with runway lighting project. Maintain defined runway width with painted edge stripes. Preserve original pavement (pavement removal not recommended).
- Runway Markings. Upgrade Runway 4 and 22 markings to Non-Precision Instrument (NPI) to support the best available NPI approach procedure FAA can design (final design to be determined by FAA after completion of the master plan update). Repaint markings as needed to maintain adequate visibility.

- Airfield Lighting. Install runway edge lighting, visual glideslope indicators (VGSI), and runway end lighting (REIL). Install airport rotating beacon. Consider solar-powered lighting systems as an economical and resilient alternative to conventional wired systems requiring backup power generation to ensure reliability. All airfield lighting systems will be LED with pilot-activated or photocell switches.
- Main Taxiway Dimensions/Markings. Define active taxiway areas with painted edge stripes and removable edge reflectors within 50 feet wide pavement. Repaint markings as needed to maintain adequate visibility.
- Aircraft Hold Lines. Install aircraft hold lines on all active taxiway connections to Runway 4/22 to meet applicable runway obstacle free zone (OFZ) clearance requirements for holding aircraft. Repaint markings as needed to maintain adequate visibility.
- Access Taxiway Connections. Construct new taxiway to Runway 22 end. Replace three acute angled exit taxiways (A1-A3) with 90-degree connectors, per current FAA design guidance. Add aircraft hold lines for new taxiways.
- Airfield Signage. Install Mandatory Instruction, Direction/Information, Taxiway Location, and Distance Remaining Signs. Reflective signs are recommended for Quillayute Airport to provide an economical, durable system.
- Closed Runway. Maintain closed runway (formerly Runway 12/30) for emergency use.

FAA PLANNING GUIDANCE

The evaluation process utilized in this study is based on guidance provided in *Advisory Circular (AC) 150/5070-6B Airport Master Planning*. Evaluation criteria categories supporting the evaluation of development alternatives include:

Operational Capability – Includes criteria that evaluate how well the airport functions and the ability to satisfy future activity levels, meets functional objectives such as accommodating the design aircraft, and provides for the most efficient taxiway system or aircraft parking layout.

FAA Design Standards – Includes an analysis of existing FAA design standards and various requirements or areas of focus currently identified by Advisory Circular.

Airspace Compatibility – Includes the identification and analysis of the impacts that proposed changes to the airport environment would have on the local and regional airspace systems.

Land Use, Transportation, and Environmental Compatibility – The preliminary alternatives are reviewed to identify potential issues that may affect comparison and implementation of the development concepts. The environmental review memo and the site conditions described in the Existing Conditions chapter are referenced in the applicable sections. A more detailed review will be performed for the development concepts that move to the next level of evaluation. This ‘best planning practices’ evaluation will expand on the earlier inventory work and is intended to provide a cursory analysis/identification of potential environmental effects, as defined in FAA Order 1050.1 Environmental Impacts Policies and Procedures and *FAA Order 5050.4 FAA Airports Guidance for complying with the National Environmental Policy Act (NEPA).*

By analyzing the development alternatives against the evaluation criteria presented above, and subsequently discussed with local stakeholders and interested airport users, an interactive process of identifying and selecting elements of a preferred alternative will emerge that can best accommodate all required facility improvements. Throughout this process, the Airport will seek public input and FAA consultation to shape the preferred alternative.

Once the preferred alternative is selected, a detailed capital improvement program is created that identifies and prioritizes specific projects to be implemented. The elements of the preferred alternative are integrated into the updated ALP drawings that will guide future improvements at the Airport.

Preliminary Development Alternatives

The preliminary development alternatives are intended to facilitate a discussion about the most effective way to meet the airside and landside facility needs of the Airport. The facility requirements previously defined for the Airport combined with the existing airfield capabilities results in a limited number of proposed improvements. For this reason, airside and landside elements have been consolidated to address all anticipated facility needs. Two “build” options are included in the group of preliminary development alternatives. These options are illustrated in **Figures 5-1 and 5-2** and are described below. The No-Build Alternative represents the status quo, or “no-change” option for the Airport. It is important to note the eventual preferred alternative selected by the City of Forks may come from one of the alternatives, a combination or hybrid of the alternatives, or a new concept that evolves through the evaluation and discussion of the alternatives.

The preliminary development alternatives are presented below:

- No-Build Alternative
- Alternative 1
- Alternative 2

NO BUILD ALTERNATIVE

A No-Build Alternative is included to represent the maintenance of existing facilities and capabilities. Unlike the active development alternatives that are intended to upgrade existing facilities and respond to future demand for facility needs, the No-Build Alternative represents a “no-action” option. The existing airfield would remain unchanged from its present configuration and the Airport would be operated in a “maintenance-only” mode.

No improvement in public use facilities would be planned, although construction of private hangars or related facilities could be accommodated within currently developed areas.

The primary result of this alternative would be the inability of the Airport to accommodate aviation demand beyond current facility capabilities, including the addition of instrument approach capabilities. Future aviation activity would be constrained by the capacity, safety, and operational limits of the existing facilities. In addition, the absence of new facility development effectively limits the airport sponsor’s ability to increase revenues and operate the Airport on a financially sustainable basis over the long term.

The no-action alternative establishes a baseline from which the other alternatives can be developed and compared. The purpose and need for the alternatives are defined by the findings of the forecasts and facility requirements analyses. The need to safely accommodate access and use of the public transportation facility provides the underlying rationale for making facility improvements. The timing of public investment in facilities is driven by safety, capacity, and the ability to operate an airport on a financially sustainable basis, whereas market factors generally determine the level and pace of private investment in hangars or other facilities at an airport.

Based on the factors noted above, the No-Build Alternative is inconsistent with the overall goal of providing a safe and efficient air transportation facility that serves the local community and surrounding areas, that is socially, environmentally, and economically sustainable.

BUILD ALTERNATIVES

The preliminary build alternatives depicted in **Figures 5-1 and 5-2** address runway, taxiway, and landside facility improvements. The basic components for these improvements were summarized in **Table 5-1**, earlier in the chapter. The proposed runway and taxiway improvements, including lighting, marking, and changes in taxiway geometry are common to both Alternative 1 and Alternative 2. The configuration of proposed landside improvements including aircraft parking, hangars, and taxilane access within the main apron vary between the alternatives.

ALTERNATIVE 1

Alternative 1 includes proposed airside and landside facility improvements. These improvements are summarized below and depicted in **Figure 5-1**.

Airside (Aircraft Movement Areas)

Runway 4/22

The existing length and configuration of Runway 4/22 is maintained. It is recommended that the future runway width be determined during the planned runway lighting project. The existing width (100 feet) exceeds the ADG II standard of 75 feet. The useable runway width is defined by painted edge stripes within the original 150-foot-wide runway pavement. Due to the complexity of the existing concrete runway construction, it is assumed that if narrowing is required, the past practice of defining usable runway with surface markings rather than pavement removal will be continued.

Non-precision instrument (NPI) markings are recommended for both runway ends to support future instrument approach development. The final procedure configuration will be determined by FAA based on its technical design, terrain clearance, and airspace requirements. Adding NPI markings at both runway ends will support both runway-specific straight-in procedures and circle-to-land procedures to the Airport. Protecting NPI approach surfaces for both runway ends is recommended to preserve future options.

Runway Lighting

Several runway lighting improvements are proposed to support development of an instrument approach procedure for the Airport. The purpose of the lighting is for the Airport to accommodate day and night operations in both visual and instrument weather conditions. All new airfield lighting systems will be LED. The proposed lighting systems are consistent with FAA standards for general aviation airports with NPI approach capabilities:

Medium Intensity Runway Lighting (MIRL). The MIRL system consists of edge and threshold lighting.

Precision Approach Path Indicators (PAPI). 4-box PAPIs are proposed for Runway 4 and 22. PAPIs are FAA-approved Visual Glide Slope Indicators (VGSI) that project red and white lights upward and outward for several miles along the extended centerline of the runway, to provide a visual glidepath to a runway end. PAPI certification requires an unobstructed glide path within a prescribed range (typically 3 to 4.5 degrees). Pilots determine their vertical position relative to the glidepath based on the color of lights observed, which allows corrections prior to landing.

Runway End Identifier Lights (REIL). REILs are proposed for Runway 4 and 22 to improve pilot recognition of the runway during periods of darkness or low visibility. REILs are generally recommended for runways without a dedicated approach lighting system (ALS) to improve safety.

The runway lighting systems may be pilot-activated with automatic shutoff timers to reduce system wear and energy consumption.

The addition of a rotating beacon is recommended to increase airport identification for pilots operating in the vicinity of the Airport. Airport beacons are installed (location and height) to ensure 360-degree visibility from the air for several miles. Airport beacons are typically installed on a dusk-dawn photocell switch.

As noted in the facility requirements evaluation, the option of installing solar powered airfield lighting exists and the final determination will be made during project formulation. The configuration of the proposed lighting installations is the same for conventional wired systems and independent solar-powered systems.

Taxiways

The configuration of the south taxiway (Taxiway A) is maintained with minor improvements. A new taxiway connector is proposed to provide direct access to the Runway 22 end from the current east end of Taxiway A. The three existing exit taxiways (A1, A2, A3) for Runway 4/22 are reconfigured/replaced with 90-degree angle connections, consistent with current FAA taxiway design guidance. Based on the low forecast volume of air traffic in the 20-year planning period, the previous planning recommendation to replace the current taxiway with a new south parallel taxiway is not maintained.

The major taxiways at Quillayute Airport are 50 feet wide. Narrowing the defined taxiways to the ADG II standard (25 or 35 feet) with pavement markings (edge and centerline stripes) is proposed to focus ongoing pavement maintenance efforts on the FAA-eligible pavement width. Aircraft hold lines are required for all active taxiways connecting to a runway to meet the runway obstacle free zone (OFZ) clearing standard for holding aircraft. Aircraft hold lines are recommended for the three existing taxiway connections (A1, A2, A3) on the south side of Runway 4/22, and for all future or reconfigured connecting taxiways. Reflective taxiway edge markers are proposed for the major taxiways, in conjunction with taxiway striping to improve pilot visibility.

The addition of reflective mandatory, location, and destination signs are recommended for the airfield:

- (Mandatory) **Hold Position** signs [4]/[4-22]/[22-4] for each taxiway/runway intersection. Hold position signs should be co-located with aircraft hold lines at the outer edge of the runway obstacle free zone (OFZ). The FAA standard for this sign requires a red background with white numerals. A new [22] sign is recommeneded to be installed in conjunction with the future taxiway connection to the end of Runway 22.
- **Taxiway Location** and **Inbound Destination** signs (directional guidance to the terminal area). The FAA standard for taxiway location signs requires a black background with yellow letters/numerals. Destination signs require a yellow background with black letters/numerals. Formal designations are recommended for existing taxiways (main taxiway: "**Taxiway A**," three existing exit/connecting taxiways "**A1**, **A2**, and **A3**." The designations should be noted on the updated ALP drawing and various FAA publications (e.g., chart supplement airport sketch). The proposed new taxiway connection to the Runway 22 threshold would be designated "**A4**."
- **Runway Distance Remaining** signs. The signs mark 1,000-foot increments of runway length remaining in both directions for takeoff and landing rolls. The FAA standard for this sign requires a black background with white numerals.

Instrument Approach

The addition of an instrument approach is among the highest priority improvements identified in the airport master plan update. For planning purposes, a straight-in NPI procedure (RNAV-GPS) with approach visibility minimums not lower than 1-mile, is assumed for both ends of Runway 4/22. The proposed NPI runway markings and lighting improvements noted above are consistent with the FAA facility requirements for instrumentation. The existing on-field Automated Weather Observation System (ASOS), meets FAA requirements for airfield weather data required for instrument procedures.

Landside (Aircraft Storage and Support)

Main Apron

This option organizes aircraft-related uses within the existing main apron. Pavement maintenance (similar to work completed on Runway 4/22) is recommended for the active sections of the main apron as part of the reconfiguration of taxilanes and aircraft parking areas. Restoration of currently unused areas of apron may be required to define taxilane access for future aircraft parking or hangars.

Several defined taxilanes are added to provide access between Taxiway A and the apron. Access is provided for the helicopter parking area, fueling area, existing small airplane tiedowns, and the existing hangar. Taxilanes are also defined for future large/small aircraft parking and new hangar developments. The addition of defined taxilanes (striping and markings) would be completed in incremental phases based on development requirements.

The current taxilane needs are related to the existing small airplane tiedowns and access to the aircraft fueling area.

The eastern section of the main apron is reconfigured to accommodate two transient helicopter parking positions and a defined aircraft fueling area for both USCG jet fuel and the existing aviation gasoline tanks (or any replacement tanks). The adjacent taxilane serving the small aircraft tiedowns is shifted west to accommodate the fueling area.

The existing row of 15 north/south-facing small airplane tiedowns is maintained in place, but the number of tiedowns is reduced (10 tiedowns) to accommodate the reconfigured apron and loop taxilane serving the south side of the tiedown row. The north-facing tiedowns are accessed from Taxiway A. A second double row of tiedowns (10 tiedowns), with extended ADG I taxilane access is located south of the existing row (reserved for future use). New aircraft parking areas are defined for large fixed-wing aircraft and helicopters.

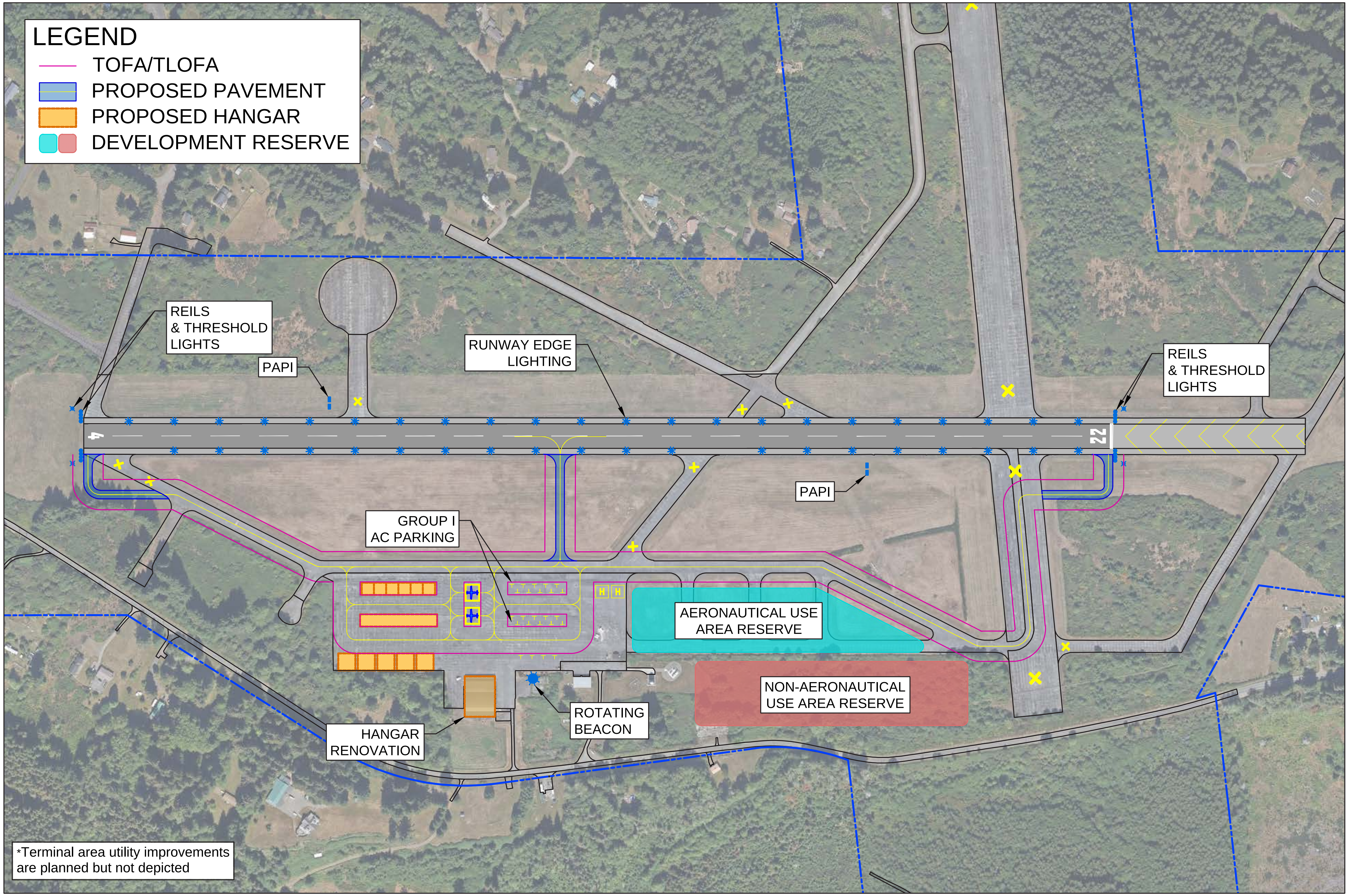
Two drive-thru ADG II parking positions for transient aircraft are located in the center section of the main apron (adjacent to the existing and future small airplane tiedowns), with defined ADG II taxilane access. These parking positions are intended to accommodate fixed-wing air ambulance aircraft and other transient business class aircraft.

Aircraft Hangars

This option provides for aircraft hangar storage within the terminal area. The layout includes both the existing large hangar and areas capable of accommodating new hangars on the western section of the main apron that is currently out of service. The City's plan to restore the historic WWII Quonset hangar and return it to active use is intended to provide facilities that are not currently available at the Airport – rental hangar space for indoor aircraft storage and related uses. Based on the configuration of the existing hangar, it is estimated that it will provide based aircraft storage capacity well into the current planning period. The defined taxilanes serving existing and future uses on the apron are also configured to provide access to the hangar. In addition to the existing historic hangar, three hangar rows for new multi-unit and conventional hangars, with dedicated taxilane connections to Taxiway A, are proposed on the currently unused western section of the main apron.

Development Reserves

Aeronautical and Non-Aeronautical Use Reserves are located in the eastern section of the terminal area. The aeronautical use reserve extends from the east end of the main apron and eliminates the rear taxilane connection to the apron. The development reserve maintains direct access to Taxiway A. The non-aeronautical use reserve area directly abuts Quillayute Airport Road to the south. The area has the ability of accommodating a wide range of airport-compatible non-aeronautical uses, consistent with Clallam County LAMIRD development standards that are intended to promote economic opportunities for the local area. The aeronautical use reserve is located in the undeveloped cutouts located east of the main apron. This area was recommended for future hangar development on the 2003 ALP. These areas are identified to preserve development opportunities that may exceed forecast demand for the 20-year planning period.


LEGEND
TOFA/TLOFA
PROPOSED PAVEMENT
PROPOSED HANGAR
DEVELOPMENT RESERVE
REILS & THRESHOLD LIGHTS
PAPI
RUNWAY EDGE LIGHTING
REILS & THRESHOLD LIGHTS
PAPI
GROUP I AC PARKING
AERONAUTICAL USE AREA RESERVE
NON-AERONAUTICAL USE AREA RESERVE
ROTATING BEACON
HANGAR RENOVATION
4
22
*Terminal area utility improvements are planned but not depicted

ALTERNATIVE 2

Alternative 2 provides a variation on future landside facilities configurations. As noted earlier, this option retains the airside elements of Alternative 1. **Figure 5-2** the proposed facility improvements for Alternative 2. This option reduces the size the transient helicopter parking area and the adjacent fueling area. The existing taxilane access east of the main apron is maintained and the cutouts and north-south taxilanes between Taxiway A and the rear taxilane are reserved for future aircraft hangars. The western section of the main apron is configured with north-south aircraft parking and hangar rows and taxilane connections to Taxiway A. Additional ADG II parking is provided west of the proposed drive-through parking positions.

A Non-Aeronautical Use Reserve is located in the eastern section of the terminal area, directly abutting Quillayute Airport Road to the south.

Additional details for Alternative 2 are summarized below.

Airside (Aircraft Movement Areas)

Runway 4/22

The existing length and configuration of Runway 4/22 is maintained. It is recommended that the future runway width be determined during the planned runway lighting project.

Non-precision instrument (NPI) markings are recommended for both runway ends to support future instrument approach development.

Runway Lighting

The lighting improvement included in Alternative 1 are maintained in this option.

Taxiways

The configuration of the south taxiway (Taxiway A) is maintained with minor improvements. The taxiway improvements included in Alternative 1 are maintained. The previous planning recommendation to replace the current taxiway with a new south parallel taxiway is not maintained.

Instrument Approach

Best available NPI approach is proposed. For planning purposes, a straight-in NPI procedure (RNAV-GPS) with approach visibility minimums not lower than 1-mile, is assumed for both ends of Runway 4/22.

Landside (Aircraft Storage and Support)

Main Apron

Reconfiguration of the existing apron to provide efficient future uses including fixed-wing and helicopter parking, aircraft fueling/fuel storage, hangars, and ADG I/II taxilane access.

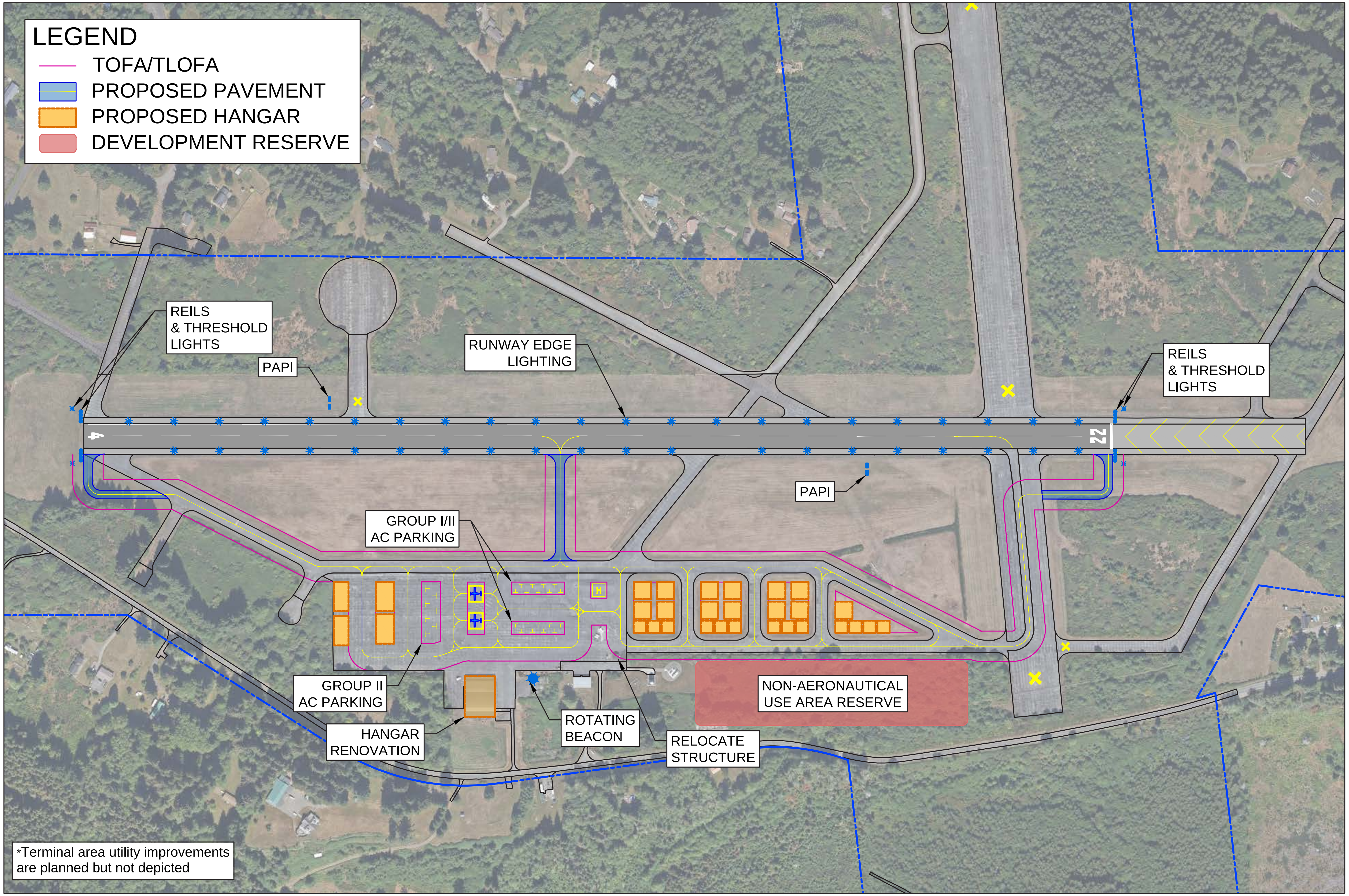
The eastern section of the main apron is reconfigured to accommodate 1 transient helicopter parking position and a defined aircraft fueling area for USCG jet fuel and the existing aviation gasoline tanks (or any replacement tanks). The adjacent taxilane serving the small aircraft tiedowns is shifted west to accommodate the fueling area.

The reconfiguration of the center section of the apron is the same as Alternative 1. The western section of the main apron is configured with additional (north-south) ADGII aircraft parking and hangar rows and taxilane connections to Taxiway A. These hangar rows would accommodate a comination of conventional hangar units or multi-unit hangars.

Aircraft Hangars

This option provides for aircraft hangar storage in the existing (renovated) WWII hangar and development of new hangar sites in the western section of the main apron for multi-unit or conventional hangars. The hangar rows and taxilanes are configured to run north-south with direct access to Taxiway A. Extension of basic utilities (water and electric) to the new hangar sites is anticipated.

Additional hangar development areas are identified east of the main apron in the cutouts between Taxiway A and the rear taxilane. Based on forecast demand, it is anticipated that this area will be identified as long-term reserve. The Non-Aeronautical Use Reserve is the same as Alternative 1.


LEGEND
TOFA/TLOFA
PROPOSED PAVEMENT
PROPOSED HANGAR
DEVELOPMENT RESERVE
REILS & THRESHOLD LIGHTS
PAPI
RUNWAY EDGE LIGHTING
REILS & THRESHOLD LIGHTS
4
22
PAPI
GROUP I/II AC PARKING
GROUP II AC PARKING
HANGAR RENOVATION
ROTATING BEACON
RELOCATE STRUCTURE
NON-AERONAUTICAL USE AREA RESERVE
*Terminal area utility improvements are planned but not depicted

Recommended Alternative Summary

The preliminary development alternatives were presented for public review and comment at a December 8, 2022 master plan project meeting. The project meeting was held virtually, with links provided to access the presentation materials and supporting documents. Project materials were subsequently posted on the airport master plan project website. Project-related comments and questions have continued to be accepted until the airport master plan is finalized.

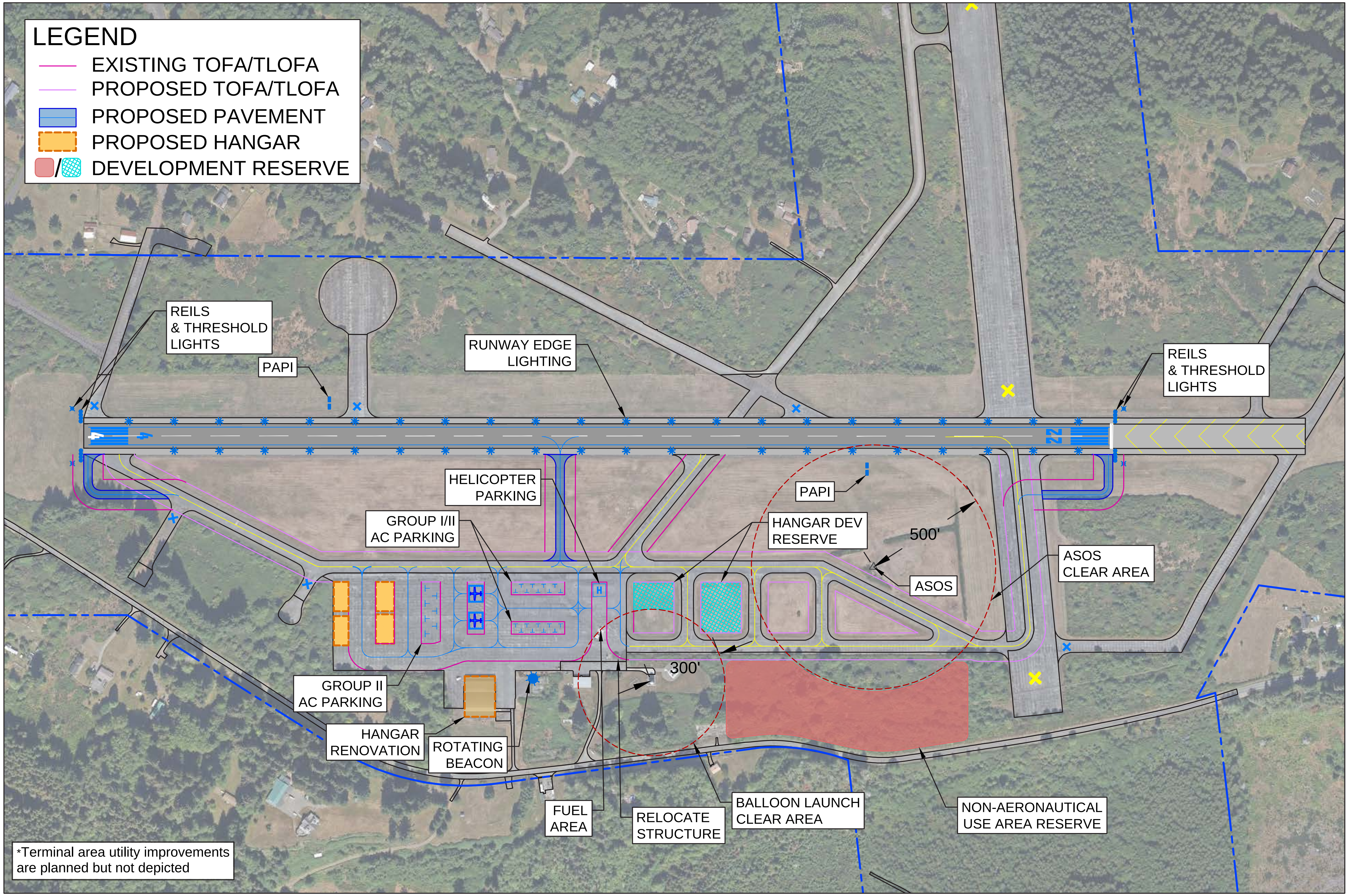
The City of Forks reviewed the preliminary alternatives and selected Alternative 2 as the preferred alternative for further refinement and incorporation into the Airport Layout Plan (ALP) drawing set, and the master plan's twenty–year Capital Improvement Program (CIP). **Figure 5-3** depicts the recommended improvements for the current 20-year planning period. Further refinement of the development concept is ongoing as the ALP is updated. The recommended preferred alternative will be reviewed by the FAA Seattle ADO.

The following improvements are recommended to be included in the preferred alternative:

- Runway 4/22 – maintain existing length; determine width based in conjunction with future runway lighting project; add non-precision instrument (NPI) markings at Runway 4 and 22 ends.
- Airfield/Runway Lighting – Airport Rotating Beacon; MIRL, PAPI, REIL (all LED).
- Instrument Approach Development. Request FsAA development of best available NPI approach.
- Taxiways – update striping and markings; add aircraft hold lines for all active taxiways connecting to runway; add edge reflectors; update taxiway geometry for runway connections; extend taxiway access to Runway 22 threshold.
- Signage – Add FAA-recommended signage to runway-taxiway system.
- Main Apron – reconfigure to provide large and small fixed wing aircraft parking, helicopter parking, aircraft fueling area, and future/reserve hangars.
- Hangars – renovate the existing WWII hangar for aircraft storage. Development areas for additional (new) hangar construction.

Minor refinements to the preferred alternative may be incorporated into the final ALP, as needed, to reflect ongoing airport activities and coordination with FAA.

- Taxiways – The original proposed location for a new 90-degree exit taxiway near the northeast corner of the main apron was shifted west based on input provided by local pilots. This refinement was added to the draft final ALP drawing submitted to FAA in August 2023.


LEGEND
EXISTING TOFA/TLOFA
PROPOSED TOFA/TLOFA
PROPOSED PAVEMENT
PROPOSED HANGAR
DEVELOPMENT RESERVE
REILS & THRESHOLD LIGHTS
PAPI
RUNWAY EDGE LIGHTING
REILS & THRESHOLD LIGHTS
HELICOPTER PARKING
GROUP I/II AC PARKING
PAPI
HANGAR DEV RESERVE
500'
ASOS
ASOS CLEAR AREA
300'
GROUP II AC PARKING
HANGAR RENOVATION
ROTATING BEACON
FUEL AREA
RELOCATE STRUCTURE
BALLOON LAUNCH CLEAR AREA
NON-AERONAUTICAL USE AREA RESERVE
*Terminal area utility improvements are planned but not depicted

Next Steps

The development alternatives are intended to facilitate a discussion about the most effective way to meet the facility needs of the Airport. The facility needs identified in the previous chapters include a variety of airside and landside items. This draft Alternatives Analysis chapter presents the preliminary alternatives and a summary of the preferred development elements supported by the City of Forks. This chapter has been submitted to the FAA for review and comment.

The following steps are required for project completion:

- Prepare project cost estimates and the 20-year CIP.
- Update ALP with recommended future improvements and AGIS survey data.
- Submit final draft of the AMP Report and ALP to City of Forks and FAA for review.
- FAA completes formal review and provides preliminary ALP approval.
- City of Forks and FAA approve the Final ALP.
- Documents revised as required; Final AMP Report and ALP published.

Chapter 6

Implementation Plan

Introduction

The purpose of this chapter is to present the City of Forks implementation program for the Airport Master Plan. This chapter includes:

- The 20-year Airport Capital Improvement Program (ACIP) that was developed based on the analyses conducted in the Facility Requirements and Development Alternatives evaluations (Chapters 4 and 5)
- A summary of airport operating revenues and expenses

The ACIP projects are summarized in **Table 6-1**, later in the chapter. The ACIP is organized into short, intermediate, and long-term planning periods that reflect both project prioritization and financial capabilities. Several factors were considered in determining project prioritization, including safety, forecast demand, the need to maintain/replace existing airfield facilities, and financial capabilities of both the City and FAA to support the development program based on existing funding sources. Minor pavement maintenance items such as vegetation removal and crack filling are not included in the ACIP, but will need to be undertaken by the city on an annual or semi-annual basis.

Airport Development Schedule and Cost Estimates

Cost estimates for each individual project were developed in 2023 dollars based on typical construction costs associated with the specific type of project. The project costs listed in the ACIP represent order-of-magnitude estimates that approximate design, engineering, environmental, other related costs, and contingencies. The estimates are intended only for preliminary planning and programming purposes. Specific project analysis and detailed engineering design will be required prior to project implementation to provide more refined and detailed estimates of the development costs.

These cost estimates can continue to assist management through adjustments to the 2023-dollar amounts to account for subsequent inflation as the plan is carried out in future years. This can be accomplished by converting the appropriate change in the United States Consumer Price Index (USCPI) to a multiplier using the following formula:

$$\frac{X}{I} = y$$

Where:
X = USCPI in any given future year
Y = Change Ratio
I = Current Index (USCPI)[1]

USCPI-U
302.92
(1982-1984 = 100)
April 2023

Multiplying the change ratio (Y) times any 2023-based cost estimate presented in this study will yield the adjusted dollar amounts appropriate in any future year evaluation. Several different CPI-based indices are available for use and any applicable index may be substituted by the airport sponsor in its financial management program.

The following sections outline the recommended development program and funding assumptions for the short-term, intermediate, and long-term projects. Overall project scheduling is defined based on the facility requirements needs identified in the master plan evaluation. The projected staging of development projects is based on a combination of needs and development priorities.

1 U.S. Consumer Price Index for All Urban Consumers (USCPI-U)

TABLE 6-1: 20-YEAR CAPITAL IMPROVEMENT PROGRAM - PROBABLE FUNDING SOURCES

Project #	Short Term Projects (2023-2027)	FAA	Local	Total Project Costs
1	WWII Hangar Repair	$302,400	$33,600	$336,000
2	NPI Instrument Approach Request	$-	$-	$-
3	NPI Markings (Rwy 4 & 22)	$274,500	$30,500	$305,000
4	Airfield Lighting Package A*	$247,500	$27,500	$275,000
	SHORT-TERM TOTAL (1-5 Years)	**$824,400**	**$91,600**	**$916,000**
Project #	**Mid Term Projects (2028-2032)**	**FAA**	**Local**	**Total Project Costs**
4a	Airfield Lighting Package B*	$1,530,000	$170,000	$1,700,000
5	Main Apron Reconfiguration - Phase 1	$360,000	$40,000	$400,000
6	Airport Utilities Assessment	$-	$200,000	$200,000
7	Main Taxiway Striping	$225,000	$25,000	$250,000
8	Airfield Signage Project	$27,000	$3,000	$30,000
9	Main Taxiway Edge Reflectors	$126,000	$14,000	$140,000
10	Automated Entrance Gate	$36,000	$4,000	$40,000
11	Repaint Markings (Rwy 4/22)	$270,000	$30,000	$300,000
	MID-TERM TOTAL (1-5 Years)	**$2,574,000**	**$486,000**	**$3,060,000**
Project #	**Long Term Projects (2033-2043)**	**FAA**	**Local**	**Total Project Costs**
12	Extend/Upgrade Airport Fencing (Phase 1)	$450,000	$50,000	$500,000
14	Repaint Markings (Taxiway A, A1-A3)	$135,000	$15,000	$150,000
15	Main Taxiway Pavement Rehabilitation	$855,000	$95,000	$950,000
16	Main Airport Entrance Road Maintenance	$90,000	$10,000	$100,000
17	NWS Area Access Road Maintenance	$90,000	$10,000	$100,000
18	Main Apron Pavement Rehabilitation - Phase 1	$675,000	$75,000	$750,000
19	Runway 4/22 Pavement Rehabilitation	$1,260,000	$140,000	$1,400,000
20	Main Taxiway - A1 Reconfiguration	$630,000	$70,000	$700,000
21	Main Taxiway - A2 Reconfiguration	$594,000	$66,000	$660,000
22	Main Taxiway - A3 Rehabilitation	$225,000	$25,000	$250,000
23	Main Taxiway - A4 New	$576,000	$64,000	$640,000
24	Main Apron Reconfiguration - Phase 2	$360,000	$40,000	$400,000
25	Repaint Markings (Rwy 4/22)	$270,000	$30,000	$300,000
26	Main Taxiway Edge Reflectors	$126,000	$14,000	$140,000
13	Extend/Upgrade Airport Fencing (Phase 2)	$450,000	$50,000	$500,000
27	Replace ASOS (AWOS-3PT)	$405,000	$45,000	$450,000
	LONG-TERM TOTAL (6-10 Years)	**$7,191,000**	**$799,000**	**$7,990,000**
	20-YEAR CIP TOTALS	**$10,589,400**	**$1,376,600**	**$11,966,000**

Typical FAA/local split for eligible projects is 90%/10%
*A: Solar powered Airfield Lighting Preferred by Airport Sponsor
*B: Conventional Wired Airfield Lighting Option as Alternative
Prepared by Century West Engineering

Capital Funding Sources & Programs

FAA grants provided through the federal Airport Improvement Program (AIP) are the primary source of funding for public use airports in the federal airport system. **Table 6-1** identifies the typical federal and local share of project costs based on current funding formulas. It is important to note that overall project eligibility for FAA funding does not guarantee availability of funding within the defined twenty-year time frame of the master plan.

FEDERAL GRANTS

The current AIP, reauthorized in 2018, is the latest evolution of a funding program originally authorized by Congress in 1946 as the Federal Aid to Airports Program (FAAP). Other appropriations of AIP funds go to states, general aviation airports, commercial service airports, and for noise compatibility planning. Any remaining AIP funds at the national level are designated as Discretionary funds and may be used by the FAA to fund eligible projects. Discretionary funds are typically used to enhance airport capacity, safety, and/or security and are often directed to specific national priorities such as the recent program to improve runway safety areas. AIP funds can only be used for eligible capital improvement projects and may not be used to support airport operation and maintenance costs.

The *FAA Reauthorization Act of 2018* extends funding through fiscal year 2023. AIP funding programs include:

- **AIP Entitlement Grants:** The AIP provides Entitlement funds for commercial service and cargo airports based on the number of annual enplaned passengers and amount of air cargo handled.
- **AIP General Aviation Non-Primary Entitlement (NPE) Grants:** The AIP provides Non-Primary Entitlement (NPE) funds for general aviation airports based on fixed amount of $150,000 per year. The NPE funds can be carried over for up to four years, or a maximum of $600,000. Unused NPEs may be “donated” to other GA airports within the state through the ADO, or the funds revert into a national pot for reallocation among all FAA regions.
- **AIP Discretionary Grants:** The AIP provides Discretionary funds to airports for projects that have a high federal priority or to enhance safety, security, or capacity. These grants are over and above Entitlement/NPE funding. Discretionary grant amounts can vary significantly compared to Entitlements/NPE and are awarded at the FAA’s sole discretion. Discretionary grant applications are evaluated based on:
  - Need;
  - The FAA’s project priority ranking system; and
  - The FAA’s assessment of a project’s significance within the national airport and airway system.
- **FAA Facilities and Equipment Funds:** Additional funds are available under the FAA Facilities and Equipment (F&E) program to purchase navigational aids and air safety-related technical equipment, including Airport Traffic Control Towers (ATCTs) for use at commercial service airports in the National Airport System. Each F&E project is evaluated independently using a cost-benefit analysis to determine funding eligibility and priority ranking. Qualified projects are funded in total (i.e., 100%) by the FAA, while remaining projects would likely be eligible for funding through the AIP or PFC programs. In addition, an airport can apply for NAVAID maintenance funding through the F&E program for those facilities not funded through the F&E program.

- As part of the economic recovery response to the COVID-19 pandemic, several supplemental funding programs were introduced that benefited airports. These included the American Rescue Plan (APRA) and the Bipartisan Infrastructure Law (BIL). These grant programs created temporary funding streams for airports beyond traditional AIP funding. BIL funding is anticipated to be used for the first phase of the WWII hangar renovation/restoration.

FAA funding is limited to projects that have a clearly defined need and are identified through preparation of an FAA approved Airport Layout Plan (ALP). Periodic updates of the ALP are required when new or unanticipated project needs or opportunities exist that require use of FAA funds and to reflect the status of completed projects. The FAA will generally not participate in projects involving vehicle parking, utilities, building renovations, or projects associated with non-aviation development.

Projects such as hangar construction or fuel systems are eligible for funding, although the FAA considers these types of project as a much lower priority than other airfield needs.

Airport sponsors accept obligations (grant assurances) when accepting FAA AIP grants. A summary of the applicable grant assurances is provided in **Appendix F**.

STATE FUNDING

The Washington State Department of Transportation - Aviation Division (WSDOT Aviation) provides an additional source of funding for airport projects in the form of grants through its Airport Aid Grants program. The Aviation Division has established grant criteria for airport sponsors requesting aid to define projects related to pavement, safety, maintenance, security, or planning.

Although Aviation Division funding is distributed widely to general aviation airports throughout the state, predicting any consistent level of funding for purposes of long-term financial planning is not possible. Competition for the limited grant funds is consistently high, with priority often given to airports with limited resources or to airports that are not eligible to receive FAA grants. Project funding is determined on a case-by-case basis and is affected by overall funding levels and competition among airports during any particular state budget cycle (biennium).

The current maximum grant award through the Aviation Division is $750,000. Due to the volume of grant applications received in any given cycle, large grant awards under this program remain relatively uncommon.

The WSDOT Aviation webpage provides the following information:

> *"On projects seeking state funds only, the airport sponsor must contribute a minimum 5 percent match of the entire project cost. If the sponsor is able, and would like to contribute a larger match amount, they certainly can and will receive additional points towards their total project application score during WSDOT Aviation's prioritization review of all grant applications.*
>
> *For projects receiving federal funds, it has been a long-standing practice of the Airport Aid Program to support airports in matching their Airport Improvement Program (AIP) grants. Currently, AIP grants require 10 percent of the project total to come from the airport sponsor. WSDOT supports grants to airports for up to half of their match requirement."*

For long-term planning purposes, the local share (10%) of FAA-eligible projects is assumed to be evenly split (5%/5%) between local and state levels in the updated CIP. However, since available funding levels in the state grant program may vary year to year, it is recommended that whenever possible, The City of Forks manage its capital program where WSDOT grants are supportive, but not essential to fully fund the local match required for FAA grants.

When WSDOT Aviation Division grant requests are successful, the required The City of Forks expenditure (local match) for FAA grants or funding non-FAA eligible projects will be reduced.

Community Aviation Revitalization Loan Program (description provided by WSDOT)

The Community Aviation Revitalization Loan Program was established by EHB 1102 and funded initially with $5 million. The revolving loan program is for revenue-producing capital projects that help public-use general aviation airports become more self-sustainable. The program funds are distributed with the guidance of the Community Aviation Revitalization Board (CARB).

As currently authorized, the program provides loans up to $750,000 at 3% interest to airports with less than 75,000 annual commercial enplanements, as reported to the FAA. Loans can have a maximum 20-year loan period and recipients can opt to have up to a 3-year loan repayment grace period. Loan recipients must commit to providing public access to the airport for a period equal to one and one-half times the loan's length. Eligible projects can include hangars, fueling facilities, business parks on airport property, paid parking facilities, passenger amenities, and other revenue-generating or cost-cutting developments that help make the airport more self-sustaining and less dependent on public funding.

State Capital Improvement Program (SCIP)

The FAA's Seattle Airport District Office (ADO) coordinates its capital improvement programming with state aviation agencies in Washington and Oregon. The coordinated program is known as the "state" capital improvement program, or "SCIP." SCIP is the primary tool used by FAA, state aviation agencies, and local airport sponsors to prioritize current and near-term future funding decisions through evaluation formulas and ongoing coordination. Airport sponsors provide annual updates to the short-term project lists to maintain a current system of defined project needs. The FAA and WSDOT Aviation schedule annual "joint planning conferences" (JPC) with airport sponsors to update the regularly SCIP.

LOCAL FUNDING

The locally funded portion of the CIP for the 20-year planning period is estimated at about $1.37 million as defined. The locally funded portion of the CIP for the 20-year planning period is estimated at about $1.22 million, as defined.

Local matching funds are generated through airport operating revenues and may include other capital funds, interfund loans, general fund support, or the issuance of long-term debt (revenue or general obligation bonds). The WSDOT CARB loan program is a similar form of long-term debt available to support eligible projects at Washington GA airports.

AIRPORT FINANCIAL OVERVIEW

The revenues currently generated at Quillayute Airport include facilities rents for the National Weather Service (NWS) weather observation equipment & operations, and periodic timber sales as part of the Airport's sustainable forest management plan.

A review of 2014-2021 City of Forks revenues and expenditures for Quillayute Airport indicates that three timber sales occurred (2016, 2020, and 2021) generating $50,000-$55,000 each year. In non-timber sale years, annual operating revenues at Quillayute Airport ranged from about $2,000 to $4,000, not including one-time items such as state or federal project grants. The facilities rental to NWS accounts for most of the airport-generated revenues.

Operating expenses for Quillayute Airport in a non-timber sale year range typically average $10,000 to $20,000, not including one-time capital expenditures or internal transfers or pass-throughs. The operating expenses increase ($15,000 to $28,000) when the costs associated with the timber sales are included. The operating expenses include operating supplies, communication, insurance, PUD services (utilities), repair & maintenance, sanitation, and miscellaneous items.

A review of the 8-year period shows that the Airport currently operates at a net loss (<$10,000) in years without additional timber revenues but generates net income >$30,000 in timber sale years. The City balances its operating budget and provides additional matching funds for FAA/WSDOT grants, through general fund transfers or use periodic timber sale revenues held in reserve. Over the eight-year period, the Airport generated a positive operational cash flow of approximately $53,000.

One existing hangar (large WWII hangar) at the Airport is not currently in service and is being restored. Once the hangar can accommodate tenants, it will provide a revenue opportunity for the City of Forks for aircraft storage or other commercial aeronautical uses. The U.S. Coast Guard (USCG) located a new aboveground jet fuel storage facility at the Airport in 2023 to support its Port Angeles-based helicopter operations in outer Olympic Peninsula.

Future revenue-generating opportunities at the Airport may include ground leases associated with any new (private) hangar construction and future build-out of the south terminal area. However, based on the limited scale and incremental pace of new development, future airport revenues are not expected to increase significantly during the current planning period.

Chapter 7

Airport Layout Plan

Introduction

This chapter presents the Airport Layout Plan (ALP) for Quillayute Airport (UIL). The ALP describes and graphically depicts recommended development for the airport based on facility needs and forecast demand. The recommendations shown on the ALP reflect the preferred alternative selected by the City of Forks, with input provided by the Federal Aviation Administration (FAA), airport stakeholders, airport users, and members of the community. The analyses and findings of the previous chapters provided the technical and policy guidance for this plan's outcome as reflected in the ALP.

The following sheets make up the set of drawings commonly referred to as the ALP:

- Sheet 1 – Title Sheet
- Sheet 2 – Airport Data Sheet
- Sheet 3 – Airport Layout Plan
- Sheet 4 – Terminal Area Plan
- Sheet 5 – Airport Airspace Plan (Part 77)
- Sheet 6 – Runway 4/22 Approach Plan & Profile
- Sheet 7 – Runway 4/22 Inner Approach Surface Plan & Profile
- Sheet 8 – Runway 4/22 Departure Surface Plan & Profile
- Sheet 9 – On-Airport Land Use Plan
- Sheet 10 – Off-Airport Land Use Plan
- Sheet 11 – Exhibit A - Airport Property Inventory Map
- Sheet 12 – Airspace Obstruction Data Tables (1 of 2)
- Sheet 13 – Airspace Obstruction Data Tables (2 of 2)

A brief summary of the individual drawings is provided below:

Title Sheet (Sheet 1 of 13)

The Title Sheet serves as an introduction to the Airport Layout Plan (ALP) drawing set. It provides the Airport's location and vicinity maps and an index of the drawings. Additionally, the FAA approval letter is embedded into the Title Sheet, in leu of signing the individual ALP sheets.

Airport Data Sheet (Sheet 2 of 13)

The Airport Data Sheet contains detailed runway and taxiway dimensions, applicable FAA dimensional standards, an all-weather (VFR+IFR) wind rose, and other data reflected within the ALP drawing set.

Airport Layout Plan (Sheet 3 of 13)

The Airport Layout Plan (ALP) drawing graphically depicts existing and future airfield facilities. Future facilities are color-coded to distinguish them from existing facilities. Future facilities are represented in the airport master plan's 20-year capital improvement program (CIP), as individual projects or project groupings.

No physical changes to Runway 4/22 are recommended, although an upgrade from the current "visual" to "non-precision instrument (NPI)" Part 77 Airspace designation is recommended to support new instrument approach capabilities. Future NPI runway markings are recommended for both ends of Runway 4/22, consistent with FAA technical requirements for approach procedure development. Future airfield lighting improvements include an airport rotating beacon, Medium Intensity Runway Lighting (MIRL), Runway End Identifier Lights (REIL), and Visual Glideslope Indicators (VGSI) for Runway 4 and 22. Several minor taxiway improvements are identified for consistency with current FAA design guidance. Several landside improvements (hangar sites, aircraft parking, etc.) are planned in the terminal area.

Terminal Area Plan (Sheet 4 of 13)

The Terminal Area Plan provides additional detail for existing and new landside facilities depicted on the ALP drawing, focusing on the main apron area and adjacent facilities (hangar, fueling facilities, pilot building, office, small aircraft tiedowns). The drawing depicts a future reconfiguration of aircraft parking and taxilane access to accommodate a wide variety of aircraft types (e.g., small aircraft, business class aircraft, and helicopters).

Redevelopment of the western section of the main apron is recommended to accommodate buildable hangar sites. The apron provides a readily buildable base for new hangars with adequate development area and required setbacks. The western section of the apron is not included in the WSDOT Aviation pavement inventory database and is not currently in active use. The Portland cement concrete (PCC) pavement has not received FAA-funded improvements or maintenance for 20+ years and therefore does not require any reimbursement of funds to FAA related to the planned aviation-use redevelopment. As noted in the alternatives' evaluation, no new pavement construction is required to accommodate the recommended future hangar or aircraft parking improvements.

The existing large hangar located at the back of the main apron is currently undergoing renovation and is expected to return to active aircraft use in the current planning period. The recommended reconfiguration of taxilanes protects both ADG I and II aircraft access to the large hangar and future hangar sites on the west end of the apron. A long-term taxiway improvement depicted on the ALP drawing adds a 90-degree exit connection from the runway, near the west end of the terminal area.

An area of future non-aeronautical land use (approximately 7.8 acres) is recommended near the east end of the terminal area. This area has direct frontage on Quillayute Road and currently accommodates one small warehouse building located east of the NWS facilities. Other parts in the terminal area include long-term development reserves for future hangars.

Airport Airspace Plan (Part 77) (Sheet 5 of 13)

The Part 77 Airspace Plan depicts the five "imaginary surfaces" for Runway 4/22, as codified in Title 14 of the Code of Federal Regulations (CFR), Part 77 - Safe, Efficient Use and Preservation of the Navigable Airspace. The surfaces defined in Part 77.25 include the primary, transitional, approach, horizontal, and conical surfaces. These surfaces were previously described in the Facility Requirements chapter. An Airports GIS survey completed as part of the airport master plan update, provides detailed elevation data for airfield facilities, terrain, and other built items.

The physical characteristics of the Part 77 surfaces for Runway 4/22 are defined by future approach capabilities and the size of aircraft using the runway. Based on the updated aviation activity forecasts approved by the FAA, Runway 4/22 is designated a Utility runway, which is designed to accommodate predominantly small aircraft (≤12,500 pounds). The runway is planned to accommodate future non-precision instrument (NPI) approach capabilities.

Part 77 surfaces should be free of built or terrain obstructions to the greatest extent possible. Objects that penetrate Part 77 surfaces may require action to mitigate (remove, obstruction light, etc.) depending on their severity, location, and the feasibility of the action. Obstacle elevations and locations presented on the Airspace Plan are documented in the 2022 AGIS survey data. The drawing is supplemented by tables detailing the obstacles with recommended dispositions.

The following Part 77 surfaces are defined for Runway 4/22, based on its ultimate Utility NPI airspace:

- **Approach Surfaces**: Runway approach surfaces are defined along the common approach path to a runway end. The approach surfaces for Runways 4 and 22 extend 5,000 feet from the ends of the primary surface. Both runway ends have an approach surface slope of 20:1, which represents the horizontal distance required for each increment of vertical rise. For Utility runways, 20:1 approach slopes are standard for both visual and non-precision instrument approaches. A total of 36 surveyed obstacles (trees) are identified within the approach surfaces, with penetrations ranging from less than 1' to 72'. The recommended disposition for the penetrating obstacles is "to be removed" (see Sheets 6, 7 and 13).
- **Primary Surface**: The primary surface is a flat plane of airspace centered on the runway, with the same elevation as the nearest point on the runway centerline. The surface is 250 feet wide and extends 200 feet beyond each end of the runway. One surveyed obstacle (terrain, north of runway) is identified within the primary surface, with a penetration of less than 2 feet. The recommended disposition for the penetrating obstacle is "to be removed" (see Sheet 13), which would likely involve simple re-grading.
- **Transitional Surface**: The transitional surfaces extend outward and upward from each side (outer edges) of the primary surface. The transitional surfaces have a slope of 7:1 and extend to an elevation 150 feet above airfield elevation (high point on runway) where they connect to the horizontal surface. A total of 50 surveyed obstacles (47 trees; 2 power poles; 1 windsock) are identified within the transitional surfaces, with penetrations ranging from less than 2' to 106' (see Sheets 6 and 13). The recommended disposition for the penetrating obstacles include "to be removed" (trees) and "to be lighted" (power poles). The windsock location is "fixed by function" and would typically be fitted with a frangible (breakable) mount and a red obstruction light.
- **Horizontal Surface**: The horizontal surface is a flat plane of airspace sitting 150 feet above airport elevation, which is defined as the high point on the runway. For Runway 4/22, the horizontal surface is drawn from 5,000-foot radii that extend from both ends of the primary surface, connected by tangential lines to form an oval. The outer ends of the horizontal surface are overlapped by the outer ends of the NPI approach surfaces. However, due to the 20:1 approach surface slopes, the horizontal surface elevation is 82 to 100 feet lower than the outer ends of the approach surfaces, which are 250 feet above the corresponding runway end elevations. A total of 15 surveyed obstacles (trees) are identified within the horizontal surface, with penetrations ranging from less than 1' to 27'. The recommended disposition for the penetrating obstacles is "to be removed" (see Sheet 13).
- **Conical Surface**: The conical surface is a band of upwardly sloping airspace that abuts the outer edge of the horizontal surface, extending at a slope of 20:1 for 4,000 feet. One surveyed obstacle (tree) is identified within the conical surface (1.6 miles north of runway), with a penetration of less than 3 feet. The recommended disposition for the penetrating obstacle is "to be removed" (see Sheet 13).

The Part 77 airspace surfaces are depicted on the drawing, along with the obstacles identified in the AGIS survey in the approach, horizontal and conical surfaces. Where scale allows, individual obstacles are identified. However, due to the number and density of obstacles in the approach and transitional surfaces for the runway, not all penetrating obstacles are individually identified on this sheet. Instead, these obstacles are depicted on the approach and profile drawings (Sheets 6 and 7). Obstacles within the future TERPS departure surfaces for the runway are depicted on Sheet 8. As noted earlier, the majority of surveyed obstacles are trees. No areas of terrain penetration were identified in the AGIS survey. All obstacles depicted on these drawings are listed in obstruction tables on separate drawings at the end of the ALP set (Sheets 12 and 13).

Runway 4/22 Approach Plan & Profile (Sheet 6 of 13)

The Approach Plan and Profile drawing depicts detailed plan and profile views of the existing/future approach surfaces and threshold siting surfaces for Runway 4/22. The drawing identifies penetrating obstacles and non-penetrating obstacles (provided for reference only) for the approach surfaces and the adjacent primary and transitional surfaces. The recommended disposition for the penetrating obstacles (trees) is "to be removed" (see Sheets 6, 7 and 13).

Runway 4/22 Inner Approach Surface Plan & Profile (Sheet 7 of 13)

The Inner Approach Surface Plan and Profile drawing depicts detailed plan and profile views of the inner portions of the existing/future approach surfaces and threshold siting surfaces, and the full plan view of the runway protection zones (RPZs). The drawing identifies penetrating obstacles and non-penetrating obstacles (provided for reference only) for the surfaces. The recommended disposition for the penetrating obstacles (trees) is "to be removed" (see Sheet 13).

Runway 4/22 Departure Surface Plan & Profile (Sheet 8 of 13)

The Departure Surface Plan and Profile drawing depicts detailed plan and profile views of the runway's instrument departure surfaces.[1] Instrument departure procedures for an airport are typically defined in conjunction with the FAA's approach procedure design. The drawing identifies penetrating obstacles and non-penetrating obstacles (provided for reference only) for the surfaces. All penetrating obstacles are trees, with the recommended disposition "to be removed" (see Sheet 12). In some cases, trees can be topped or the required departure climb rates can be increased.

On-Airport Land Use Plan (Sheet 9 of 13)

The On-Airport Land Use Plan depicts five land use categories common to general aviation airports. The land uses include:

- Airport Operations Area (runway, taxiway and protected areas)
- Runway Protection Zone (defined surfaces at runway ends)
- Aeronautical Development (aviation related development; hangars, aircraft parking, etc.)
- Aeronautical Compatible Non-Aviation Facilities (development that is compatible with the airfield's primary aeronautical functions)
- Aviation or Aviation-Related Development Sensitive Zone (compatible development in identified sensitive areas)

The land use classifications, originally defined in the 2003 airport master plan, have been updated for consistency with the current ALP drawing. As noted earlier in the master plan, Clallam County has land use jurisdiction for Quillayute Airport and the surrounding area. The zoning designation for the Airport is Western Region Rural Center (WRD) (CCC Chapter 33.15.045). The County's LAMIRD standards provide guidance for commercial or industrial development (CCC Chapter 33.22) on the Airport. The definition of airport-compatible non-aeronautical land uses provides the basis for the formal FAA process, known as AIP Section 163 Review, which is intended to streamline the process of developing land uses that benefit an airport's operational function. The process is designed to "pre-clear" designated areas within an airport's boundary for future non-aeronautical land uses, while protecting the land areas required to maintain the long-term aeronautical function of the airport.

1 U.S. Standard for Terminal Instrument Procedures (TERPS); FAA Order 8260.3D.

Off-Airport Land Use Plan (Sheet 10 of 13)

The Off-Airport Land Use Plan depicts the existing land use designations for the Airport and surrounding areas with the boundaries of the Part 77 airspace surfaces. The majority of the surrounding area is within the land use jurisdiction of Clallam County. Quillayute Airport has a **Rural Commercial – Western Region (WRC)** land use designation. The areas surrounding the Airport have A variety of rural land use designations: Western Region Rural Low, Commercial Forest, Rural Neighborhood Conservation, Parks and Recreation, and Quileute Reservation. The western portion of the Airport's Part 77 airspace (conical surface) extends over Olympic National Park.

Exhibit A - Airport Property Inventory Map (Sheet 11 of 13)

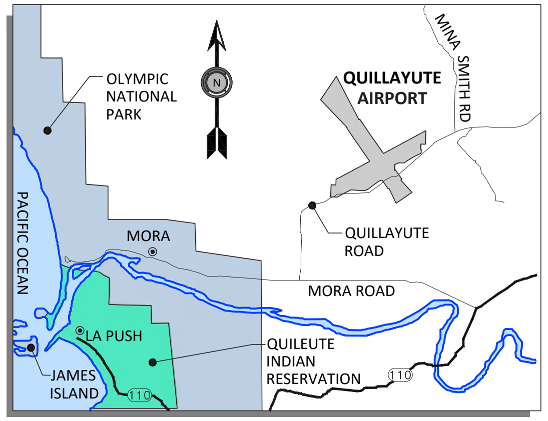
The Airport Property Map depicts all property owned or controlled by the City of Forks. The drawing notes the form of ownership or control (fee simple, easement, etc.), the date of acquisition per FAA guidelines, and the purpose for ownership. Total airport acreage is recorded as 753.4± acres, with transfer of ownership listed as 1999.

Airspace Obstruction Data Tables (Sheets 12 and 13 of 13)

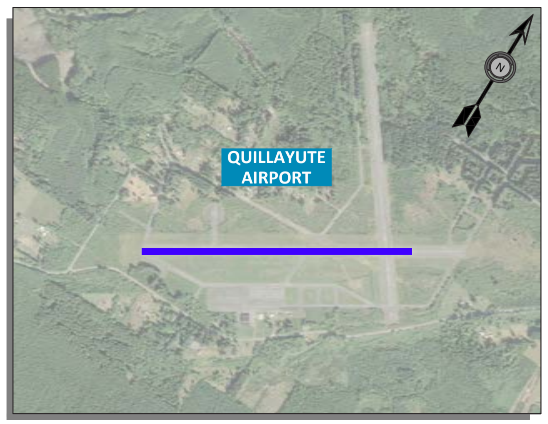
The obstacles depicted on several drawings in the ALP set are listed in tabular form on two separate drawings. All listed obstructions fall under their respective Part 77 surface category. The location, elevation information, and proposed disposition for each obstruction is provided in detail.

QUILLAYUTE AIRPORT (UIL)
AIRPORT LAYOUT PLAN

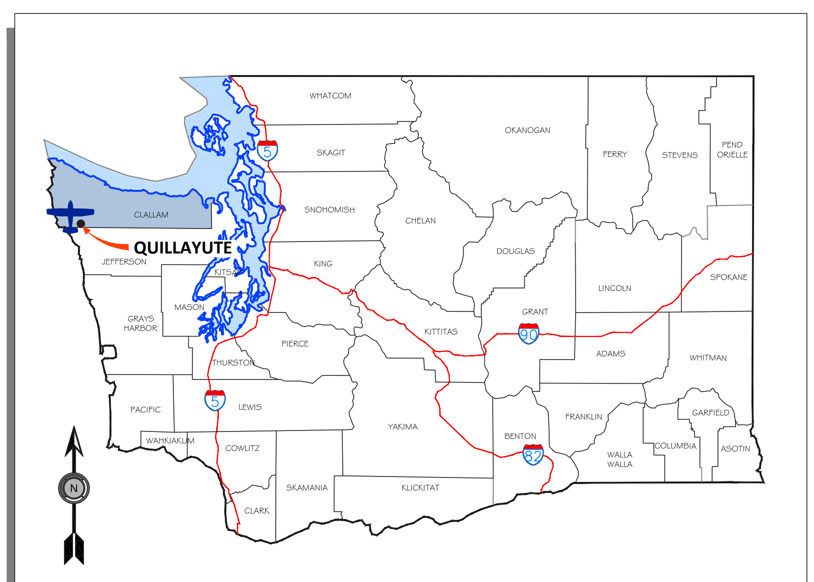
CITY OF FORKS, WASHINGTON
AIP NO. 3-53-0168-009-2021
AIRPORT MASTER PLAN
JANUARY 2024



VICINITY MAP



AERIAL PHOTO



LOCATION MAP

SHEET INDEX

NUMBER	REV. DATE	CONTENTS
1		TITLE SHEET
2		AIRPORT DATA SHEET
3		AIRPORT LAYOUT PLAN
4		TERMINAL AREA PLAN
5		AIRPORT AIRSPACE PLAN (PART 77)
6		RUNWAY 4-22 APPROACH PLAN & PROFILE
7		RUNWAY 4-22 INNER APPROACH SURFACE PLAN AND PROFILE
8		RUNWAY 4-22 DEPARTURE SURFACE PLAN AND PROFILE
9		ON AIRPORT LAND USE PLAN
10		OFF AIRPORT LAND USE PLAN
11		EXHIBIT A - AIRPORT PROPERTY PLAN
12		AIRPORT AIRSPACE PLAN OBSTRUCTION TABLES
13		AIRPORT AIRSPACE PLAN OBSTRUCTION TABLES

FAA APPROVAL LETTER

ALP APPROVAL

Quillayute Airport I Forks, WA

February 20, 2024

Background

The updated Airport Layout Plan (ALP) for the Quillayute Airport (UIL) represents a change to the general aviation area of the airport. This change was developed based on the conclusions of an informal planning study completed over the course of 2021-2024. An aeronautical study (no. 2023-ANM- 5281-NRA) was conducted on the proposed development. This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground.

ALP

Major changes in this January 2024 ALP from the previous 2003 version include:

Sheet 3 - Airport Layout Plan

- Runway 04/22
  - The existing/future runway length is 4,210'. This is a change from the 2003 ALP plan that identified a future runway length of 5,000'.
  - AAC/ADG (A-II Small) and Part 77 Designation (Utility- NPI). This is a change from the 2003 ALP (previously identified as ARC B-11, future PIR).
  - Previous recommendation to construct a new south parallel taxiway (replacing existing taxiway) is eliminated.
  - Previous recommendation to add future MIRL and PAPIs, and airport beacon is maintained.
  - Previous recommendation to add MALS-R on Runway 22 is eliminated.
- Former Runway 12/30
  - This runway is closed and is no longer identified as an existing or future runway. The southern section of the former runway is used as a taxiway (south of Runway 4/22).
- Taxiways
  - Runway 4/22 acute angled taxiway connectors (two) to be reconfigured to 90-degree connections.
  - Future taxiway section with 90-degree connector planned for Runway 22 access, east of closed runway.
- Landside
  - Taxilane reconfigurations are planned within the existing main apron to accommodate reconfigured aircraft parking areas and future hangar sites.
  - Main apron taxilanes based ADG-11 standards, which will serve existing and future hangar development and transient parking.
  - Designated helicopter parking area to be located adjacent to existing fuel facilities.
  - Future hangar sites are located on the west section of the main apron. This section of the main apron is not currently in use, has not received FAA maintenance funding in the last 20 years, and is not included in WSDOT IDEA database for UIL.

This ALP approval is conditioned on acknowledgement that any development on airport property requiring Federal environmental approval must receive such written approval from FAA prior to commencement of the subject development. This ALP approval is also conditioned on acceptance of the plan under local land use laws. We encourage appropriate agencies to adopt land use and height restrictive zoning based on the plan.

Approval of the plan does not indicate that the United States will participate in the cost of any development proposed. AIP funding requires evidence of eligibility and justification at the time a funding request is ripe for consideration. When construction of any proposed structure or development indicated on the plan is undertaken, such construction requires normal 45-day advance notification to FAA for review in accordance with applicable Federal Aviation Regulations (i.e., Parts 77, 157, 152, etc.). More notice is generally beneficial to ensure that all statutory, regulatory, technical and operational issues can be addressed in a timely manner.

Signature Blocks

The FAA signature below acknowledges approval of the ALP.

FAA: Agnes Fisher, Community Planner - Seattle Airports District Office

AGNES O. FISHER Digitally signed by AGNES O. FISHER Date: 2024.02.20 07:12:53 -08'00'

Airport Sponsor - City of Forks: Tim Fletcher, Mayor

Consultant- Century West Engineering: Samantha Peterson, Project Manager

Samantha Peterson Digitally signed by Samantha Peterson Date: 2024.02.05 11:26:42 -08'00'

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NO.	DATE	BY	APPR	REVISIONS

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APPROVAL DATE: ____________
SIGNATURE

CITY OF FORKS APPROVAL
APPROVAL DATE: ____________
SIGNATURE

CENTURY WEST ENGINEERING
BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	EDS	WMR	AS SHOWN
DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

TITLE SHEET

FIGURE NO. -

SHEET NO. 1 OF 13

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT IDENTIFIER	UIL	SAME
AIRPORT REFERENCE CODE	A-II SMALL	SAME
MEAN MAX TEMPURATURE	68.9°	SAME
AIRPORT ELEVATION	194.11	SAME
AIRPORT ACREAGE	753.4	752.6
NAVAIDS	NONE	APBN, PAPI, REILS, GPS
AIRPORT REFERENCE POINT	47° 56' 11.69" N, 124° 33' 45.42" W	SAME
MISCELLANEOUS FACILITIES	ASOS	ASOS, MIRL, TAXIWAY EDGE REFLECTORS
CRITICAL AIRCRAFT	A-II SMALL (FAMILY OF AC)	SAME
MAGNETIC DECLINATION (1)	15° 44' E ± 0° 24'	0° 6' W ANNUALLY
NPIAS SERVICE LEVEL	BASIC GA	SAME
	STATE SERVICE LEVEL	

1. NATIONAL GEODETIC SURVEY MAGNETIC DECLINATION CALCULATOR (HTTPS://WWW.NGDC.NOAA.GOV/GEOMAG/CALCULATORS/MAGCALC.SHTML) ACCESSED ON APRIL 5, 2023

RUNWAY 4/22 DATA

	EXISTING	FUTURE
RUNWAY IDENTIFICATION	4/22	SAME
RUNWAY DESIGN CODE - RDC	A-II(S)-VIS	A-II(S)-5000
APPROACH REFERENCE CODE - APRC	A/II(S)-VIS	A/II(S)-5000
DEPARTURE REFERENCE CODE - DPRC	A/II(S)	A/II(S)
PAVEMENT TYPE	PCC	SAME
PAVEMENT STRENGTH	30,000 SW/50,000 DW	SAME
RUNWAY PAVEMENT STRENGTH - PCN	N/A	N/A
RUNWAY SURFACE TREATMENT	NONE	SAME
RUNWAY GRADIENT	0.04%	SAME
PERCENT WIND COVERAGE	SEE WIND ROSE	
RUNWAY DIMENSIONS LENGTH AND WIDTH	4,210' x 100'	SEE NOTE
DISPLACED THRESHOLD	N/A	SAME
RUNWAY END COORDINATES		
RUNWAY 4	47° 56' 0.79" N 124° 34' 11.73" W ELEV: 176.4	SAME
RUNWAY 22	47° 56' 22.59" N 124° 33' 19.10" W ELEV: 194.1	SAME
RUNWAY LIGHTING	NONE	MIRL
RUNWAY PROTECTION ZONE	SEE RUNWAY DESIGN SURFACES TABLE	
RUNWAY MARKING	VISUAL	NON PRECISION
14 CFR PART 77 APPROACH CATEGORY	20:1	20:1
RUNWAY APPROACH	VISUAL	NPI
RUNWAY VISIBILITY MINIMUMS	VISUAL	≥ 1 MILE
AERONAUTICAL SURVEY REQUIRED	NVGS	SAME
RUNWAY DEPARTURE SURFACE	N/A	YES
RUNWAY SAFETY AREA - RSA	SEE RUNWAY DESIGN SURFACES TABLE	
RUNWAY OBJECT FREE AREA - OFA		
RUNWAY OBSTACLE FREE ZONE - OFZ		
THRESHOLD SITING SURFACE - TSS	TYPE 3	TYPE 4
RUNWAY VISUAL AND INSTRUMENT NAVAIDS	NONE	PAPI, REILS
TOUCHDOWN ZONE ELEVATION		
RUNWAY 4	187.3'	SAME
RUNWAY 22	194.1'	SAME
TAXIWAY AND TAXILANE SAFETY AREA - TSA	SEE TAXIWAY DATA TABLE	
TAXIWAY AND TAXILANE OBJECT FREE AREA - TOFA		
TAXIWAY AND TAXILANE SEPARATION		
TAXIWAY AND TAXILANE LIGHTING	NONE	REFLECTORS
VERTICAL DATUM	NAD83 (2011)	SAME
HORIZONTAL DATUM	NAVD88	SAME

NOTE: RUNWAY 4/22 PAVEMENT CURRENTLY EXCEEDS STANDARDS AND WILL BE MAINTAINED AT CURRENT WIDTH

RUNWAY 4/22 DESIGN SURFACES

RUNWAY PROTECTION ZONE

	INNER WIDTH	LENGTH	OUTER WIDTH
EXISTING RWY 4	250'	1,000'	450'
EXISTING RWY 22	250'	1,000'	450'
FUTURE RWY 4	SAME	SAME	SAME
FUTURE RWY 22	SAME	SAME	SAME

RUNWAY SAFETY AREA

	WIDTH	LENGTH BEYOND RUNWAY END & PRIOR TO THRESHOLD
EXISTING RWY 4/22	150'	300'
FUTURE RWY 4/22	SAME	SAME

RUNWAY OBJECT FREE AREA

	WIDTH	LENGTH BEYOND RUNWAY END & PRIOR TO THRESHOLD
EXISTING RWY 4/22	500'	300'
FUTURE RWY 4/22	SAME	SAME

RUNWAY OBSTACLE FREE ZONE

	WIDTH	LENGTH BEYOND RUNWAY END & PRIOR TO THRESHOLD
EXISTING RWY 4/22	250'	200'
FUTURE RWY 4/22	SAME	SAME

NOTE:

DECLARED DISTANCES

	EXISTING		FUTURE	
	RWY 7	RWY 25	RWY 7	RWY 25
TORA	4,210'	4,210'	4,210'	4,210'
TODA	4,210'	4,210'	4,210'	4,210'
ASDA	4,210'	4,210'	4,210'	4,210'
LDA	4,210'	4,210'	4,210'	4,210'

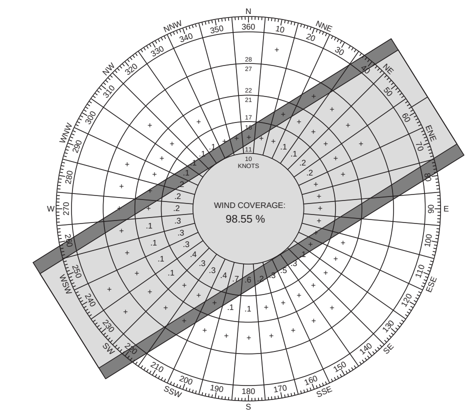
MODIFICATIONS TO DESIGN STANDARDS

APPROVAL DATE	CASE NUMBER	MODIFICATION	DESCRIPTION
NONE REQUIRED			

TAXIWAY DATA

	DESIGN GROUP	LIGHTING	TAXIWAY WIDTH	OBJECT FREE AREA WIDTH	SAFETY AREA WIDTH	RUNWAY SEPERATION
TAXIWAY A (EXISTING)	ADG-II/TDG-1B	NONE	50'	124'	79'	540'
TAXIWAY A (FUTURE)	SAME	REFLECTORS	SAME	SAME	SAME	SAME
TAXILANE (EXISTING)	N/A	N/A	N/A	N/A	N/A	N/A
TAXILANE (FUTURE)	ADG-II/TDG-B			110'	N/A	

NOTE: TWY A PAVEMENT CURRENTLY EXCEDES STANDARDS AND WILL BE MAINTAINED AT CURRENT WIDTH



ALL WEATHER WIND ROSE

SOURCE:
FAA AIRPORT DATA AND INFORMATION PORTAL
PERIOD OF OBSERVATIONS : 2011-2020
NUMBER OF OBSERVATIONS : 166,615
CALM OBSERVATIONS : 53,669

RUNWAY WIND COVERAGE

RUNWAY ALIGNMENT	CROSSWIND COMP. (KNOTS)	ALL-WEATHER WIND COVERAGE	VFR WIND COVERAGE	IFR WIND COVERAGE
RUNWAY 4	10.5	57.99%	59.89%	54.10%
	13	58.25%	60.18%	54.19%
RUNWAY 22	10.5	71.41%	67.41%	79.15%
	13	72.71%	68.30%	81.20%
COMBINED	10.5	97.01%	97.62%	96.10%
	13	98.55%	98.78%	98.25%

LEGEND

	EXISTING	FUTURE
PROPERTY LINE		
ON AIRPORT BUILDINGS		
OFF AIRPORT BUILDINGS		N/A
RUNWAY/AIRFIELD PAVEMENT		
PAVEMENT DECOMMISSION	N/A	
ROAD		
TAXIWAY MARKING		
RUNWAY MARKING		
AIRCRAFT PARKING AREA / TIEDOWNS		T T T
NON-AERONAUTICAL COMPATIBLE DEVEL. AREA		SAME
PAVEMENT MARKING REMOVAL	N/A	
BUILDING RESTRICTION LINE (BRL)	20' BRL	20' BRL
RUNWAY SAFETY AREA (RSA)		N/A
OBJECT FREE AREA (OFA)		N/A
OBSTACLE FREE ZONE (OFZ)		N/A
TAXIWAY OBJECT FREE AREA (TOFA)		
TAXIWAY SAFETY AREA (TSA)		
RUNWAY PROTECTION ZONE (RPZ)		N/A
GROUND CONTOURS	10'	N/A
AIRPORT REFERENCE POINT (ARP)		SAME
REIL	N/A	
THRESHOLD LIGHTS	N/A	
VISUAL GUIDANCE INDICATORS (PAPI)	N/A	
SEGMENTED CIRCLE / WIND INDICATOR		
FENCE (8' CHAINLINK)	x x	xx xx
BEACON	N/A	
ASOS		SAME
MEDIUM INTENSITY RUNWAY LIGHTS (MIRL)	N/A	

NOTE:

1. AGIS SURVEY - SEPTEMBER 2021, PROVIDED RUNWAY END COORDINATES AND ELEVATIONS.

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APPROVAL DATE:

SIGNATURE

CENTURY WEST ENGINEERING
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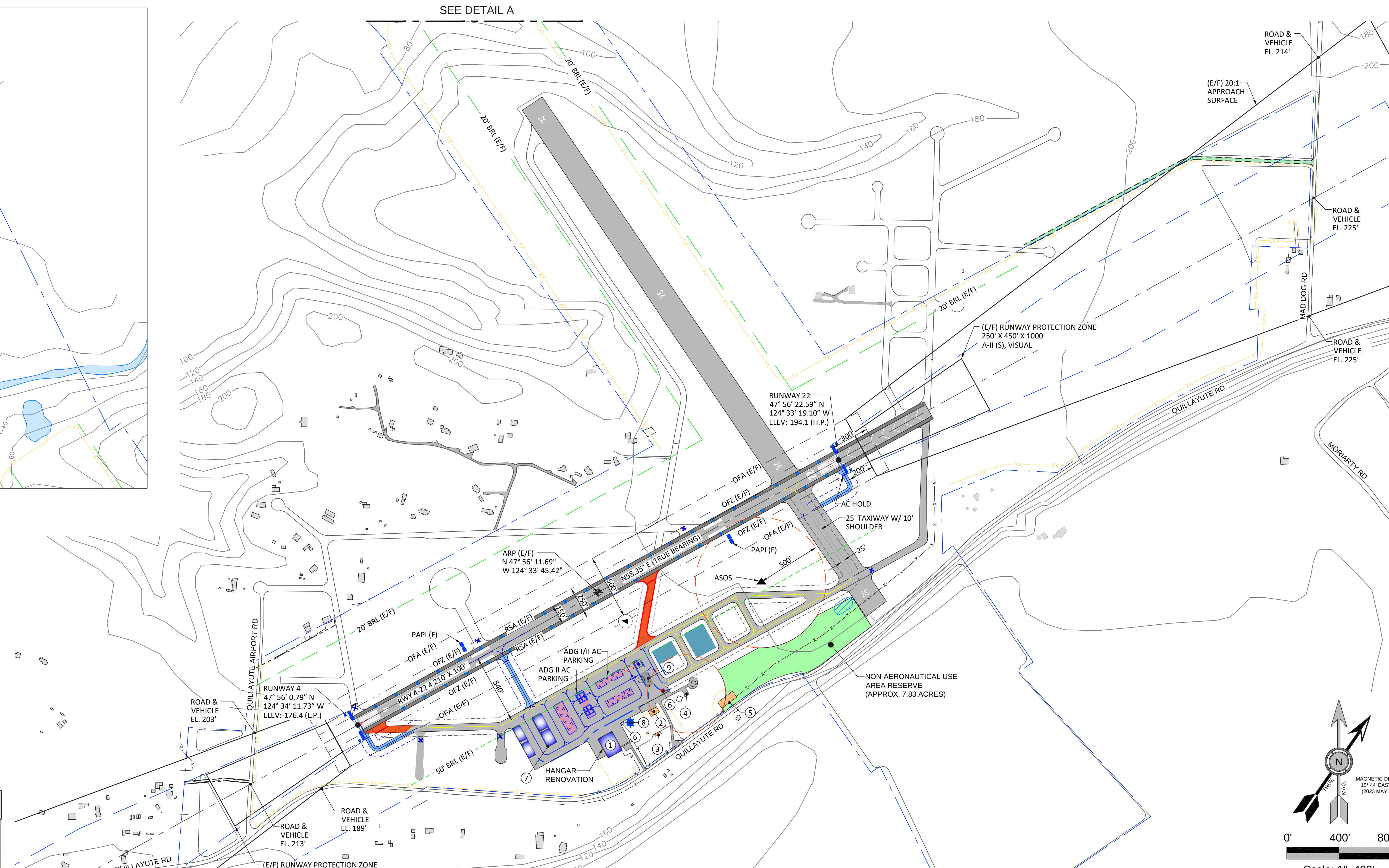
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

DESIGNED BY: DM | DRAWN BY: EDS | CHECKED BY: WMR | SCALE: AS SHOWN
DATE: JANUARY 2024 | PROJECT NO: -

QUILLAYUTE AIRPORT
CITY OF FORKS

DATA SHEET

FIGURE NO. -



APRON DIMENSIONS

	SQUARE FOOTAGE APPROX.
APRON EXISTING	469,000 SF
APRON FUTURE	SAME

NOTES:

1. SEE TERMINAL AREA PLAN (SHEET 4) FOR MORE DETAIL OF AIRFIELD FACILITIES.
2. SEE AIRPORT DATA SHEET (SHEET 2) FOR FULL LEGEND.

BUILDING/FACILITIY KEY

NO.	DESCRIPTION	TOP ELEV
1	HANGAR(E)	216'
2	NWS OFFICE(E)	193'
3	CONCRETE BUILDING (E)	UNKOWN
4	WEATHER SERVICE/BALLON LAUNCH BUILDING (E)	222'
5	WAREHOUSE (E)	UNKOWN
6	PILOT BUILDING TO BE RELOCATED (F)	193'
7	HANGAR FACILITY (F)	X
8	ROTATING BEACON (F)	X
9	AVIATION FUEL TANKS	199'

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SIGNATURE

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BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

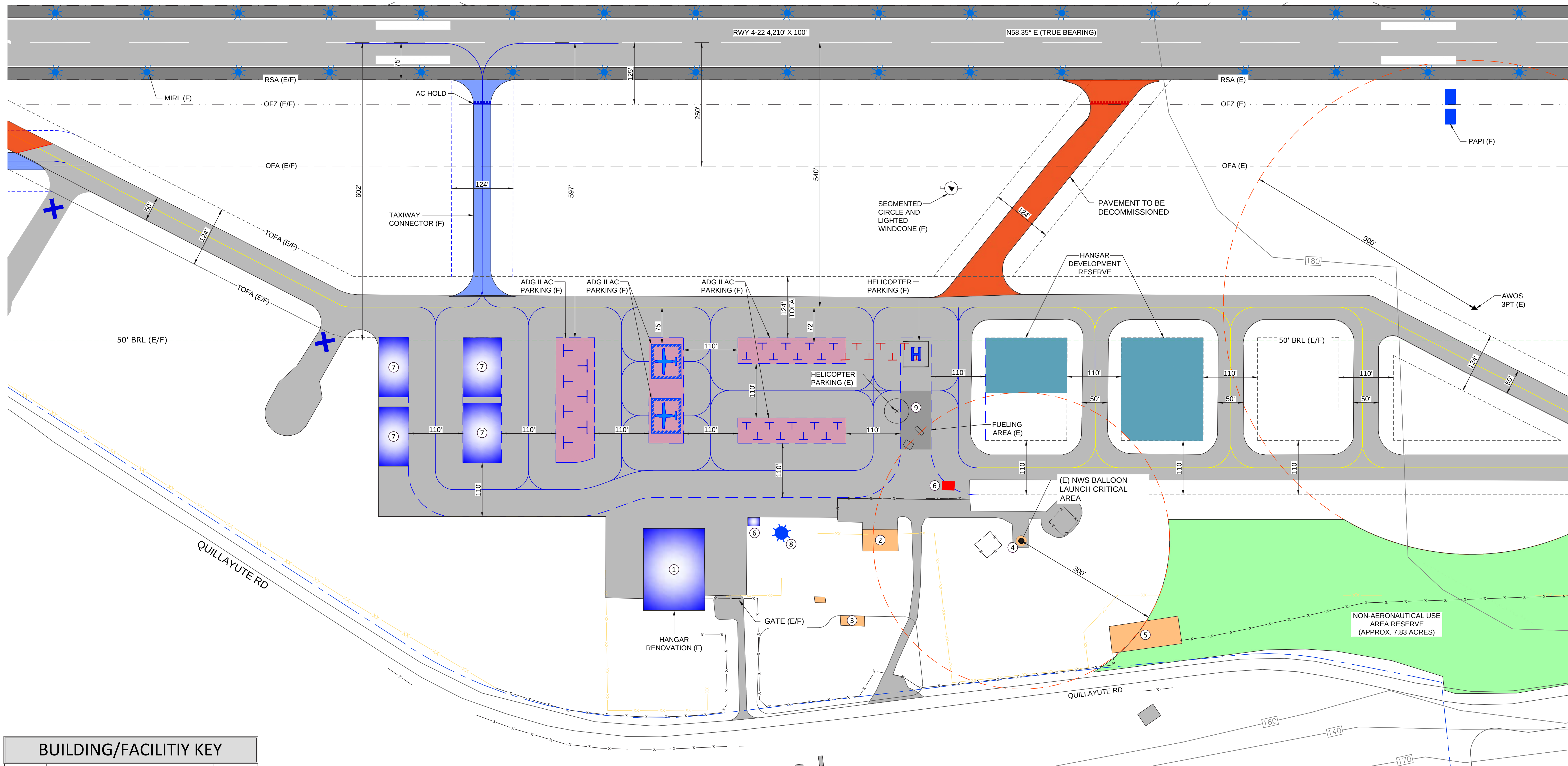
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	EDS	WMR	AS SHOWN
DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

AIRPORT LAYOUT PLAN

FIGURE NO.
-

SHEET NO.
3 OF 13



BUILDING/FACILITIY KEY

NO.	DESCRIPTION	TOP ELEV
1	HANGAR(E)	216'
2	NWS OFFICE(E)	193'
3	CONCRETE BUILDING (E)	UNKOWN
4	WEATHER SERVICE/BALLON LAUNCH BUILDING (E)	222'
5	WAREHOUSE (E)	UNKOWN
6	PILOT BUILDING TO BE RELOCATED (F)	193'
7	HANGAR FACILITY (F)	X
8	ROTATING BEACON (F)	X
9	AVIATION FUEL TANKS	199'

APRON DIMENSIONS

	SQUARE FOOTAGE APPROX.
APRON EXISTING	469,000 SF
APRON FUTURE	SAME

NOTE:

1. SEE AIRPORT DATA SHEET (SHEET 2) FOR FULL LEGEND.

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NO.	DATE	BY	APPR	REVISIONS

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APPROVAL DATE: ____________

SIGNATURE

CITY OF FORKS APPROVAL

APPROVAL DATE: ____________

SIGNATURE

CENTURY WEST ENGINEERING

BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

DESIGNED BY: DM | DRAWN BY: EDS | CHECKED BY: WMR | SCALE: AS SHOWN

DATE: JANUARY 2024 | PROJECT NO: -

QUILLAYUTE AIRPORT
CITY OF FORKS

TERMINAL AREA PLAN

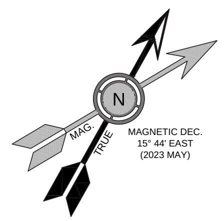
FIGURE NO. -

SHEET NO. 4 OF 13

RUNWAY 4/22

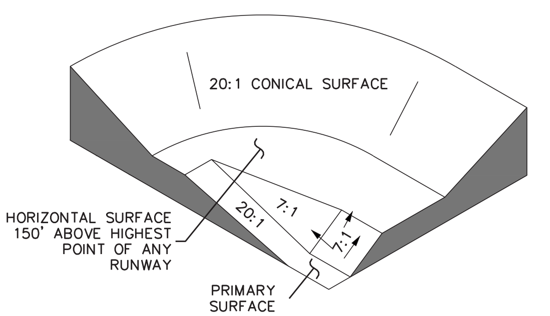
PART 77 DIMENSIONAL STANDARDS
NON-PRECISION INSTRUMENT (FUTURE)
RUNWAY EXISTING LENGTH = 4,210' (RUNWAY TYPE = A-II small)
RUNWAY FUTURE LENGTH = 4,210' (RUNWAY TYPE = A-II small)

RUNWAY 4	RUNWAY 22
PRIMARY SURFACE WIDTH = 500'	PRIMARY SURFACE WIDTH = 500'
APPROACH SURFACE INNER WIDTH = 500'	APPROACH SURFACE INNER WIDTH = 500'
APPROACH SURFACE OUTER WIDTH = 2,000'	APPROACH SURFACE OUTER WIDTH = 2,000'
APPROACH SURFACE LENGTH = 5,000'	APPROACH SURFACE LENGTH = 5,000'
RADIUS OF HORIZONTAL SURFACE = 5,000'	RADIUS OF HORIZONTAL SURFACE = 5,000'
APPROACH SLOPE = 20:1	APPROACH SLOPE = 20:1

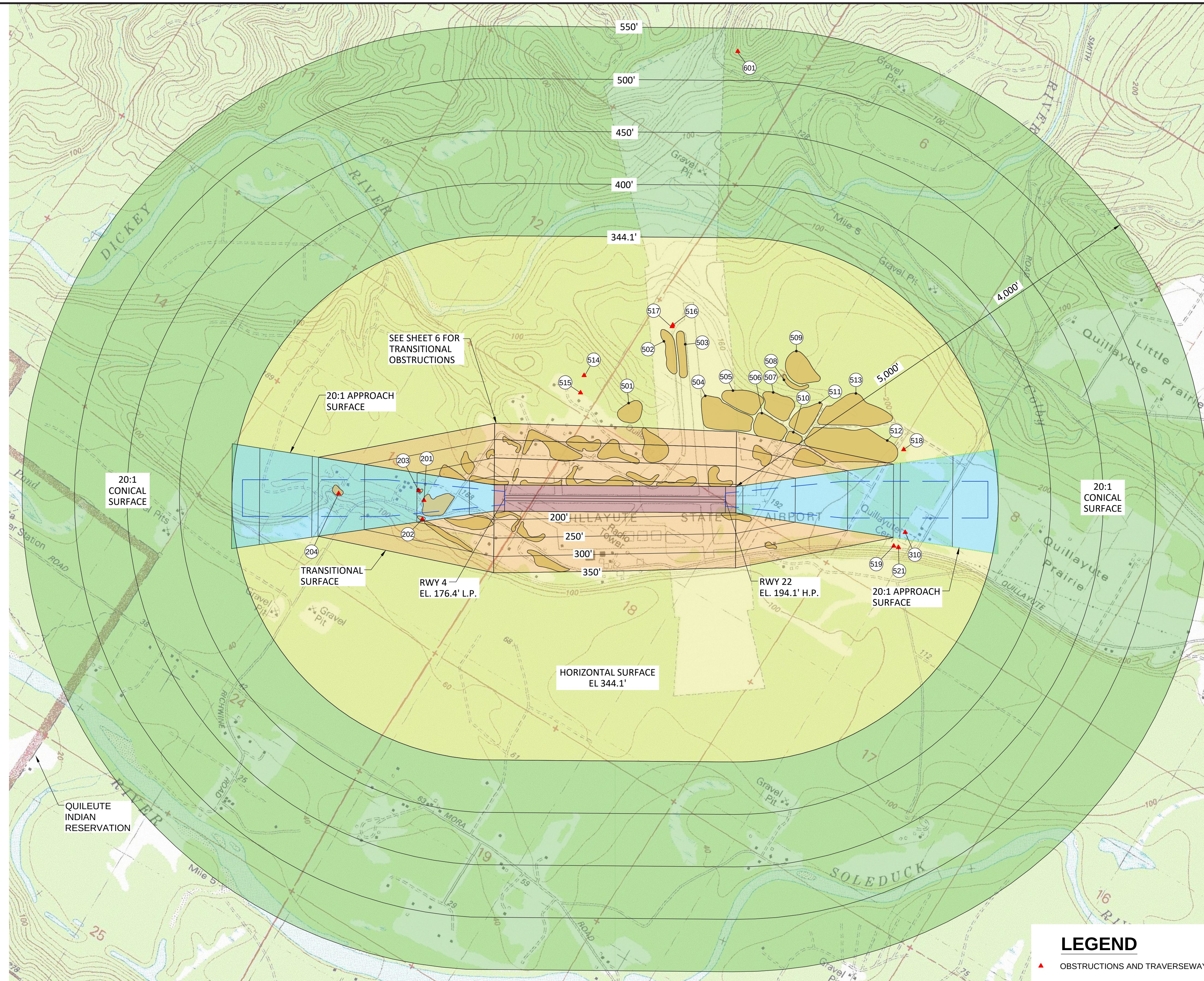


0' 1000' 2000'

Scale: 1"=1000'



TYPICAL ISOMETRIC VIEW OF F.A.R. PART 77 SURFACES
(CUT ON RUNWAY CENTERLINE)



LEGEND

▲ OBSTRUCTIONS AND TRAVERSEWAYS

NOTES:

1. DETAILED DATA ARE PROVIDED FOR OBSTACLES (SEE LEGEND) THAT ARE LESS THAN 10' BELOW THE CONTROLLING SURFACE OR ABOVE. CONSULT ADIP FOR DETAILED INFORMATION ON THESE FEATURES.
2. AREAS OF DENSE OBSTACLES ARE AGGREGATED BY CANOPY BOUNDARIES (TRANSITIONAL) OR GRIDS (HORIZONTAL/CONICAL). THE OBSTACLE ID NUMBER OF THE MOST PENETRATING OBSTACLE FOR EACH AREA IS LISTED ON THE PLAN VIEW AND REFERENCED IN THE OBSTRUCTION TABLES ON SHEETS 12 & 13.
3. SEE SHEET 6 FOR APPROACH PLAN AND PROFILE.
4. SEE SHEET 7 FOR INNER APPROACH SURFACE.
5. CLALLAM COUNTY OVERLAY ZONE (AR) SECTION 33.08 OF CLALLAM COUNTY ZONING ORDINANCE SPECIFIES HEIGHT RESTRICTIONS.
6. AIRPORT ELEVATION IS 194.1' AS SURVEYED IN 2020 AGIS SURVEY.
7. BASE MAP USGS QUADRANGLE (APRIL 2002)

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APPROVAL DATE: ______________

SIGNATURE

CITY OF FORKS APPROVAL

APPROVAL DATE: ______________

SIGNATURE

CENTURY WEST ENGINEERING
BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

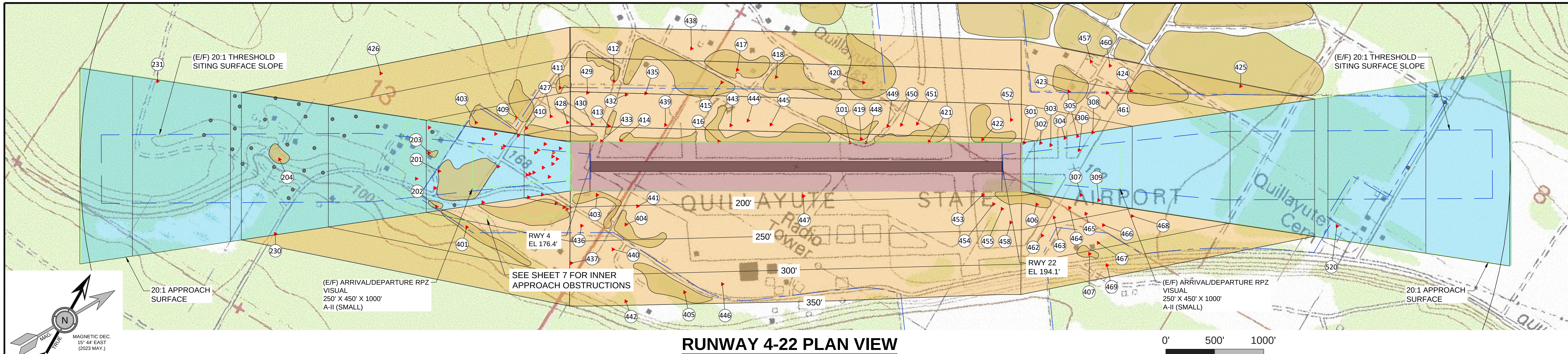
DESIGNED BY: DM	DRAWN BY: EDS	CHECKED BY: WMR	SCALE: AS SHOWN
DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

AIRPORT AIRSPACE PLAN
(PART 77)

FIGURE NO. -

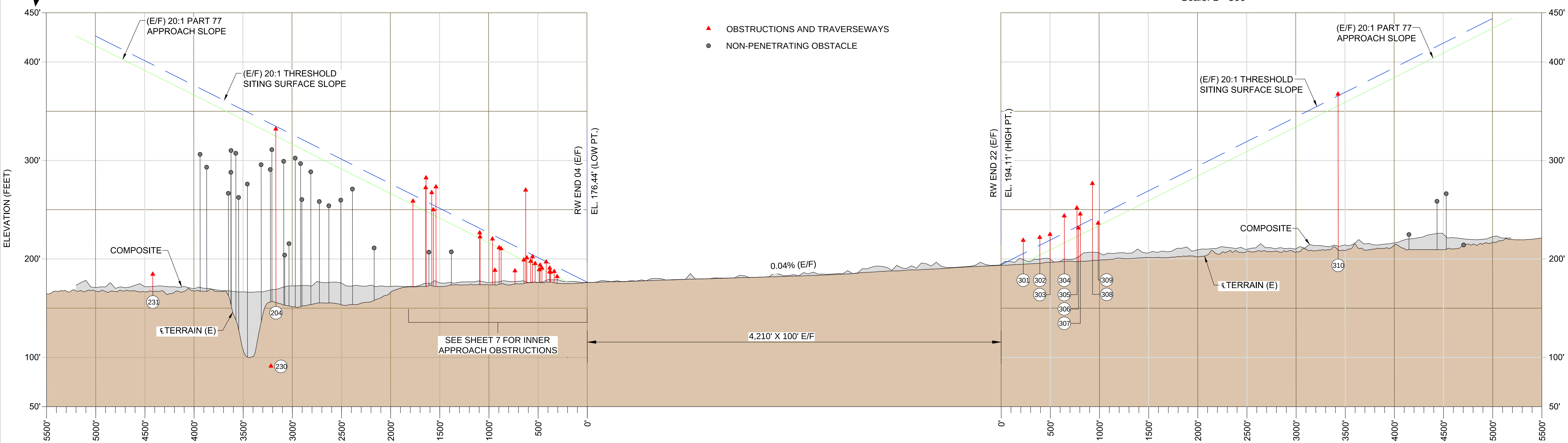
SHEET NO. 5 OF 13



RUNWAY 4-22 PLAN VIEW

0' 500' 1000'

Scale: 1"=500'



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0' 50' 100'

Vertical Scale: 1"=50'

RUNWAY 4-22 PROFILE VIEW

0' 500' 1000'

Horizontal Scale: 1"=500'

NOTES:
1. SEE SHEETS 12 AND 13 FOR OBSTRUCTION TABLES
2. DATE OF OBSTRUCTION SURVEY: 09/2/2021.
3. USGS QUADRANGLE BASE MAP MAY CONTAIN OBSOLETE INFORMATION (QUILLAYUTE STATE AIRPORT ETC.)

NO.	DATE	BY	APPR	REVISIONS

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SIGNATURE

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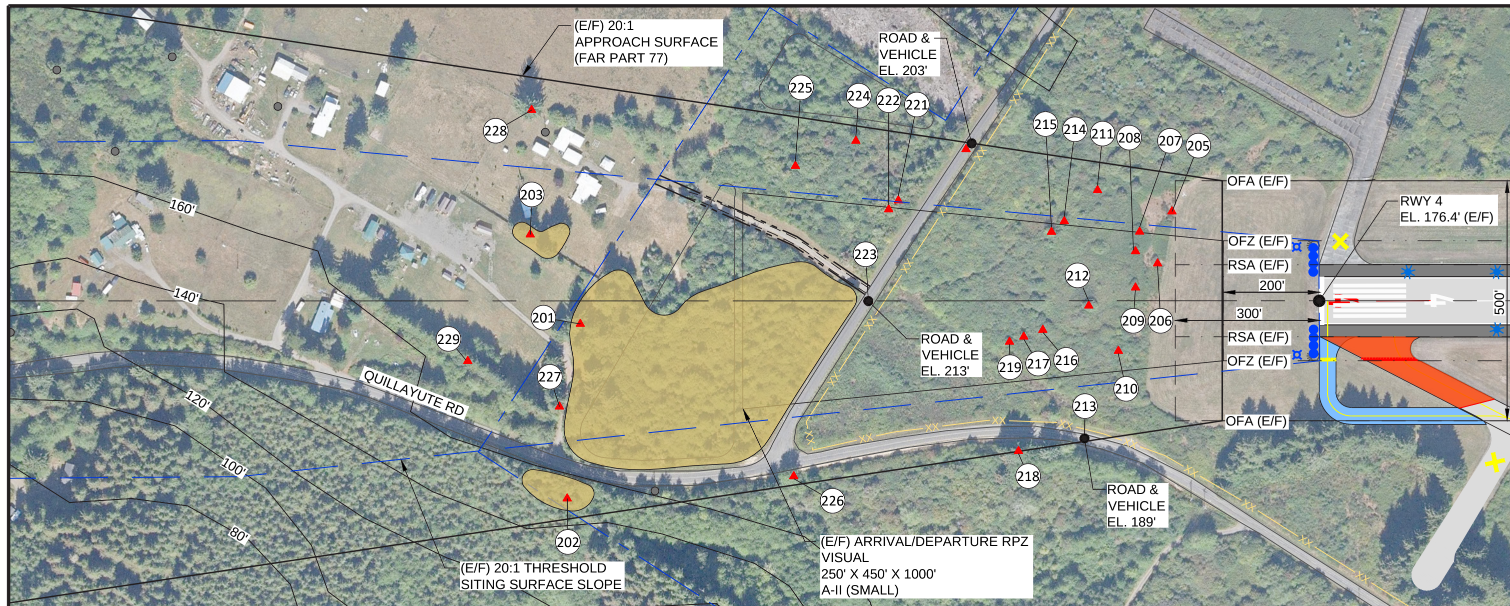
QUILLAYUTE AIRPORT
CITY OF FORKS

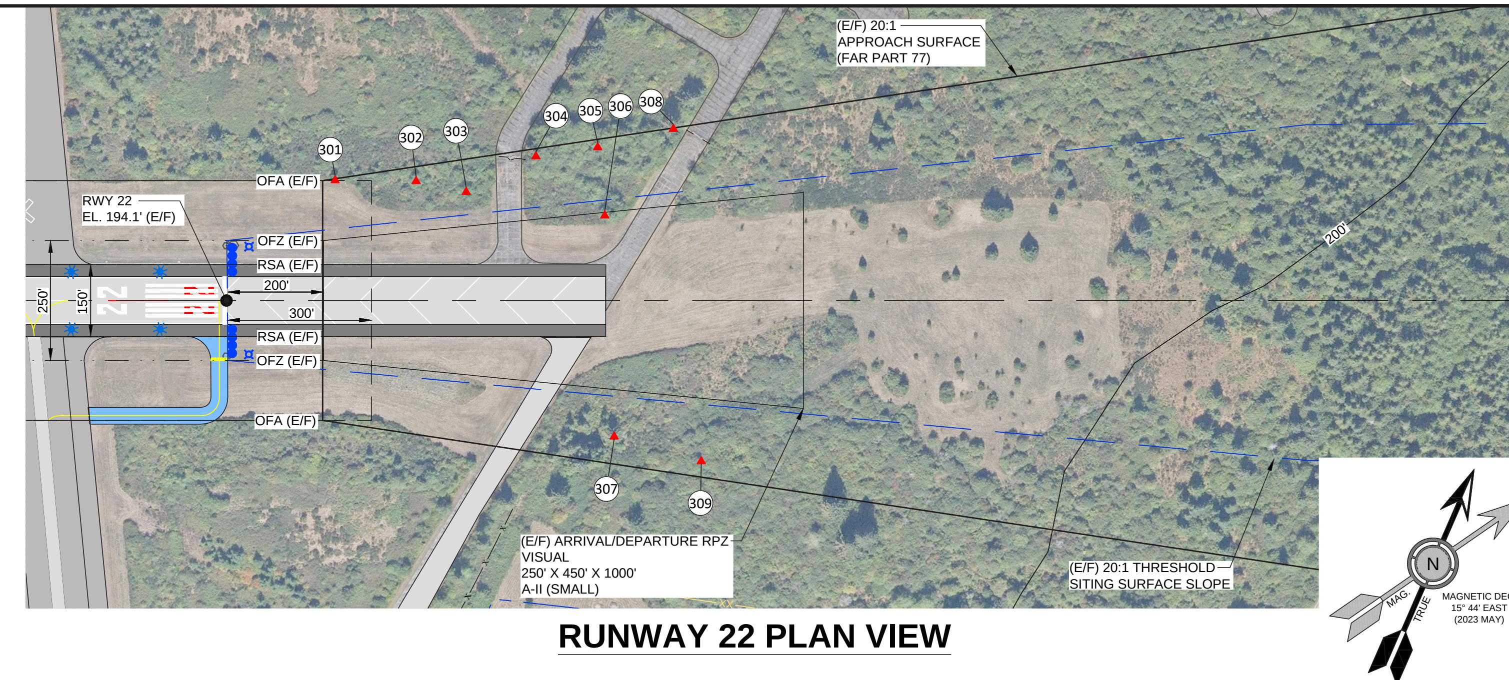
RUNWAY 4-22 APPROACH PLAN AND PROFILE

FIGURE NO. -

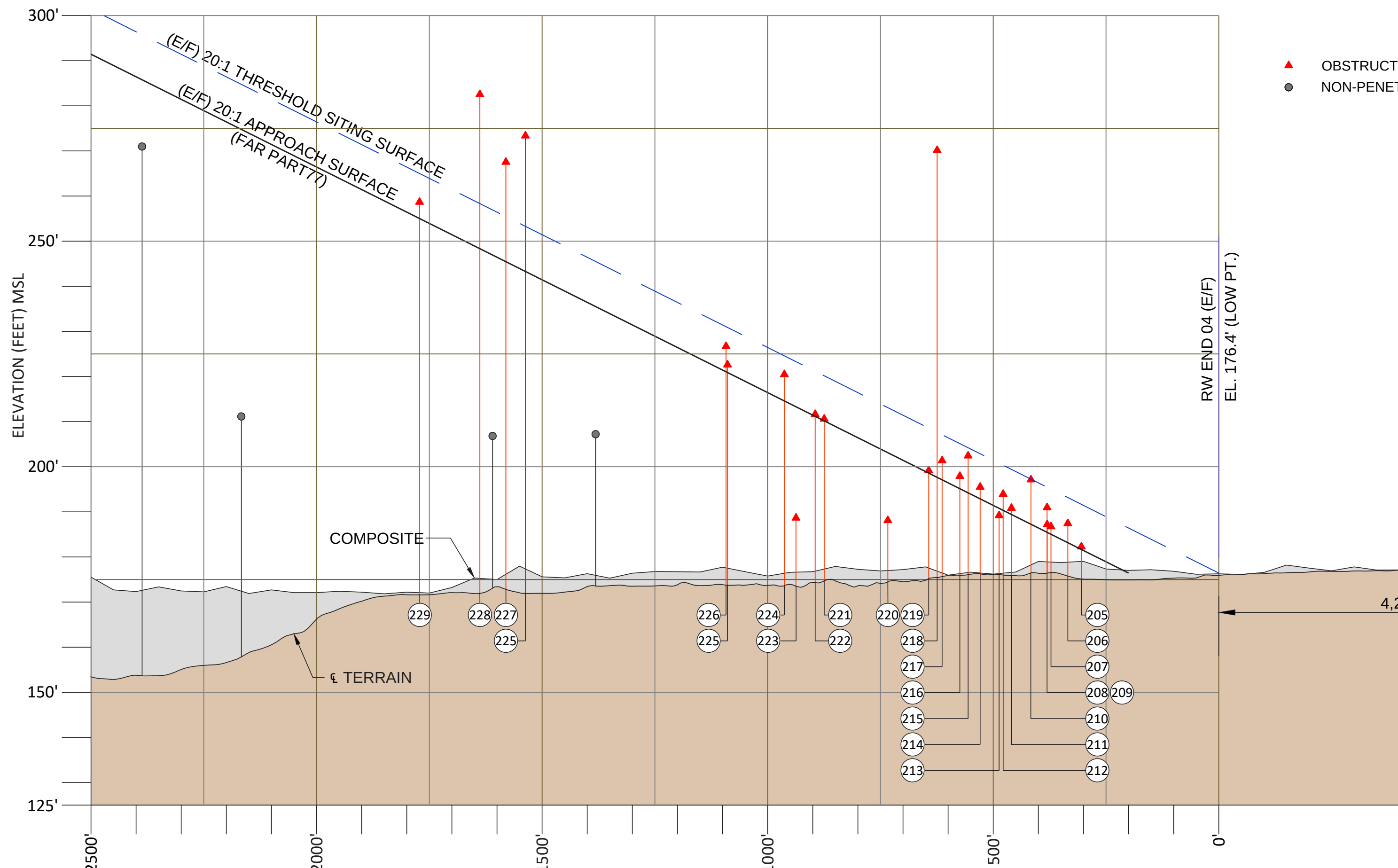
SHEET NO. 6 OF 13



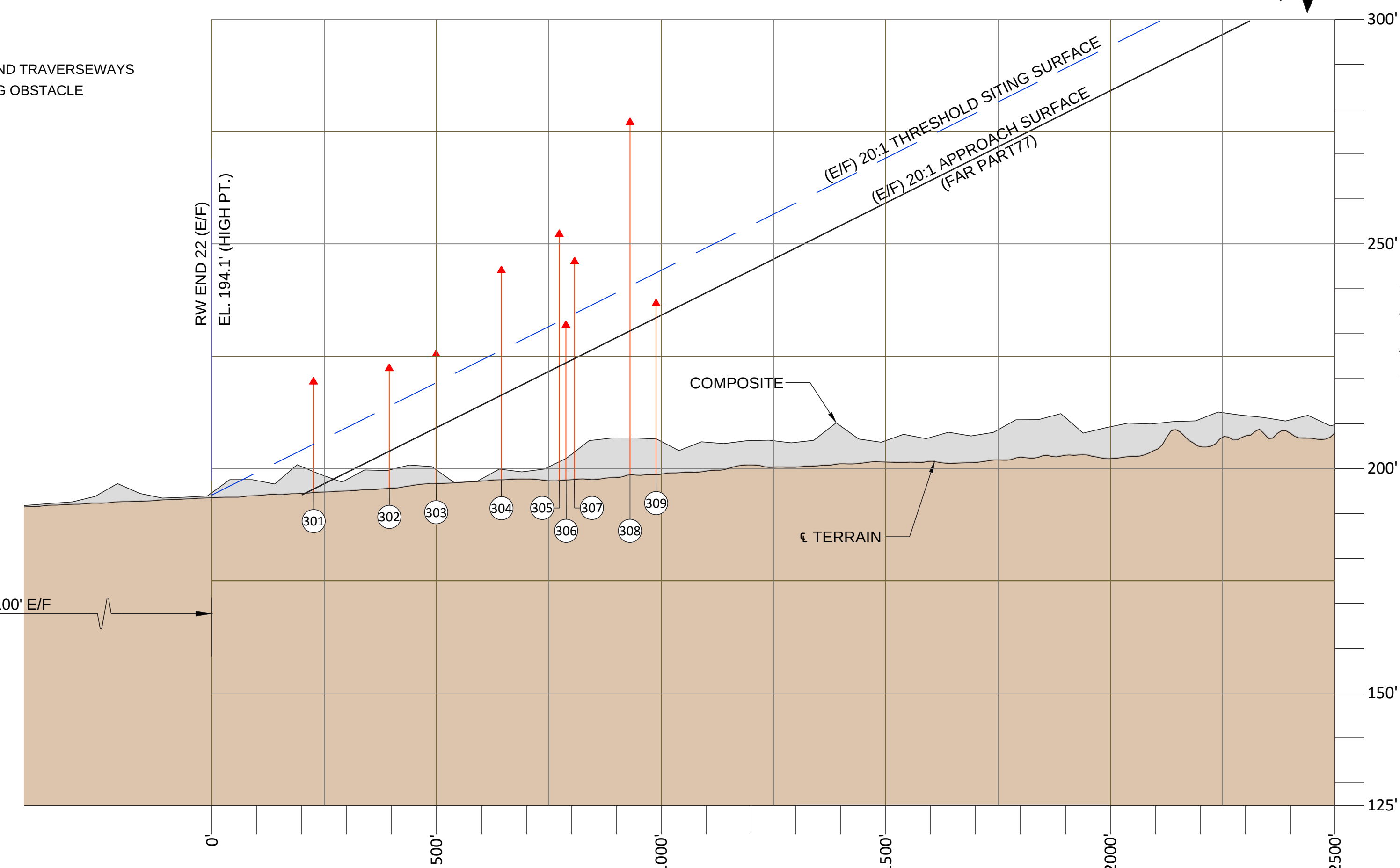
RUNWAY 4 PLAN VIEW



RUNWAY 22 PLAN VIEW



RUNWAY 4 PROFILE VIEW



RUNWAY 22 PROFILE VIEW

0' 200' 400'
Horizontal Scale: 1"=200'

0' 20' 40'
Vertical Scale: 1"=20'

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NOTES:
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2. SEE SHEETS 12 AND 13 FOR OBSTRUCTION TABLES.
3. SEE SHEET 2 FOR FULL LEGEND

NO.	DATE	BY	APPR	REVISIONS

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SIGNATURE

CITY OF FORKS APPROVAL
APPROVAL DATE:
SIGNATURE

CENTURY WEST ENGINEERING
BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

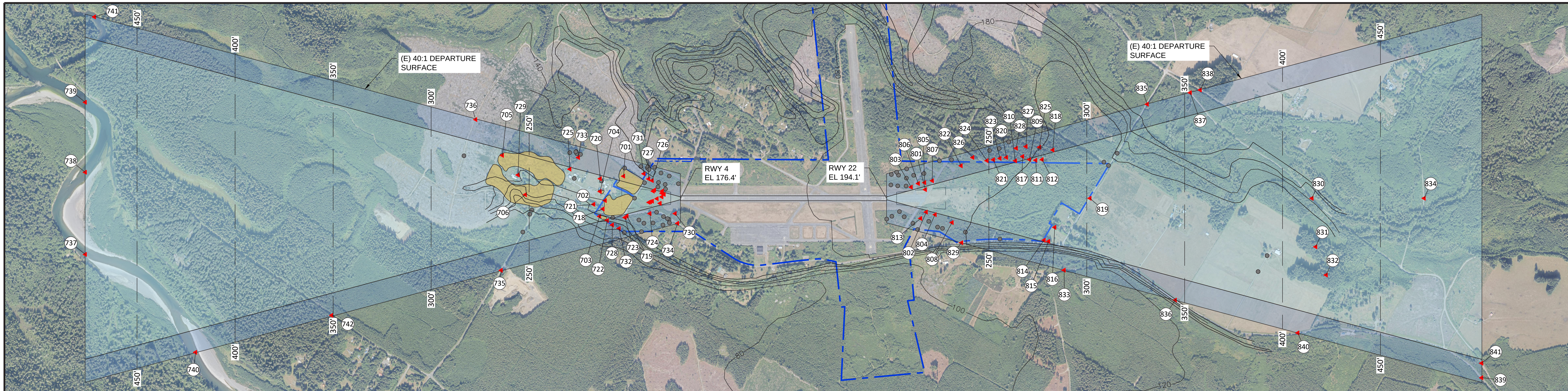
DESIGNED BY: DM	DRAWN BY: EDS	CHECKED BY: WMR	SCALE: AS SHOWN
DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

RUNWAY 4-22 INNER APPROACH
SURFACE PLAN AND PROFILE

FIGURE NO.
-

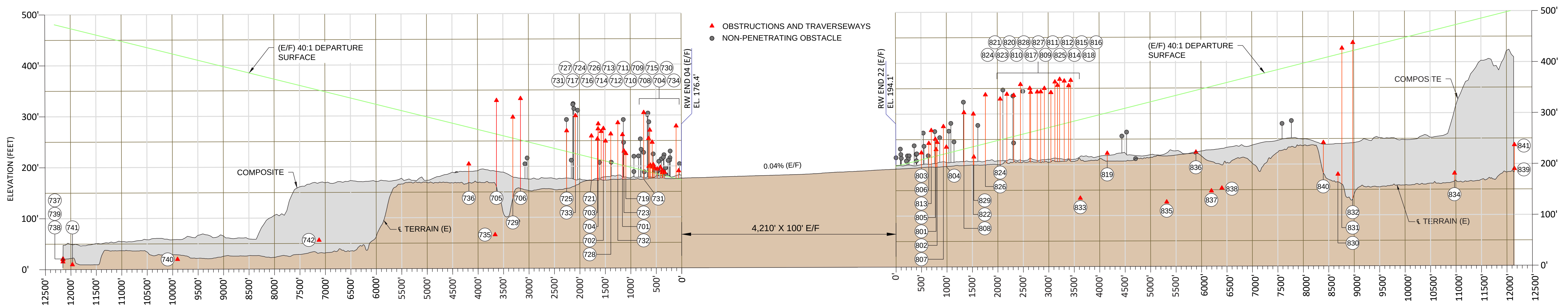
SHEET NO.
7 OF 13



0' 1000' 2000'

Horizontal Scale: 1"=1000'

RUNWAY 4-22 PLAN VIEW



RUNWAY 4-22 PROFILE VIEW

NOTES:

1. DETAILED DATA ARE PROVIDED FOR OBSTACLES (SEE LEGEND) THAT ARE LESS THAN 10' BELOW THE CONTROLLING SURFACE OR ABOVE. THE LOCATIONS OF OTHER OBSTACLES ARE DEPICTED BY GRAY DOTS FOR REFERENCE. CONSULT ADIP FOR DETAILED INFORMATION ON THESE FEATURES.

AREAS OF DENSE OBSTACLES ARE AGGREGATED INTO OBSTACLE GROUPS. THE OBSTACLE ID NUMBER OF THE MOST PENETRATING OBSTACLE FOR EACH AREA IS LISTED ON THE PLAN VIEW AND REFERENCED IN THE OBSTRUCTION TABLES ON SHEET 12 AND 13.

0' 100' 200'

Vertical Scale: 1"=100'

0' 1000' 2000'

Horizontal Scale: 1"=1000'

NOTES:

1. SEE SHEETS 12 AND 13 FOR OBSTRUCTION TABLES
2. DATE OF OBSTRUCTION SURVEY: 09/2/2021.

N MAG TRUE MAGNETIC DEC. 15° 44' EAST (2023 MAY)

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SIGNATURE

CITY OF FORKS APPROVAL

APPROVAL DATE: ______

SIGNATURE

CENTURY WEST ENGINEERING

BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

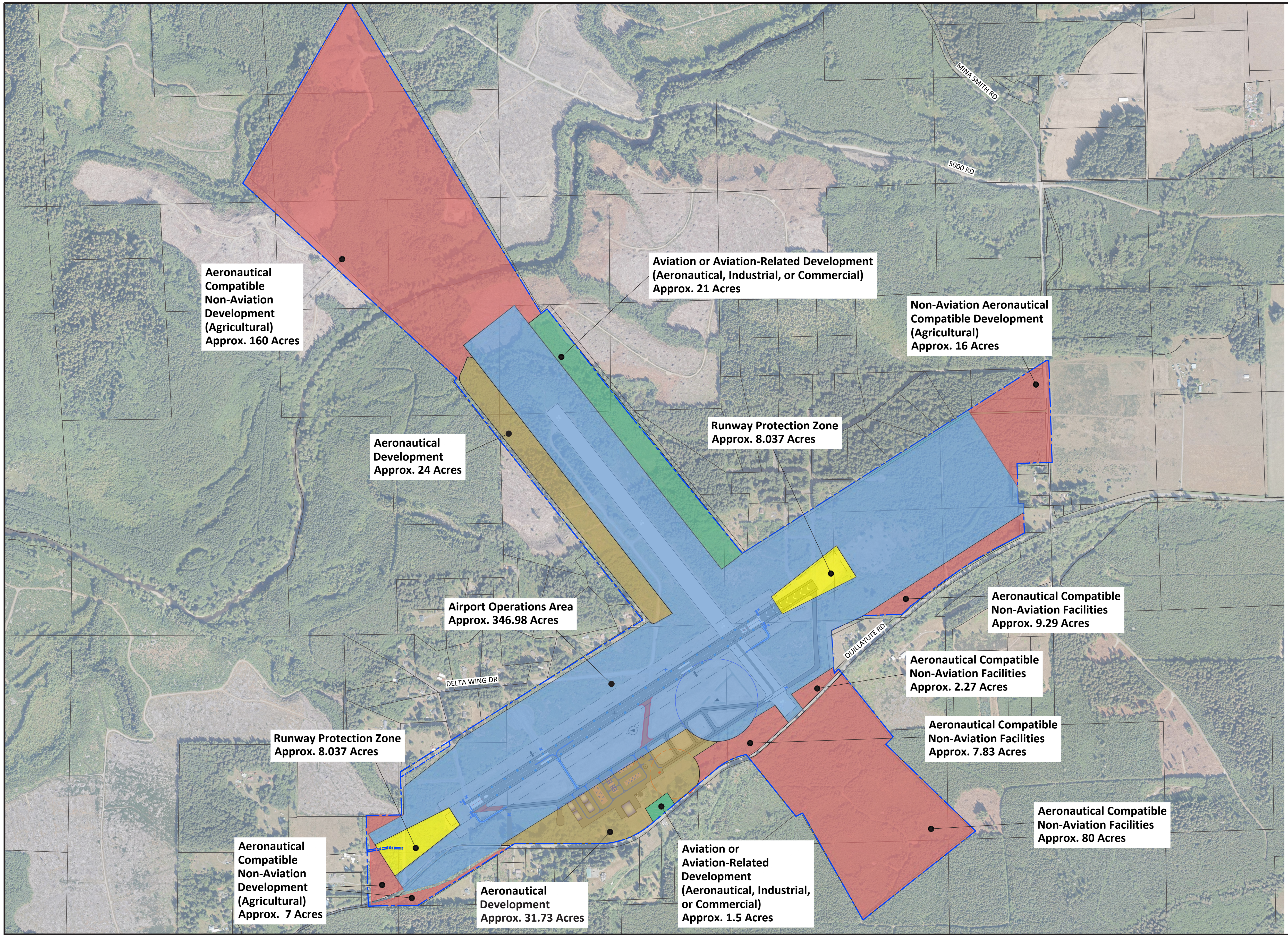
DESIGNED BY: DM	DRAWN BY: EDS	CHECKED BY: WMR	SCALE: AS SHOWN
DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

RUNWAY 4-22 DEPARTURE SURFACE
PLAN AND PROFILE

FIGURE NO. -

SHEET NO. 8 OF 13



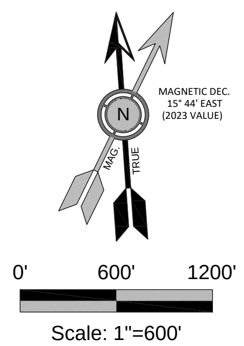
LAND USE

- AERONAUTICAL DEVELOPMENT (APPROX. 58.3 ACRES)
- AERONAUTICAL COMPATIBLE NON-AVIATION FACILITIES (APPROX. 292.7 ACRES)
- AVIATION OR AVIATION RELATED DEVELOPMENT SENSITIVE ZONE (APPROX. 26.4 ACRES)
- AIRPORT OPERATIONS PROTECTED AREA (APPROX. 347.0 ACRES)
- RUNWAY PROTECTION ZONE (APPROX. 16.1 ACRES)

LEGEND

- AIRPORT PROPERTY LINE (EXISTING)
- AIRPORT PROPERTY LINE (FUTURE)

* SEE AIRPORT LAYOUT PLAN (SHEET 3) FOR INFRASTRUCTURE AND SAFETY BOUNDARY LEGEND.



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DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

ON AIRPORT LAND USE PLAN

FIGURE NO. -

SHEET NO. 9 OF 13

CLALLAM COUNTY LAND USE

- COMMERCIAL FOREST
- RURAL COMMERCIAL-WESTERN REGION (WRC)
- WESTERN REGION RURAL LOW (RW5)
- RURAL NEIGHBORHOOD CONSERVATION (NC)
- OLYMPIC NATIONAL PARK (NP)
- PARKS AND RECREATION (PR)
- QUILLAYUTE RESIDENTIAL (QR)

PART 77 SURFACES

- PRIMARY SURFACE
- APPROACH SURFACE
- TRANSITIONAL SURFACE
- HORIZONTAL SURFACE
- CONICAL SURFACE

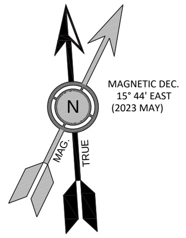
LEGEND

- AIRPORT PROPERTY LINE (EXISTING)
- AIRPORT PROPERTY LINE (FUTURE)
- * SEE AIRPORT LAYOUT PLAN (SHEET 3) FOR INFRASTRUCTURE AND SAFETY BOUNDARY LEGEND.

PUBLIC FACILITY KEY

A	QUILLAYUTE RIVER COUNTY PARK
B	PRIOR HOMESTEAD CAMPING AND RV
C	SLOUGH TRAILHEAD AT MORA RANGER STATION
D	QUILLAYUTE CEMETARY

NOTE:
1. ZONING HEIGHT RESTRICTIONS: SEE CLALLAM COUNTY - AIRPORT OVERLAY ZONING CHAPTER 33.08.



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SIGNATURE

CITY OF FORKS APPROVAL

APPROVAL DATE: ____________

SIGNATURE

CENTURY WEST ENGINEERING

BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SCALE:
DM	EDS	WMR	AS SHOWN

DATE: JANUARY 2024

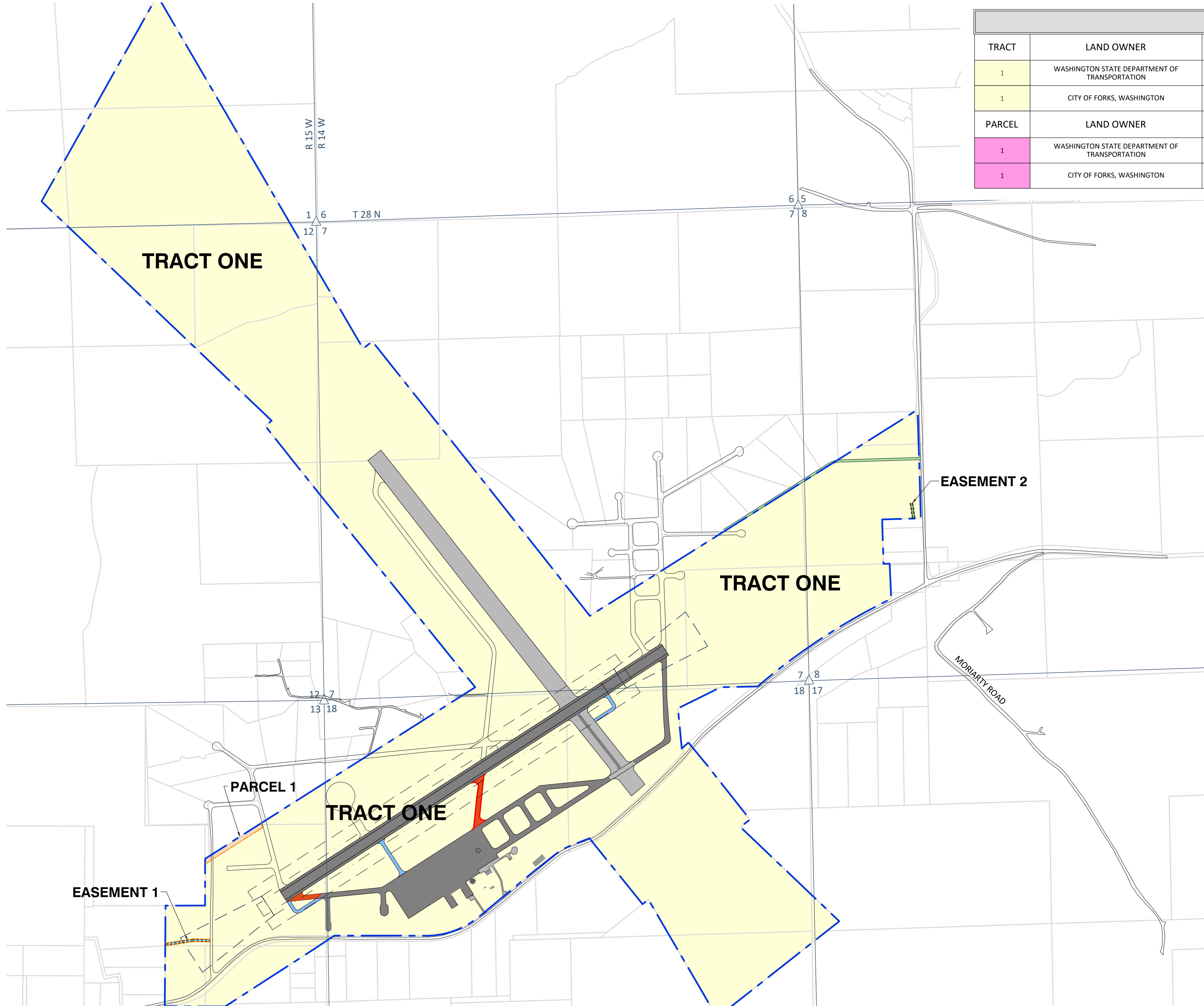
PROJECT NO: -

QUILLAYUTE AIRPORT
CITY OF FORKS

OFF AIRPORT LAND USE PLAN

FIGURE NO. -

SHEET NO. 10 OF 13



OWNERSHIP DATA TABLE

TRACT	LAND OWNER	ACRES	RECORDING INFORMATION VOL., PAGE	INTEREST	PREVIOUS OWNER	ACQUISITION YEAR	PURPOSE
1	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	753.4±	909, 54	FEE	UNITED STATES OF AMERICA	1963	SURPLUS AIRPORT PROPERTY AGREEMENT
1	CITY OF FORKS, WASHINGTON	753.4±	909, 54	FEE	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	1999	SURPLUS AIRPORT PROPERTY AGREEMENT
PARCEL	**LAND OWNER**	**ACRES**	**RECORDING INFORMATION VOL., PAGE**	**INTEREST**	**PREVIOUS OWNER**	**ACQUISITION YEAR**	**PURPOSE**
1	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	0.8	909, 54	FEE	UNITED STATES OF AMERICA	1963	SURPLUS AIRPORT PROPERTY AGREEMENT
1	CITY OF FORKS, WASHINGTON	0.8	909, 46	FEE	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	1999	AIRPORT PROPERTY RELEASE *

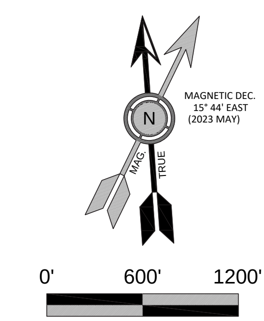
EXISTING EASMENT TABLE

PARCEL	RECORDING INFROMATION		INTEREST ACQU.	MAP AND TAX LOT NUMBERS	GRANTOR/GRANTEE	EASEMENT ACQUISITION YEAR
	DATE	BOOK, PAGE				
1	-	-	EASEMENT	-	CITY OF FORKS, WASHINGTON	-
2	-	-	EASEMENT	-	CITY OF FORKS, WASHINGTON	-

* PROPOSED (FUTURE) RELEASE SUBJECT TO FAA APPROVAL.

LEGEND

- EASEMENT LINE
- AIRPORT PROPERTY LINE (E)
- AIRPORT PROPERTY LINE (F)
- COUNTY TAXLOT LINE
- RPZ
- ROFA
- OFZ
- RSA



Scale: 1"=600'

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QUILLAYUTE AIRPORT
CITY OF FORKS

EXHIBIT A - AIRPORT PROPERTY INVENTORY MAP

FIGURE NO. -

SHEET NO. 11 OF 13

RUNWAY 4 DEPARTURE SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
801	TREE	9/2/2021	RWY4 DEPARTURE	195.3	36.7	232.0	213.9	18.1	TO BE REMOVED
802	TREE	9/2/2021	RWY4 DEPARTURE	198.0	48.2	246.2	225.6	20.5	TO BE REMOVED
803	TREE	9/2/2021	RWY4 DEPARTURE	192.6	32.9	225.5	226.7	-1.2	NO OBSTRUCTION
804	TREE	9/2/2021	RWY4 DEPARTURE	199.0	37.8	236.8	231.3	5.6	TO BE REMOVED
805	TREE	9/2/2021	RWY4 DEPARTURE	197.4	54.9	252.3	239.8	12.4	TO BE REMOVED
806	TREE	9/2/2021	RWY4 DEPARTURE	196.5	47.7	244.2	241.9	2.3	TO BE REMOVED
807	TREE	9/2/2021	RWY4 DEPARTURE	197.7	79.4	277.2	242.5	34.7	TO BE REMOVED
808	TREE	9/2/2021	RWY4 DEPARTURE	203.7	100.8	304.5	261.7	42.8	TO BE REMOVED
809	TREE	9/2/2021	RWY4 DEPARTURE	206.2	146.0	352.2	267.0	85.2	TO BE REMOVED
810	TREE	9/2/2021	RWY4 DEPARTURE	204.0	148.3	352.3	269.6	82.7	TO BE REMOVED
811	TREE	9/2/2021	RWY4 DEPARTURE	209.1	134.8	343.9	270.2	73.7	TO BE REMOVED
812	TREE	9/2/2021	RWY4 DEPARTURE	203.6	154.6	358.2	273.5	84.7	TO BE REMOVED
813	TREE	9/2/2021	RWY4 DEPARTURE	198.2	71.3	269.5	273.7	-4.1	NO OBSTRUCTION
814	TREE	9/2/2021	RWY4 DEPARTURE	210.5	159.5	370.0	274.5	95.5	TO BE REMOVED
815	TREE	9/2/2021	RWY4 DEPARTURE	204.7	161.9	366.6	276.8	89.8	TO BE REMOVED
816	TREE	9/2/2021	RWY4 DEPARTURE	207.3	160.7	367.9	279.9	88.0	TO BE REMOVED
817	TREE	9/2/2021	RWY4 DEPARTURE	204.7	140.4	345.1	289.1	56.0	TO BE REMOVED
818	TREE	9/2/2021	RWY4 DEPARTURE	207.3	150.2	357.4	293.7	63.8	TO BE REMOVED
819	ROAD	9/2/2021	RWY4 DEPARTURE	209.8	15.0	224.8	297.9	-73.2	NO OBSTRUCTION
820	TREE	9/2/2021	RWY4 DEPARTURE	205.9	154.0	359.8	302.8	57.1	TO BE REMOVED
821	TREE	9/2/2021	RWY4 DEPARTURE	201.1	139.5	340.6	303.7	36.9	TO BE REMOVED
822	TREE	9/2/2021	RWY4 DEPARTURE	203.9	97.9	301.8	304.1	-2.4	NO OBSTRUCTION
823	TREE	9/2/2021	RWY4 DEPARTURE	202.1	136.4	338.4	304.7	33.7	TO BE REMOVED
824	TREE	9/2/2021	RWY4 DEPARTURE	197.8	133.4	331.2	306.1	25.1	TO BE REMOVED
825	TREE	9/2/2021	RWY4 DEPARTURE	204.8	160.0	364.8	327.8	37.0	TO BE REMOVED
826	TREE	9/2/2021	RWY4 DEPARTURE	198.2	141.2	339.4	344.1	-4.7	NO OBSTRUCTION
827	TREE	9/2/2021	RWY4 DEPARTURE	206.9	138.5	345.4	349.3	-3.9	NO OBSTRUCTION
828	TREE	9/2/2021	RWY4 DEPARTURE	201.5	143.0	344.5	350.5	-6.0	NO OBSTRUCTION
829	ROAD	9/2/2021	RWY4 DEPARTURE	202.6	15.0	217.6	380.9	-163.3	NO OBSTRUCTION
830	ROAD	9/2/2021	RWY4 DEPARTURE	168.9	15.0	183.9	411.2	-227.3	NO OBSTRUCTION
831	TREE	9/2/2021	RWY4 DEPARTURE	240.8	190.6	431.4	413.1	18.3	TO BE REMOVED
832	TREE	9/2/2021	RWY4 DEPARTURE	238.6	203.6	442.2	418.4	23.8	TO BE REMOVED
833	ROAD	9/2/2021	RWY4 DEPARTURE	121.6	15.0	136.6	433.1	-296.5	NO OBSTRUCTION
834	ROAD	9/2/2021	RWY4 DEPARTURE	171.0	15.0	186.0	468.4	-282.4	NO OBSTRUCTION
835	ROAD	9/2/2021	RWY4 DEPARTURE	114.3	15.0	129.3	475.1	-345.8	NO OBSTRUCTION
836	ROAD	9/2/2021	RWY4 DEPARTURE	212.2	15.0	227.2	490.6	-263.4	NO OBSTRUCTION
837	ROAD	9/2/2021	RWY4 DEPARTURE	136.0	15.0	151.0	497.4	-346.3	NO OBSTRUCTION
838	ROAD	9/2/2021	RWY4 DEPARTURE	141.6	15.0	156.6	497.9	-341.3	NO OBSTRUCTION
839	ROAD	9/2/2021	RWY4 DEPARTURE	179.9	15.0	194.9	497.9	-303.0	NO OBSTRUCTION
840	ROAD	9/2/2021	RWY4 DEPARTURE	231.0	15.0	246.0	497.9	-251.9	NO OBSTRUCTION
841	ROAD	9/2/2021	RWY4 DEPARTURE	226.8	15.0	241.8	497.9	-256.1	NO OBSTRUCTION

RUNWAY 25 DEPARTURE SURFACE

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
701	TREE	9/2/2021	RWY22 DEPARTURE	173.5	88.0	261.5	240.4	21.1	TO BE REMOVED
702	TREE	9/2/2021	RWY22 DEPARTURE	172.7	100.8	273.5	214.8	58.7	TO BE REMOVED
703	TREE	9/2/2021	RWY22 DEPARTURE	162.0	91.2	253.2	217.7	35.5	TO BE REMOVED
704	TREE	9/2/2021	RWY22 DEPARTURE	172.2	100.6	272.7	217.4	55.3	TO BE REMOVED
705	TREE	9/2/2021	RWY22 DEPARTURE	164.9	163.6	328.5	267.3	61.2	TO BE REMOVED
706	TREE	9/2/2021	RWY22 DEPARTURE	156.8	175.5	332.3	255.5	76.8	TO BE REMOVED
707	TREE	9/2/2021	RWY22 DEPARTURE	174.7	12.9	187.6	184.8	2.8	TO BE REMOVED
708	TREE	9/2/2021	RWY22 DEPARTURE	174.9	12.4	187.3	185.9	1.4	TO BE REMOVED
709	TREE	9/2/2021	RWY22 DEPARTURE	174.5	16.6	191.1	185.9	5.2	TO BE REMOVED
710	TREE	9/2/2021	RWY22 DEPARTURE	175.9	21.4	197.3	186.8	10.5	TO BE REMOVED
711	TREE	9/2/2021	RWY22 DEPARTURE	177.2	16.9	194.1	188.3	5.7	TO BE REMOVED
712	TREE	9/2/2021	RWY22 DEPARTURE	171.8	23.9	195.6	189.6	6.0	TO BE REMOVED
713	TREE	9/2/2021	RWY22 DEPARTURE	171.1	31.5	202.6	190.3	12.3	TO BE REMOVED
714	TREE	9/2/2021	RWY22 DEPARTURE	178.2	19.8	198.0	190.7	7.3	TO BE REMOVED
715	TREE	9/2/2021	RWY22 DEPARTURE	173.7	13.2	186.9	190.8	-3.9	TO BE REMOVED
716	TREE	9/2/2021	RWY22 DEPARTURE	174.3	27.2	201.5	191.7	9.8	TO BE REMOVED
717	TREE	9/2/2021	RWY22 DEPARTURE	175.2	24.1	199.3	192.5	6.8	TO BE REMOVED
718	TREE	9/2/2021	RWY22 DEPARTURE	173.4	94.3	267.7	215.9	51.8	TO BE REMOVED
719	TREE	9/2/2021	RWY22 DEPARTURE	168.3	58.5	226.8	217.1	9.7	TO BE REMOVED
720	TREE	9/2/2021	RWY22 DEPARTURE	171.5	111.2	282.7	217.3	65.3	TO BE REMOVED
721	TREE	9/2/2021	RWY22 DEPARTURE	172.6	86.2	258.8	220.7	38.1	TO BE REMOVED
722	TREE	9/2/2021	RWY22 DEPARTURE	157.6	91.2	248.8	221.0	27.8	TO BE REMOVED
723	TREE	9/2/2021	RWY22 DEPARTURE	165.5	63.7	229.2	223.8	5.4	TO BE REMOVED
724	TREE	9/2/2021	RWY22 DEPARTURE	174.0	96.3	270.3	228.6	41.7	TO BE REMOVED
725	TREE	9/2/2021	RWY22 DEPARTURE	170.7	98.3	269.0	232.8	36.2	TO BE REMOVED
726	TREE	9/2/2021	RWY22 DEPARTURE	168.1	78.3	246.4	246.9	-0.6	NO OBSTRUCTION
727	TREE	9/2/2021	RWY22 DEPARTURE	169.3	84.6	253.9	253.7	0.2	TO BE REMOVED
728	TREE	9/2/2021	RWY22 DEPARTURE	112.9	149.9	262.8	256.2	6.6	TO BE REMOVED
729	TREE	9/2/2021	RWY22 DEPARTURE	162.6	133.2	295.7	259.3	36.5	TO BE REMOVED
730	TREE	9/2/2021	RWY22 DEPARTURE	175.9	102.6	278.5	259.9	18.6	TO BE REMOVED
731	TREE	9/2/2021	RWY22 DEPARTURE	170.2	134.6	304.7	281.7	23.1	TO BE REMOVED
732	TREE	9/2/2021	RWY22 DEPARTURE	164.8	120.0	284.8	288.0	-3.3	NO OBSTRUCTION
733	TREE	9/2/2021	RWY22 DEPARTURE	169.7	128.9	298.7	306.6	-8.0	NO OBSTRUCTION
734	ROAD	9/2/2021	RWY22 DEPARTURE	175.6	15.0	190.6	326.6	-136.0	NO OBSTRUCTION
735	ROAD	9/2/2021	RWY22 DEPARTURE	50.0	15.0	65.0	414.6	-349.6	NO OBSTRUCTION
736	ROAD	9/2/2021	RWY22 DEPARTURE	188.8	15.0	203.8	426.4	-222.6	NO OBSTRUCTION
737	RIVER	9/2/2021	RWY22 DEPARTURE	17.3	0.0	17.3	480.1	-462.8	NO OBSTRUCTION
738	RIVER	9/2/2021	RWY22 DEPARTURE	11.7	0.0	11.7	480.1	-468.5	NO OBSTRUCTION
739	RIVER	9/2/2021	RWY22 DEPARTURE	15.9	0.0	15.9	480.1	-464.2	NO OBSTRUCTION
740	RIVER	9/2/2021	RWY22 DEPARTURE	16.5	0.0	16.5	480.2	-463.7	NO OBSTRUCTION
741	RIVER	9/2/2021	RWY22 DEPARTURE	6.0	0.0	6.0	480.2	-474.3	NO OBSTRUCTION
742	ROAD	9/2/2021	RWY22 DEPARTURE	39.1	15.0	54.1	480.2	-426.1	NO OBSTRUCTION

"THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION (PROJECT NUMBER 3-53-0168-009-2021) AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

NO.	DATE	BY	APPR	REVISIONS

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING.
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL

APPROVAL DATE: ____________

SIGNATURE

CITY OF FORKS APPROVAL

APPROVAL DATE: ____________

SIGNATURE

CENTURY WEST ENGINEERING
BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

DESIGNED BY: DM	DRAWN BY: EDS	CHECKED BY: WMR	SCALE: AS SHOWN
DATE: JANUARY 2024		PROJECT NO: -	

QUILLAYUTE AIRPORT
CITY OF FORKS

AIRPORT AIRSPACE PLAN OBSTRUCTION TABLES

FIGURE NO. -

SHEET NO. 12 OF 13

PART 77 PRIMARY SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
101	FENCE	9/2/2021	PRIMARY	182.3749976	4.185	186.5599976	185.412323	1.149999976	TO BE REMOVED

PART 77 TRANSITIONAL SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
401	TREE	9/2/2021	TRANSITIONAL	164.8	120.0	284.8	259.0	25.8	TO BE REMOVED
402	TREE	9/2/2021	TRANSITIONAL	173.0	48.8	221.8	198.4	23.5	TO BE REMOVED
403	TREE	9/2/2021	TRANSITIONAL	175.1	113.5	288.6	181.8	106.7	TO BE REMOVED
404	TREE	9/2/2021	TRANSITIONAL	177.6	131.2	308.8	225.9	82.9	TO BE REMOVED
405	TREE	9/2/2021	TRANSITIONAL	181.6	166.7	348.3	326.3	22.0	TO BE REMOVED
406	TREE	9/2/2021	TRANSITIONAL	195.5	43.9	239.4	217.0	22.4	TO BE REMOVED
407	TREE	9/2/2021	TRANSITIONAL	200.5	119.3	319.8	304.2	15.6	TO BE REMOVED
408	TREE	9/2/2021	TRANSITIONAL	173.5	88.0	261.5	232.5	29.0	TO BE REMOVED
409	TREE	9/2/2021	TRANSITIONAL	170.2	134.6	304.7	227.9	76.9	TO BE REMOVED
410	TREE	9/2/2021	TRANSITIONAL	169.3	84.6	253.9	209.9	44.0	TO BE REMOVED
411	TREE	9/2/2021	TRANSITIONAL	173.5	94.1	267.5	258.8	8.8	TO BE REMOVED
412	TREE	9/2/2021	TRANSITIONAL	175.9	113.6	289.6	266.6	23.0	TO BE REMOVED
413	TREE	9/2/2021	TRANSITIONAL	175.8	71.5	247.3	200.9	46.4	TO BE REMOVED
414	TREE	9/2/2021	TRANSITIONAL	173.7	61.7	235.4	180.0	55.4	TO BE REMOVED
415	TREE	9/2/2021	TRANSITIONAL	177.1	132.1	309.2	268.7	40.5	TO BE REMOVED
416	TREE	9/2/2021	TRANSITIONAL	177.4	39.7	217.1	182.2	34.9	TO BE REMOVED
417	TREE	9/2/2021	TRANSITIONAL	178.9	142.2	321.1	287.4	33.7	TO BE REMOVED
418	TREE	9/2/2021	TRANSITIONAL	180.1	133.7	313.8	278.2	35.6	TO BE REMOVED
419	TREE	9/2/2021	TRANSITIONAL	183.1	28.0	211.1	191.3	19.8	TO BE REMOVED
420	TREE	9/2/2021	TRANSITIONAL	186.9	118.0	304.8	274.0	30.9	TO BE REMOVED
421	TREE	9/2/2021	TRANSITIONAL	189.0	45.8	234.8	191.9	42.9	TO BE REMOVED
422	TREE	9/2/2021	TRANSITIONAL	192.0	55.7	247.7	197.9	49.8	TO BE REMOVED
423	TREE	9/2/2021	TRANSITIONAL	198.3	96.1	294.4	283.2	11.1	TO BE REMOVED
424	TREE	9/2/2021	TRANSITIONAL	196.2	128.7	324.9	302.9	22.0	TO BE REMOVED
425	TREE	9/2/2021	TRANSITIONAL	205.9	154.0	359.8	341.7	18.2	TO BE REMOVED
426	TREE	9/2/2021	TRANSITIONAL	167.6	154.6	322.1	331.9	-9.8	NO OBSTRUCTION
427	TREE	9/2/2021	TRANSITIONAL	174.5	39.2	213.6	219.9	-6.3	NO OBSTRUCTION
428	TREE	9/2/2021	TRANSITIONAL	173.4	42.5	215.9	206.4	9.5	TO BE REMOVED
429	TREE	9/2/2021	TRANSITIONAL	174.5	82.6	257.1	248.9	8.2	TO BE REMOVED
430	TREE	9/2/2021	TRANSITIONAL	174.4	46.5	220.9	202.7	18.1	TO BE REMOVED
431	POWER POLE	9/2/2021	TRANSITIONAL	171.7	38.9	210.6	201.9	8.8	TO BE LIGHTED
432	TREE	9/2/2021	TRANSITIONAL	176.8	116.3	293.1	247.4	45.7	TO BE REMOVED
433	SIGN	9/2/2021	TRANSITIONAL	174.7	10.5	185.2	178.3	6.9	TO BE REMOVED
434	POWER POLE	9/2/2021	TRANSITIONAL	171.3	40.0	211.3	203.1	8.3	TO BE LIGHTED
435	TREE	9/2/2021	TRANSITIONAL	174.9	70.7	245.5	249.9	-4.3	NO OBSTRUCTION
436	TREE	9/2/2021	TRANSITIONAL	175.1	45.6	220.7	226.6	-5.9	NO OBSTRUCTION
437	TREE	9/2/2021	TRANSITIONAL	176.3	115.9	292.2	281.1	11.0	TO BE REMOVED
438	TREE	9/2/2021	TRANSITIONAL	177.5	145.4	322.9	317.0	5.9	TO BE REMOVED
439	TREE	9/2/2021	TRANSITIONAL	178.8	19.3	198.1	204.3	-6.2	NO OBSTRUCTION
440	TREE	9/2/2021	TRANSITIONAL	175.6	135.9	311.4	261.7	49.7	TO BE REMOVED
441	TREE	9/2/2021	TRANSITIONAL	175.2	22.3	197.5	199.6	-2.2	NO OBSTRUCTION
442	TREE	9/2/2021	TRANSITIONAL	179.1	178.7	357.8	337.9	19.9	TO BE REMOVED
443	TREE	9/2/2021	TRANSITIONAL	180.8	21.5	202.3	206.0	-3.8	NO OBSTRUCTION
444	TREE	9/2/2021	TRANSITIONAL	180.9	31.0	211.8	213.5	-1.7	NO OBSTRUCTION
445	TREE	9/2/2021	TRANSITIONAL	183.3	43.5	226.7	208.6	18.2	TO BE REMOVED
446	TREE	9/2/2021	TRANSITIONAL	180.7	125.1	305.9	315.8	-9.9	NO OBSTRUCTION
447	WINDSOCK	9/2/2021	TRANSITIONAL	183.7	21.0	204.7	190.1	14.6	FIXED BY FUNCTION
448	WALL	9/2/2021	TRANSITIONAL	183.5	2.7	186.2	186.3	-0.2	NO OBSTRUCTION
449	TREE	9/2/2021	TRANSITIONAL	186.3	24.9	211.2	211.8	-0.6	NO OBSTRUCTION
450	TREE	9/2/2021	TRANSITIONAL	188.8	20.2	209.0	214.5	-5.6	NO OBSTRUCTION
451	TREE	9/2/2021	TRANSITIONAL	189.3	26.8	216.1	217.3	-1.1	NO OBSTRUCTION
452	TREE	9/2/2021	TRANSITIONAL	196.6	25.5	222.1	227.7	-5.5	NO OBSTRUCTION
453	TREE	9/2/2021	TRANSITIONAL	191.9	17.9	209.7	197.7	12.0	TO BE REMOVED
454	TREE	9/2/2021	TRANSITIONAL	191.5	34.1	225.6	211.5	14.1	TO BE REMOVED
455	TREE	9/2/2021	TRANSITIONAL	195.6	20.3	215.8	219.0	-3.2	NO OBSTRUCTION
456	TREE	9/2/2021	TRANSITIONAL	195.0	43.4	238.4	235.4	3.0	TO BE REMOVED
457	TREE	9/2/2021	TRANSITIONAL	193.8	141.2	335.0	333.4	1.6	TO BE REMOVED
458	TREE	9/2/2021	TRANSITIONAL	194.7	35.3	230.0	238.6	-8.6	NO OBSTRUCTION
459	TREE	9/2/2021	TRANSITIONAL	197.7	69.5	267.2	246.5	20.7	TO BE REMOVED
460	TREE	9/2/2021	TRANSITIONAL	196.6	146.6	343.2	333.2	10.1	TO BE REMOVED
461	TREE	9/2/2021	TRANSITIONAL	197.6	85.8	283.4	292.5	-9.1	NO OBSTRUCTION
462	TREE	9/2/2021	TRANSITIONAL	197.0	61.7	258.7	263.8	-5.1	NO OBSTRUCTION
463	TREE	9/2/2021	TRANSITIONAL	195.2	69.1	264.3	240.9	23.4	TO BE REMOVED
464	TREE	9/2/2021	TRANSITIONAL	198.2	71.3	269.5	231.2	38.3	TO BE REMOVED
465	TREE	9/2/2021	TRANSITIONAL	201.5	53.8	255.3	244.6	10.7	TO BE REMOVED
466	TREE	9/2/2021	TRANSITIONAL	208.4	59.6	268.0	266.4	1.6	TO BE REMOVED
467	TREE	9/2/2021	TRANSITIONAL	201.1	138.2	339.3	290.7	48.5	TO BE REMOVED
468	TREE	9/2/2021	TRANSITIONAL	203.7	100.8	304.5	261.5	43.0	TO BE REMOVED
469	TREE	9/2/2021	TRANSITIONAL	194.8	121.5	316.3	326.0	-9.7	NO OBSTRUCTION

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PART 77 RWY 4 APPROACH SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
201	TREE	9/2/2021	RWY4 APPROACH	172.7	100.8	273.5	243.3	30.2	TO BE REMOVED
202	TREE	9/2/2021	RWY4 APPROACH	168.2	82.1	250.3	244.7	5.6	TO BE REMOVED
203	TREE	9/2/2021	RWY4 APPROACH	172.2	100.6	272.7	248.5	24.2	TO BE REMOVED
204	TREE	9/2/2021	RWY4 APPROACH	156.8	175.5	332.3	324.7	7.6	TO BE REMOVED
205	TREE	9/2/2021	RWY4 APPROACH	172.8	9.6	182.4	181.7	0.8	TO BE REMOVED
206	TREE	9/2/2021	RWY4 APPROACH	174.7	12.9	187.6	183.1	4.4	TO BE REMOVED
207	TREE	9/2/2021	RWY4 APPROACH	173.7	13.2	186.9	185.0	1.8	TO BE REMOVED
208	TREE	9/2/2021	RWY4 APPROACH	174.9	12.4	187.3	185.5	1.9	TO BE REMOVED
209	TREE	9/2/2021	RWY4 APPROACH	174.5	16.6	191.1	185.5	5.6	TO BE REMOVED
210	TREE	9/2/2021	RWY4 APPROACH	175.9	21.4	197.3	187.2	10.0	TO BE REMOVED
211	TREE	9/2/2021	RWY4 APPROACH	170.5	20.5	190.9	189.4	1.6	TO BE REMOVED
212	TREE	9/2/2021	RWY4 APPROACH	177.2	16.9	194.1	190.3	3.7	TO BE REMOVED
213	ROAD	9/2/2021	RWY4 APPROACH	174.3	15.0	189.3	190.8	-1.5	NO OBSTRUCTION
214	TREE	9/2/2021	RWY4 APPROACH	171.8	23.9	195.6	192.9	2.8	TO BE REMOVED
215	TREE	9/2/2021	RWY4 APPROACH	171.1	31.5	202.6	194.2	8.3	TO BE REMOVED
216	TREE	9/2/2021	RWY4 APPROACH	178.2	19.8	198.0	195.1	2.9	TO BE REMOVED
217	TREE	9/2/2021	RWY4 APPROACH	174.3	27.2	201.5	197.1	4.4	TO BE REMOVED
218	TREE	9/2/2021	RWY4 APPROACH	174.0	96.3	270.3	197.6	72.6	TO BE REMOVED
219	TREE	9/2/2021	RWY4 APPROACH	175.2	24.1	199.3	198.6	0.7	TO BE REMOVED
220	ROAD	9/2/2021	RWY4 APPROACH	173.3	15.0	188.3	203.1	-14.9	NO OBSTRUCTION
221	TREE	9/2/2021	RWY4 APPROACH	171.4	39.4	210.7	210.2	0.6	TO BE REMOVED
222	TREE	9/2/2021	RWY4 APPROACH	172.4	39.4	211.8	211.2	0.6	TO BE REMOVED
223	ROAD	9/2/2021	RWY4 APPROACH	173.8	15.0	188.8	213.3	-24.5	NO OBSTRUCTION
224	TREE	9/2/2021	RWY4 APPROACH	171.8	48.8	220.6	214.6	6.0	TO BE REMOVED
225	TREE	9/2/2021	RWY4 APPROACH	176.2	46.6	222.7	220.9	1.9	TO BE REMOVED
226	TREE	9/2/2021	RWY4 APPROACH	168.3	58.5	226.8	221.0	5.8	TO BE REMOVED
227	TREE	9/2/2021	RWY4 APPROACH	173.4	94.3	267.7	245.4	22.2	TO BE REMOVED
228	TREE	9/2/2021	RWY4 APPROACH	171.5	111.2	282.7	248.3	34.3	TO BE REMOVED
229	TREE	9/2/2021	RWY4 APPROACH	172.6	86.2	258.8	255.0	3.8	TO BE REMOVED
230	ROAD	9/2/2021	RWY4 APPROACH	76.5	15.0	91.5	327.3	-235.8	NO OBSTRUCTION
231	ROAD	9/2/2021	RWY4 APPROACH	169.8	15.0	184.8	387.3	-202.5	NO OBSTRUCTION

PART 77 RWY 22 APPROACH SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
301	TREE	9/2/2021	RWY22 APPROACH	192.4	27.0	219.4	195.4	24.0	TO BE REMOVED
302	TREE	9/2/2021	RWY22 APPROACH	192.7	29.7	222.4	203.8	18.6	TO BE REMOVED
303	TREE	9/2/2021	RWY22 APPROACH	192.6	32.9	225.5	209.1	16.4	TO BE REMOVED
304	TREE	9/2/2021	RWY22 APPROACH	196.5	47.7	244.2	216.3	27.9	TO BE REMOVED
305	TREE	9/2/2021	RWY22 APPROACH	197.4	54.9	252.3	222.8	29.5	TO BE REMOVED
306	TREE	9/2/2021	RWY22 APPROACH	195.3	36.7	232.0	223.5	8.5	TO BE REMOVED
307	TREE	9/2/2021	RWY22 APPROACH	198.0	48.2	246.2	224.5	21.7	TO BE REMOVED
308	TREE	9/2/2021	RWY22 APPROACH	197.7	79.4	277.2	230.7	46.5	TO BE REMOVED
309	TREE	9/2/2021	RWY22 APPROACH	199.0	37.8	236.8	233.5	3.3	TO BE REMOVED
310	TREE	9/2/2021	RWY22 APPROACH	207.3	160.7	367.9	355.6	12.3	TO BE REMOVED

PART 77 CONICAL SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
601	TREE	9/2/2021	CONICAL	375.8	149.0	524.8	522.4	2.4	TO BE REMOVED

PART 77 HORIZONTAL SURFACE OBSTRUCTIONS

OBSTACLE ID	DESCRIPTION	SURVEY DATE	SURFACE	GROUND ELEVATION (FT)	AGL (FT)	TOP HEIGHT (FT)	SURFACE HEIGHT (FT)	PENETRATION (FT)	DISPOSITION
501	TREE	9/2/2021	HORIZONTAL	167.3	182.2	349.5	344.1	5.4	TO BE REMOVED
502	TREE	9/2/2021	HORIZONTAL	188.5	164.3	352.8	344.1	8.7	TO BE REMOVED
503	TREE	9/2/2021	HORIZONTAL	189.0	147.7	336.7	344.1	-7.4	NO OBSTRUCTION
504	TREE	9/2/2021	HORIZONTAL	191.5	174.6	366.1	344.1	22.0	TO BE REMOVED
505	TREE	9/2/2021	HORIZONTAL	195.0	157.5	352.5	344.1	8.4	TO BE REMOVED
506	TREE	9/2/2021	HORIZONTAL	198.8	155.5	354.3	344.1	10.2	TO BE REMOVED
507	TREE	9/2/2021	HORIZONTAL	194.8	149.3	344.1	344.1	0.0	TO BE REMOVED
508	TREE	9/2/2021	HORIZONTAL	198.8	145.1	344.0	344.1	-0.2	NO OBSTRUCTION
509	TREE	9/2/2021	HORIZONTAL	199.4	157.4	356.8	344.1	12.6	TO BE REMOVED
510	TREE	9/2/2021	HORIZONTAL	195.6	148.4	344.0	344.1	-0.1	NO OBSTRUCTION
511	TREE	9/2/2021	HORIZONTAL	196.0	164.7	360.7	344.1	16.6	TO BE REMOVED
512	TREE	9/2/2021	HORIZONTAL	204.8	160.0	364.8	344.1	20.7	TO BE REMOVED
513	TREE	9/2/2021	HORIZONTAL	304.3	67.2	371.5	344.1	27.4	TO BE REMOVED
514	TREE	9/2/2021	HORIZONTAL	176.4	158.0	334.4	344.1	-9.8	NO OBSTRUCTION
515	TREE	9/2/2021	HORIZONTAL	175.2	165.8	341.0	344.1	-3.1	NO OBSTRUCTION
516	TREE	9/2/2021	HORIZONTAL	187.2	158.0	345.1	344.1	1.0	TO BE REMOVED
517	TREE	9/2/2021	HORIZONTAL	189.8	146.3	336.0	344.1	-8.1	NO OBSTRUCTION
518	TREE	9/2/2021	HORIZONTAL	207.3	150.2	357.4	344.1	13.3	TO BE REMOVED
519	TREE	9/2/2021	HORIZONTAL	210.5	159.5	370.0	344.1	25.9	TO BE REMOVED
520	TREE	9/2/2021	HORIZONTAL	207.3	160.7	367.9	344.1	23.8	TO BE REMOVED
521	TREE	9/2/2021	HORIZONTAL	204.7	161.9	366.6	344.1	22.5	TO BE REMOVED

NO.	DATE	BY	APPR	REVISIONS

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING.
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FEDERAL AVIATION ADMINISTRATION APPROVAL

APPROVAL DATE:

SIGNATURE

CITY OF FORKS APPROVAL

APPROVAL DATE:

SIGNATURE

CENTURY WEST ENGINEERING
BEND OFFICE
1020 SW EMKAY DRIVE
SUITE #100
BEND, OR 97702
541.322.8962 OFFICE

DESIGNED BY: DM | DRAWN BY: EDS | CHECKED BY: WMR | SCALE: AS SHOWN
DATE: JANUARY 2024 | PROJECT NO: -

QUILLAYUTE AIRPORT
CITY OF FORKS

AIRPORT AIRSPACE PLAN OBSTRUCTION TABLES

FIGURE NO. -

Appendix A

Environmental Memo

Quillayute Airport

Master Plan Update – Draft Environmental Screening

The purpose of the following environmental screening is to identify potential environmental resources that occur at the Quillayute Airport that should be taken into consideration of future improvements included in the Master Plan Update. The environmental overview will be based on the National Environmental Policy Act (NEPA) Environmental Impact Categories outlined in FAA Order 1050.1F *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B *Airports Environmental Handbook* utilizing available data and information. Research was performed for the following environmental impact categories described within the FAA's Order 1050.1F:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- *Department of Transportation Act*, Section 4(f)
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Natural Resources and Energy Supply
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers

AIR QUALITY

Local air quality is described by the concentration of various pollutants in the atmosphere. The significance of a pollution concentration is determined by comparing it to state and federal air quality standards. In 1971, the U.S. Environmental Protection Agency (EPA) established standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Oxide (NO_x), Particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb).

Based on both federal and state air quality standards, a specific geographic area can be classified as either an "attainment," "maintenance," or "non-attainment" area for each pollutant. The threshold for non-attainment designation varies by pollutant. The Quillayute Airport is in a portion of Clallam County, Washington, that attains all NAAQS (EPA 2021d) (EPA 2021e). Clallam County currently complies with federal NAAQS.

According to the EPA's Environmental Justice Screening and Mapping Tool (EJSCREEN), a tool created to highlight locations that may be candidates for further environmental review, the Quillayute Airport property falls within a census block where all air quality related environmental hazard indexes are below the 2nd percentile nationwide. The airport property scores within the 0th percentile for PM2.5 levels, ozone summer seasonal average of daily maximum 8-hour concentrations in the air, and for diesel particulate matter (EPA 2020). For all other mapped environmental air quality hazards including cancer risk from the inhalation of air toxics and other respiratory hazards exposure, the census block in which the Airport falls scored respectively in the 1st and 2nd percentiles nationwide (EPA 2020).

BIOLOGICAL RESOURCES

Biological resources are valued for their intrinsic, aesthetic, economic, and recreational qualities and include fish, wildlife, plants, and their respective habitats. Typical categories of biological resources include:

- terrestrial and aquatic plant and animal species;
- game and non-game species;
- special status species (state or federally-listed threatened or endangered species, marine mammals, or species of concern, such as species proposed for listing or migratory birds); and
- environmentally-sensitive or critical habitats.

Special Status Species

Endangered Species Act and Washington Priority Habitat and Species

The purpose of the Endangered Species Act (ESA) is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The ESA requires all federal agencies to seek to conserve species listed as threatened and endangered and associated designated Critical Habitat.

The Washington Department of Fish and Wildlife's (WDFW) Priority Habitat and Species (PHS) Program is a publicly accessible tool provided by WDFW for evaluating the potential impact of development actions on fish and wildlife habitat. Mapping and data provided by PHS provides guidance to regulatory decision making concerning the transferring of fish and wildlife information from WDFW to local governments, landowners, and others. Priority habitats are classified by PHS as: "habitat types or elements with unique or significant value to a large number of species", and may consist of unique vegetation types, dominant plant species, or a specific habitat feature (WDFW 2021k).

According to the USFWS Information for Planning and Consultation (IPaC) and the WDFW PHS on the Web tool, the federally or state protected species listed in **Table 1** have the potential to occur in the vicinity of the Airport.

Table 1. Federal or State Protected Species That Could Occur In The Vicinity Of The Airport

Species	Status	Habitat Requirements	Occurrence in Vicinity Of Airport
Monarch butterfly (*Danaus plexippus*)	Candidate (F)	Migratory species with a summer range along the west coast of the U.S. and Canada. Typical habitat includes herbaceous and scrub-shrub wetlands, woodlands, savannas, forests and dunes where milkweed plants occur (NatureServe 2021a).	No recorded sightings at Airport, but habitat in the vicinity.
Little brown bat (*Myotis lucifungus*)	Protected (WA)	Roosting habitat for this species includes buildings and other structures, tree cavities, rock crevices and mines (WDFW 2021f). Hibernacula are typically found in caves, mines and lava tubes and foraging is often concentrated near water, forests, forest edges, lawns, streets and other cover types (WDFW 2021f).	No recorded sightings at Airport, but buildings could be potential roosting habitat.

Species	Status	Habitat Requirements	Occurrence in Vicinity Of Airport
Yuma myotis (*Myotis yumanensis*)	Protected (WA)	Habitat includes moist and dry forests, riparian zones, grasslands, shrub-steppe, and deserts and are often found near rivers, streams, ponds and lakes. Yuma myotis roost in buildings, bridges, cliff crevices, caves, mines, and trees (WDFW 2021p).	No recorded sightings at Airport, but buildings could be potential roosting habitat. Habitat in the vicinity of the Airport along rivers.
Roosevelt Elk (*Cervus canadensis roosevelti*)	Protected game (WA)	Roosevelt elk occupy the coastal range of the Olympic Peninsula and the western slopes of the Cascade Range. Habitat includes grasslands, meadows, or clear cuts interspersed with closed-canopy forests (WDFW 2021e).	Roosevelt elk are mapped by PHS as using the portion of Airport property north of the Dickey River.
Marbled murrelet (*Brachyramphus marmoratus*)	Threatened (F), Threatened (WA)	This seabird forages in marine waters but nests in forests, with a preference for old-growth conifer forests (WDFW 2021i).	Recorded sightings within 2.5 mi of the airport. Critical habitat occurs 5.5 miles southeast of the Airport and ~8 miles east of the Airport within the outskirts of Olympic National Park.
Northern Goshawk (*Accipiter gentilis*)	Candidate (WA)	Nest almost exclusively in late-seral stage coniferous forests and are opportunistic foragers. Ten percent of breeding territories occur in the Olympic Peninsula (WDFW 2021g).	A northern goshawk was mapped by PHS as occurring on a property adjacent to the northwestern boundary of the Airport.
Northern spotted owl (*Strix occidentalis caurina*)	Threatened (F), Endangered (WA)	Habitat includes mid and late seral coniferous forests with high canopy closure, complex canopy structure, large snags and high volumes of downed wood (WDFW 2021h).	No recorded sightings in vicinity of Airport. Critical habitat is located ~ 9.5 miles northeast and ~ 11 miles east of the Airport in Olympic National Park
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened (F), Endangered (WA)	Habitat for this coastal subspecies includes airport grasslands and remnant prairies, and beaches on the coasts of Oregon and Washington (WDFW 2021n).	No recorded sightings at Airport. Potential habitat in the vicinity of the Airport.

Species	Status	Habitat Requirements	Occurrence in Vicinity Of Airport
Yellow-billed Cuckoo (*Coccyzus americanus*)	Threatened (F), Endangered (WA)	Habitat includes large, continuous riparian zones with cottonwood trees and willows (WDFW 2021o).	No recorded sightings at Airport, but potential suitable habitat in the vicinity of the Airport along rivers.

Source: USFWS 2021, WDFW 2021a-o

Multiple species of federal and state listed fish have mapped occurrences on airport property. These species include winter steelhead, chum salmon, Coho salmon, and fall Chinook. **Table 2** lists distributions of fish populations in the vicinity of the Quillayute Airport.

Table 2. Fish Populations In The Vicinity Of The Quillayute Airport

Species	Status	Occurrence in the vicinity of the airport
Bull trout (*Salvelinus confluentus*)	Threatened (F), Candidate (WA)	Critical habitat is located ~3.5 miles west of the Airport in the Pacific Ocean and 8 miles south in Goodman Creek. This population is a part of the Coastal Recovery Unit of bull trout.
Coho salmon (*Oncorhynchus kisutch*)	Protected (WA)	Coho utilize the Dickey, Quillayute, Sol Duc and Bogachiel Rivers for migration. Coho utilize Coal and Colby creeks for spawning and rearing. The nearest ESA listed population of Coho is the Lower Columbia River ESU near the border of Oregon and Washington.
Cutthroat trout (*Oncorhynchus clarkii)*	Protected game species (WA)	Coastal cutthroat and Quillayute coastal cutthroat are mapped by PHS as using the Dickey River for habitat and migration.
Dolly varden (*Salveninus malma*)	Threatened (F), Protected (WA)	Dolly varden occupy the same habitat as bull trout and are so similar that the two species cannot easily be distinguished in the field. Species listed under a similarity of appearance may be protected by the take prohibitions the ESA.
Chinook salmon (*Oncorhynchus tshawytscha*)	Protected (WA)	Fall chinook utilize rivers and creeks in the vicinity of the Airport for spawning and rearing. Spring chinook utilize the Quillayute river for rearing and migration and use the Sol Duc and Bogachiel Rivers for spawning and rearing. Summer chinook utilize the Quillayute River for migration and the Sol Duc and Bogachiel rivers for spawning and rearing. The closest ESA listed population of this species is the Puget Sound ESU.
Chum Salmon (*Oncorhynchus keta*):	Protected (WA)	Chum salmon use the Dickey River, Quillayute River, Sol Duc River, Colby Creek, Coal Creek for migration. The Bogachiel River is used for spawning and rearing. The closest ESA listed population of chum salmon is the Hood Canal summer-run ESU.

Species	Status	Occurrence in the vicinity of the airport
Steelhead (*Oncorhynchus mykiss*):	Protected (WA)	Summer steelhead utilize the Quillayute, Bogachiel and Sol Duc Rivers for migration. Winter steelhead utilize the Dickey River for migration and spawning and rearing. Spawning and rearing also occur in Colby and Coal Creek as well as the Bogachiel and Sol Duc Rivers. Mixed migration, rearing and migration, and spawning and rearing occur in the Quillayute River. The closest listed population of Steelhead is the Puget Sound DPS.
Sockeye salmon	Protected (WA)	Sockeye salmon utilize the Quillayute River, the Sol Duc River and the Bogachiel River for migration. A portion of the Bogachiel River near the vicinity of the Airport is also used for spawning and rearing. The closest listed population of Sockeye salmon is the Ozette Lake ESU.

Source: StreamNet Mapper 2021

Migratory Bird Treaty Act

Birds protected under the *Migratory Bird Treaty Act* (MBTA) may nest, winter, or migrate throughout the area. Under the requirements of the MBTA, all project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. Migratory birds known to occur in the vicinity of the area are listed in **Table 3.** The species listed below are only representative of species found in the vicinity, not necessarily on airport property.

Table 3. Bird Species in the Airport Vicinity Protected Under the MBTA

American Crow	Common Goldeneye	Mallard	Ruby-crowned Kinglet
American Dipper	Common Loon	Marbled Murrelet	Ruddy Duck
American Goldfinch	Common Merganser	Marsh Wren	Rufous Hummingbird
American Kestrel	Common Murre	Merlin	Sanderling
American Pipit	Common Nighthawk	Mew Gull	Savannah Sparrow
American Robin	Common Raven	Mourning Dove	Sharp-shinned Hawk
American Wigeon	Common Yellowthroat	Nashville Warbler	Short-eared Owl
Ancient Murrelet	Cooper's Hawk	Northern Flicker	Short-tailed Shearwater
Anna's Hummingbird	Dark-eyed Junco	Northern Fulmar	Snow Goose
Arctic Loon	Double-crested Cormorant	Northern Harrier	Song Sparrow
Bald Eagle	Downy Woodpecker	Northern Pintail	Spotted Sandpiper
Band-tailed Pigeon	Dunlin	Northern Pygmy-Owl	Spotted Towhee
Barn Owl	Eared Grebe	Northern Rough-winged Swallow	Steller's Jay
Barn Swallow	Eurasian Wigeon	Northern Saw-whet Owl	Surf Scoter
Barred Owl	Evening Grosbeak	Northern Shoveler	Surfbird
Barrow's Goldeneye	Fox Sparrow	Northern Shrike	Swainson's Thrush
Belted Kingfisher	Gadwall	Northwestern Crow	Swamp Sparrow
Bewick's Wren	Glaucous Gull	Olive-sided Flycatcher	Townsend's Solitaire
Black Oystercatcher	Glaucous-winged Gull	Orange-crowned Warbler	Townsend's Warbler
Black Scoter	Golden Eagle	Osprey	Tree Swallow
Black Swift	Golden-crowned Kinglet	Pacific Loon	Tropical Kingbird
Black Turnstone	Golden-crowned Sparrow	Pacific Wren	Trumpeter Swan

Black-bellied Plover	Great Blue Heron	Pacific-slope Flycatcher	Tufted Duck
Black-capped Chickadee	Great Horned Owl	Palm Warbler	Tundra Swan
Black-headed Grosbeak	Greater Scaup	Pelagic Cormorant	Turkey Vulture
Black-legged Kittiwake	Greater White-fronted Goose	Peregrine Falcon	Varied Thrush
Black-throated Gray Warbler	Green Heron	Pied-billed Grebe	Vaux's Swift
Bonaparte's Gull	Green-winged Teal	Pigeon Guillemot	Violet-green Swallow
Brandt's Cormorant	Hairy Woodpecker	Pileated Woodpecker	Virginia Rail
Brant	Hammond's Flycatcher	Pine Grosbeak	Warbling Vireo
Brewer's Blackbird	Harlequin Duck	Pine Siskin	Western Grebe
Brown Creeper	Harris's Sparrow	Purple Finch	Western Gull
Brown-headed Cowbird	Heermann's Gull	Red Crossbill	Western Kingbird
Bufflehead	Hermit Thrush	Red Phalarope	Western Meadowlark
Bullock's Oriole	Herring Gull	Red-breasted Merganser	Western Screech-Owl
Bushtit	Hooded Merganser	Red-breasted Nuthatch	Western Tanager
Cackling Goose	Horned Grebe	Red-breasted Sapsucker	Western Wood-Pewee
California Gull	House Finch	Red-eyed Vireo	White-crowned Sparrow
Canada Goose	Hutton's Vireo	Red-necked Grebe	Willow Flycatcher
Canada Jay	Indigo Bunting	Red-tailed Hawk	Wilson's Snipe
Cassin's Auklet	Killdeer	Red-throated Loon	Wilson's Warbler
Cassin's Vireo	Lesser Scaup	Red-winged Blackbird	Yellow Warbler
Cedar Waxwing	Lincoln's Sparrow	Rhinoceros Auklet	Yellow-billed Loon
Chestnut-backed Chickadee	Long-billed Dowitcher	Ring-billed Gull	Yellow-rumped Warbler
Clark's Grebe	Long-eared Owl	Ring-necked Duck	
Clay-colored Sparrow	Long-tailed Duck	Rock Sandpiper	
Cliff Swallow	MacGillivray's Warbler	Rough-legged Hawk	

Source: (USFWS 2020) (USGS 2021a) (Audubon 2021b) (USFWS 2021c)

Birds of Conservation Concern

The Quillayute Airport falls within the USFWS Birds of Conservation Concern (BCC) Zone 5 (USFWS 2021a). Species that have recorded sightings within or at the Airport are listed in **Table 4**. Of the species recorded on airport property all observations except for one of the varied thrush sightings occurred on the eastern boundary where the property borders Quillayute Prairie (eBird 2021).

Table 4. BCC Sightings In The Vicinity of the Airport

	Recorded sightings	
within 3.5 mi of airport	within 2.5 mi of airport	at Airport
Clark’s grebe, marbled godwit, short-billed dowitcher, lesser yellowlegs, and ancient murrelet	western grebe, black oystercatcher, marbled murrelet, Cassin’s auklet, tufted puffin, western gull, Brandt’s cormorant, and olive-sided flycatcher	black swift, Vaux’s swift, rufous hummingbird, California gull, western screech-owl, chestnut-backed chickadee, and varied thrush

Source: eBird 2021

Bald and Golden Eagle Protection Act

The bald eagle and golden eagle are protected under the *Bald and Golden Eagle Protection Act* of 1940, which provides specific guidance for minimizing effects to these species. While there are no recorded observations of golden eagles within the immediate vicinity of the airport, there are recorded observations of bald eagles on the eastern boundary of Quillayute Airport property, where the tree line opens to Quillayute Prairie (eBird 2021).

Environmental Sensitive and Critical Habitats

Designated critical habitat in the vicinity of the Quillayute Airport include the following:

- Bull trout critical habitat is approximately 3.35 miles west of the Airport in the Pacific Ocean and 8 miles south of the Airport in Goodman Creek.
- Marbled murrelet critical habitat is approximately 5.5 miles southeast of the Airport, and approximately 8 miles east of the Airport within and on the outskirts of Olympic National Park.
- Northern spotted owl critical habitat is approximately 9.5 miles northeast and approximately 11 miles east of the Airport in Olympic National Park.

There are National Wetland Inventory (NWI) and PHS mapped freshwater emergent wetlands and freshwater forested/shrub wetland on airport property (see **Figure 1**). On airport property, adjacent and connecting to the northern side of the Dickey River, PHS has mapped a wetland complex named Elkhorn Pond that is not mapped on NWI or NHD resources (see **Figure 1**). This area is documented as a snag rich wetland/pond that is habitat for elk and numerous bird species. This area is also a WDFW enhancement project for creating off-channel habitat for juvenile Coho (WDFW 2021j).

DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(f)

Section 4(f) of the *Department of Transportation* (DOT) *Act*, provides that the Secretary of Transportation will not approve any program orproject that requires the use of any publicly owned land from a historic site, public parks, recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planningto minimize harm resulting from the use. The following list summarizes the nearest properties of each type that may be protected under Section4(f) of the DOT Act:

- Properties Listed on the National Register of Historic Places – Washington MPS Beaver School located approximately 13.75 miles northeast of the Airport (NPS 2021a).
- Recreation Area – Mora campgrounds located approximately 1.5 miles southwest of the Quillayute Airport.
- Wilderness Area – Daniel J. Evans Wilderness Area located approximately one mile southwest of the Airport. Daniel J. Evans Wilderness includes 95 percent of Olympic National Park, five areas in Olympic National Forest and more than 600 islands in National Wildlife Refuges (NPS n.d.).
- Wildlife Refuge – Quillayute Needles National Wildlife Refuge located approximately 3.2 miles west of the Airport
- Locally Owned Park – Quillayute River County Park located approximately one mile south of the Quillayute Airport property

There are no Section 4(f) resources located within the immediate vicinity of the Airport. The closest Section 4(f) resource is Olympic National Park/Daniel J. Evans Wilderness Area that is approximately one mile southwest of the Airport.

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. According to the EPA'sEJSCREEN, the closest brownfield site is located approximately 29 miles north of the Quillayute Airport property. The closest superfund site is located at the Makah Reservation Warmhouse Beach Dump in Neah Bay, WA, approximately 30 miles north of the Airport (EPA 2020). This site is in the remedial investigation stage of the Superfund cleanup process (EPA 2021a).

According to the DOE's "What's in my Neighborhood Map", the Formerly Used Defense Site (FUDS) Quillayute Naval Auxiliary Air Station (NAAS) cleanup site is located on the Airport. The site was initially reported and investigated in 1999 and the affected media and contaminants include:

- Priority pollutant metals in the soil confirmed above cleanup level, and
- Polycyclic aromatic hydrocarbons in the soil confirmed above cleanup level.

In addition, according to the DOE spills map, the closest recoded oil and/or chemical spills to open water recorded in the vicinity of the Airport is limited to six spills of varying types of oil and fuel that occurred in the town of La Push approximately three miles southwest of the Airport. The recorded spills were all under 50 gallons each and took place between the years of 2015 to 2019 (DOE 2021a).

The EPA Toxics Release Inventory Tool lists only one facility within a 10-mile radius of the Quillayute Airport. The mapped TRI facility is Interfor Pacific Forks Sawmill, and it was closed in 2014 (EPA 2021b). While in operation it released a variety of hazardous emissions but followed permitting compliances with the Clean Air Act (CAA), Clean Water Act (CWA) and the Resource Conservation and Recovery ACT (RCRA) (EPA 2021c).

NATURAL RESOURCES AND ENERGY SUPPLY

There are two decommissioned above-ground fuel tanks and pumps on site at the Quillayute Airport (Clallam County 2020). These facilities are located approximately 150 feet north of the end of the main driveway entrance to the Airport. According to the Airport owner, tanks are inactive and will be removed. The U.S. Coast Guard (USCG) began work in 2021 to establish a small jet fuel storage cache at the Airport to support their area operations. The new USCG tank will be located adjacent to the existing fuel tanks to access available electrical power supply. No public use aviation fuel services are currently available at the Airport.

There is also a generator and fuel tank located on the western side of the National Weather Service (NWS) Building (Clallam County 2020).

The Quillayute Airport lies outside of the Forks Urban Growth Area and the service area for the Forks City Water Department and the Forks Sewer District (City of Forks 2021). The Airport also is not located within the Clallam County Public Utility District (PUD) water service area (Clallam County PUD 2021). There is a well on the airport property located southwestern of the closed second runway used to provide water to the Airport (Barnard 2003). There is also at least one fire hydrant located on airport property (Clallam County 2021a).

The building occupied by the National Weather Service and the existing large hangar are the only facilities on the Airport with functional restrooms. These facilities were designed with septic system connections. There is also one portable toilet located on the Airport for public use (Clallam County 2020).

According to the Clallam County On-Site Sewage System (OSS) Inspection Status Map, the Quillayute Airport is not up to date for required septic tank inspection. In addition, according to the Clallam County Online Permit System, as of 2008, the septic tank systems on site were installed in 1943 serving the Quillayute Air Base. The septic systems installed in 1943 were abandoned but have not been decommissioned (Clallam County 2021a).

Electrical service to Clallam County is provided by Clallam County PUD, which serves the Quillayute Airport. Communications utility services are also present at the Airport. The nearest utility transformer and communications pedestal are located approximately 250 feet down the main driveway entrance towards the Airport from Quillayute Road, on the western side of the drive (Clallam County 2020). Overhead power and communications services are routed from Quillayute Road to the utility transformer and communications pedestal. From this location, overhead power and communications are directly routed to the NWS building, located an additional 90 feet north (Clallam County 2020). From the eastern side of the NWS building, buried power and communications lines extend east 300 feet to the existing NWS weather balloon launch area (Clallam County 2020).

Additionally, there are buried power and communications utilities lines that extend from the transformer and pedestal north 150 feet to the edge of the pavement, then east 130 feet to a handhole, before extending 50 feet north to a utility junction box (Clallam County 2020). From the junction box, underground utilities are buried approximately 40 feet northwest to the airport shelter and portable toilet, extending approximately 150 feet northwest to the airport fuel tanks/pumps (Clallam County 2020).

WATER RESOURCES

Wetlands

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material intowaters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*. Wetlands are defined in Executive Order 11990, *Protection of Wetlands*, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction."

The NWI mapping within the vicinity of the Airport is shown on **Figure 1** and includes the following resources:

- One freshwater forested/shrub wetland at northernmost point of airport property near Coal Creek. The USGS National Hydrography Dataset (NHD) has mapped a tributary to Coal Creek originating on airport property and flowing east to west through this wetland. Surrounding this tributary, NWI has mapped riverine wetland habitat.
- A tributary to the Dickey River flows through the airport property south of Coal Creek and north of the Dickey River. NWI maps riverine wetland habitat along the banks of this tributary. The NWI also maps a freshwater emergent wetland south of Dickey River that appears to connect to the river. An NHD mapped tributary to the Dickey River flows east to northwest through the airport property south of Dickey River, along the banks of this

tributary, there is a NWI mapped riverine wetland habitat. Approximately 400 ft south of the Dickey River there is another freshwater forested/shrub wetland mapped by NWI.

- Two other small tributaries to the Dickey River appear to originate on the western edge of the airport property and have riverine wetlands mapped by NWI along the banks.
- Two freshwater emergent wetlands and one forested/shrub wetland is mapped by NWI at the end of Runway 4. The NWI indicates that the forested/shrub wetland could be a headwater of one of the small tributaries of the Dickey River.

In addition to the NWI mapping, three wetlands are mapped on the Quillayute Airport Layout Plan documented by Barnard Dunkelberg and Company (2003). The source of the data concerning these mapped wetlands is not listed. However, two out of the three wetlands mapped on these plans do not correspond with NWI mapped wetlands. The following wetlands are mapped on the Quillayute Airport Layout Plans and shown on **Figure 1**:

- One wetland near the southwest end of the runway protection zone for Runway end 30.
- One wetland near the northeast interior corner of the airport property boundary
- One wetland at the end of the northern runway protection zone for Runway end 12. This wetland corresponds to an NWI mapped freshwater forested/shrub wetland south of the Dickey River.

Floodplains

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve thenatural and beneficial values served by the floodplains. Based on a review of Federal Emergency Management Agency (FEMA) maps, there are areas of 100-year floodplains on airport property.

Areas that lie within the floodplain on airport property are associated with Coal Creek and Dickey River. All areas within the floodplain are at minimum 600 feet past the end of Runway 12 (which is currently closed). The portion of the airport property that lies in the 100-year flood plane is classified as FEMA Zone A (FEMA 1983). Zone A areas lie within the floodplain but base flood elevations and flood hazard factors are not determined (FEMA 1983).

Surface Waters

This airport property is in the watershed defined by the 8-digit Hydrologic Unit Code (HUC) 17100101 (USGS 2018). The largest NHD mapped surface water on Quillayute Airport property is the Dickey River. NHD also maps five tributaries to the Dickey River on airport property as well as one tributary to Coal Creek. Coal Creek is a larger tributary to Dickey River that is approximately 30 feet west of the northwestern most point of the airport property (USGS 2021). The NHD mapping within the vicinity of the Airport is shown on **Figure 1**.

NHD maps all surface water resources present on the airport property as streams/rivers with perennial hydrology except for the tributary to Coal Creek in the northernmost portion of the property and the tributary to Dickey River located west of the central portion of Runway 12-30.

The segments of Dickey River and Coal Creek that pass through and near the airport property are classified as an impaired water under Section 303[d] of the *Clean Water Act* (DOE 2016). In addition, the nearest portion of the Sol Duc River approximately 0.85 miles south of the airport property is also classified as an impaired water under section 303[d]. All three waters are listed for water temperatures above criterion. Currently no TDMLs have been established for any of these surface waters.

Although Dickey River is listed as an impaired waterway, the Airport can prevent further degradation of the water quality by adhering to the National Pollutant Discharge Elimination System (NPDES) permit obligations and not further contributing to point-source pollutants.

Groundwater

According to the USGS Principal Aquifers of the 48 Conterminous United States the general aquifer type in the vicinity of the Quillayute Airport is Pacific Northwest basin-fill aquifers composed of unconsolidated sand and gravel aquifers (USGS 2004). This type of unconsolidated deposit aquifer is the most productive and widespread type of aquifer in Idaho, Oregon and Washington (USGS 1994). They are prevalent in stream valleys and lowlands associated with structural or erosional basins (USGS 1994). These types of aquifers provide freshwater for domestic, commercial and industrial purposes and are important for providing agricultural irrigation (USGS 1994).

There is one well located on the Quillayute Airport property (Barnard 2003). It is located southwest of the intersection of the two runways.

National Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created in 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values. The closest designated segment of a Wild and Scenic River is a portion of the Skagit River, located approximately 115 miles east of the Airport (USFWS 2016).

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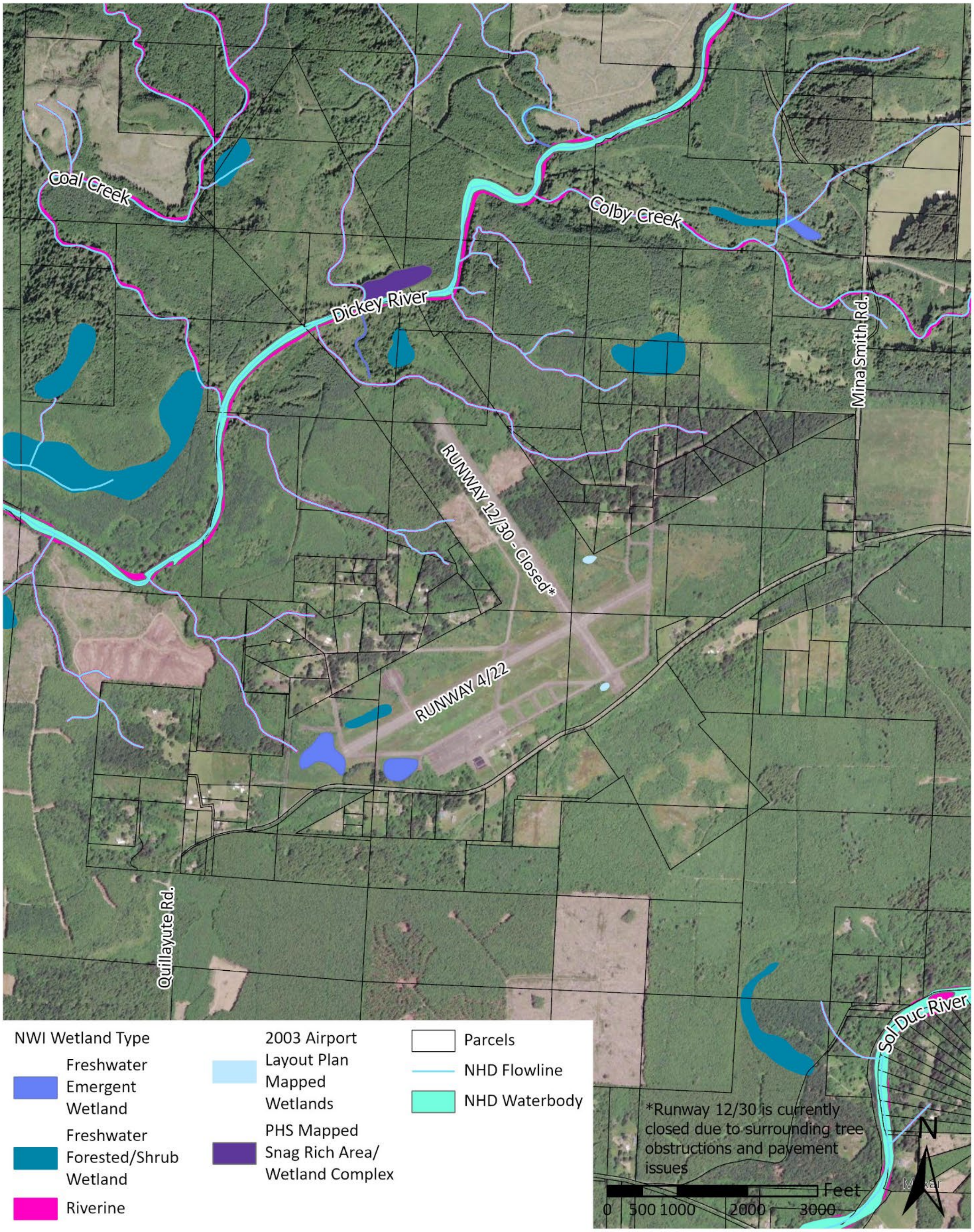
Coal Creek
Colby Creek
Dickey River
Mina Smith Rd.
RUNWAY 12/30 - Closed*
RUNWAY 4/22
Quillayute Rd.
Sol Duc River
NWI Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Riverine
2003 Airport Layout Plan Mapped Wetlands
PHS Mapped Snag Rich Area/ Wetland Complex
Parcels
NHD Flowline
NHD Waterbody
*Runway 12/30 is currently closed due to surrounding tree obstructions and pavement issues
0 500 1000 2000 3000 Feet
N

Appendix B

Cultural Resources Assessment

Cultural Resources Documentation for the Quillayute Airport-UIL Mater Plan, 5144 Quillayute Road, Forks, Washington

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Drayton Archaeology Report: 0621Q

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Cultural Resources Documentation for the Quillayute Airport-UIL Mater Plan, 5144 Quillayute Road, Forks, Washington

Authors:	Garth L. Baldwin and Stephen F. Austin
Date:	March 14, 2022
Location:	Forks, Clallam County, Washington
USGS Quad:	Quillayute Prairie, WA 7.5-minute USGS Quadrangle (2020)
Township, Range, Section:	T 28 N, R 14 W, S 18

SUMMARY

Drayton Archaeology (Drayton) was retained by the City of Forks to conduct a built environment assessment of 5144 Quillayute Rd, Forks, WA 98331, Clallam County, for the proposed Quillayute Airport-UIL Master Plan Project. The proposal involves inventory and assessment of historic-aged structures located on the Quillayute Airport property. This built environment assessment was conducted to *preempt possible* compliance requirements *that may accompany grant funding to be sought for restoration of the Quillayute Airport.* No archaeological or subsurface testing was initiated per the project's purpose and scoping. No project or undertaking is currently planned for this property; therefore, no further archaeological or architectural oversight is warranted.

Drayton's cultural resources assessment consisted of a thorough background review, field investigation, and production of this report. Background review concluded that the project is located in an area of high probability for historic built environment resources. On-site fieldwork included systematic visual reconnaissance and intensive level historical research of the property. Two historic era building were identified via field survey. Historic Property Inventory forms were produced for either property and included determinations of eligibility.

REGULATORY CONTEXT

This project was initiated by the City of Forks as a preempt component of future cultural resources compliance that may arise as a component of future grant applications. This action was not necessitated by any known cultural resources regulation. The purpose of the historic property survey was to identify potentially eligible buildings located on the property and assess their eligibility for listing to the National Register of Historic Places.

PROJECT LOCATION AND DESCRIPTION

The APE consists of approximately 500-acreage and is located 5144 Quillayute Rd, Forks, WA 98331 in southwest Clallam County, 10-miles west of downtown Forks, Washington. Clallam County Tax Assessor data reports that the Quillayute Airport (Tax Parcel No. 142807410150) falls within sections 13, 18, and 7 of Townships 28N Ranges 15W and 14W of the Willamette Meridian

(Figure 1). The current proposal involves extant buildings built in conjunction with Naval Auxiliary Air Station Quillayute (Quillayute Airport).

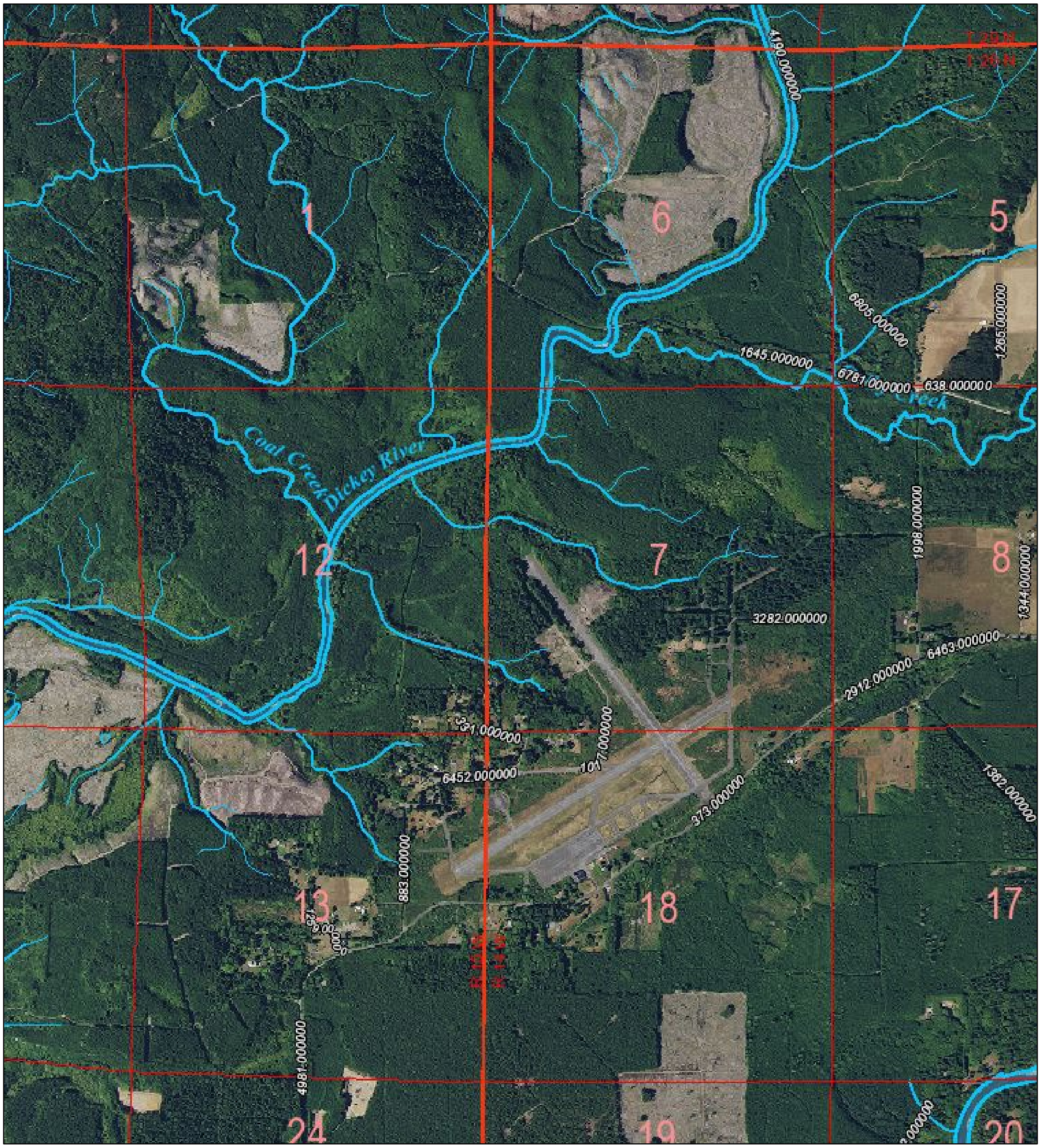

Figure 1. A portion of the Quillayute Prairie (2022) Assessors Tax Map the APE.

Figure 2. An aerial image illustrating the APE (google maps, 2022).

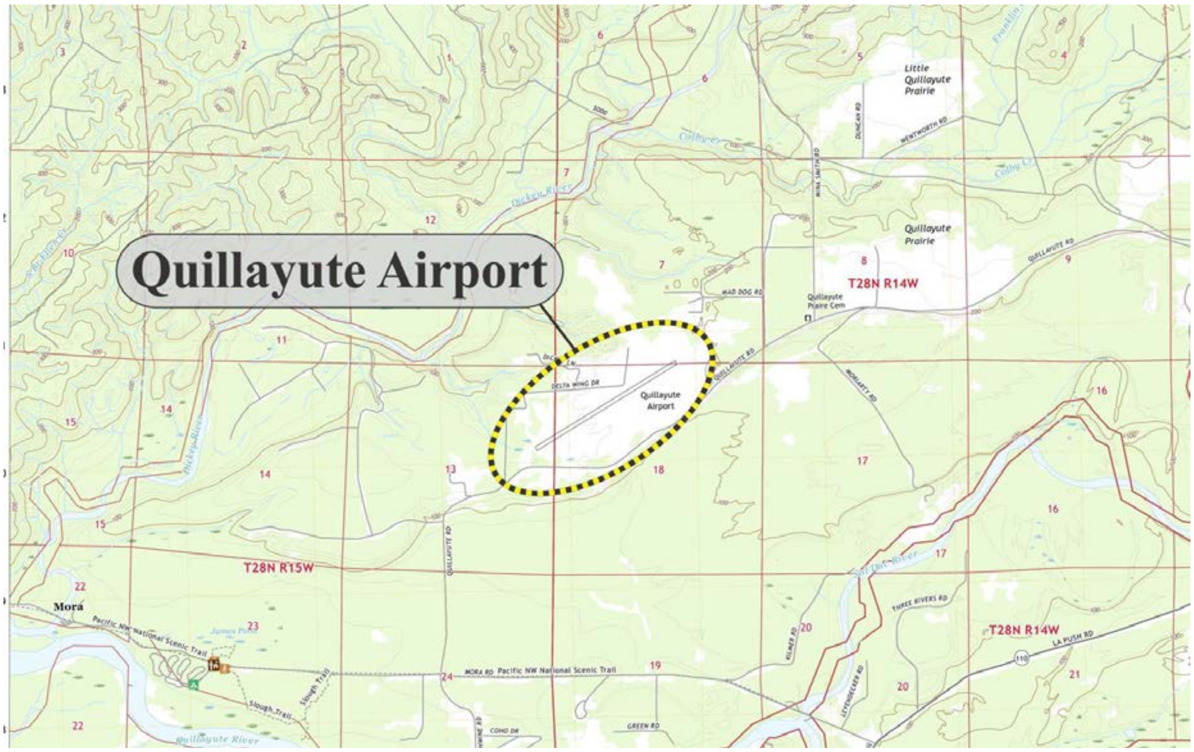

Figure 3. 2020 WA 7.5' USGS quad map with project area shown.

BACKGROUND REVIEW

An investigation of archival research informs of the potential for encountering cultural resources within APEs. Drayton's consulted archives include documents related to precontact and historic contexts, previously recorded cultural resources studies and site records, and selected published local historic accounts. Historical materials directly related to the Naval Auxiliary Air Station Quillayute and its subsequent acquisition by the City of Forks were provided by Forks City Attorney and Planner Rod Fleck.

Archaeological records are obtained from the Washington State Department of Archaeology and Historic Preservation's (DAHP) Washington Information System for Architectural and Archaeological Records Data (WISAARD). WISAARD is a restricted-access searchable geographic information system containing locations of previously recorded cultural resources surveys conducted post-1995, archaeological sites, historic sites, National Register of Historic Places (NRHP) sites, and cemeteries and burials. For this project, Drayton reviewed cultural resource archives documented within an approximate one-mile radius of the APE.

The following sections detail the environmental, cultural, and archaeological circumstances that inform Drayton's archaeological assessment of the APE.

Geology and Topography

The APE is geographically situated within the Olympic Peninsula within the Bogachiel River watershed. The project location is near the Quillayute river, which drains west to the Pacific Ocean from the Olympic Mountains. This area represents the southern terminus of the massive continental ice-sheet originating from Canada (Kruckeberg 1991:12). The topography and geology of the APE was formed during the Fraser Glaciation during the late Pleistocene (Halloin 1987). The hills and lowlands of the northwestern Olympic Peninsula primarily contain continental glacial moraine and stratified deposits of sand, gravel, silt, and clay, with glacially transported foreign rock clasts (Tabor and Cady 1978). Ethnographic evidence establishes that native peoples were accustomed to burning prairies to cultivate edible species and promote a good hunting environment (Powell and Morgenroth 1998). The Quillayute Prairie is one such location. Euro-American farming and construction of the current Quillayute airport has keep the APE clear of trees. Western hemlock (Tsuga heterophylla), Douglas-fir (Pseudotsuga Menziesi) predominate the project. The APE was reported logged through the 1980s and 1990s.

Soils

According to the University of California Davis SoilWeb (UCDavis SoilWeb (2020), soils in the APE are classified as Quillayute silt loam, 0 to 8 percent slopes. The Quillayute series consists of deep, well drained soils that formed in loess and old estuary deposits. These soils are on river terraces with slopes of 0 to 8 percent. A typical soil profile consists of a 01 horizon 2.5 to 0 centimeters (1 inch to 0); needles, leaves, and twigs, an A11 horizon 0 to 20.32 centimeters (0 to 8 inches); very dark brown silt loam, an A12 horizon 20.32 to 50.80 centimeters (8 to 20 inches); very dark grayish brown silt loam, an A13 horizon 50.80 to 81.28 centimeters (20 to 32 inches); very dark grayish brown and very dark gray silty clay loam, a B2 horizon 81.28 to 124.50 centimeters (32 to 49 inches); yellowish brown silty clay loam, and a B3 horizon 124.50 to 152.40 centimeters (49 to 60 inches); light olive brown silty clay loam (UCDavis SoilWeb n.d.).

Flora and Fauna

The project is in the Picea sitchensis vegetation zone on the west coast of the Olympic Peninsula, which could be considered a subtype of the western hemlock (*Tsuga heterophylla*) vegetation zone. Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), red cedar (*Thuja plicanta*), Douglas fir (*Pseudotsuga menziesii*), western white fir (*Abies grandis*), and silver fir (*A. amabilis*) are the dominant tree species in the region, while hardwoods such as red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*) are generally subordinate and found near water courses or riparian habitats. Understory shrubs with potential food and resource value in the western hemlock zone include, but are not limited to, swordfern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), Oregon grape (*Mahonia aquifolium*), vine maple (*Acer circinatum*), blackberry (*Rubus spp*.), ocean spray (*Holodiscus discolor*), salal (*Gaultheria shallon*), blueberries and huckleberries (*Vaccinium spp*.), and red elderberry (*Sambucus racemosa*) (Franklin and Dyrness 1998).

Terrestrial fauna in the region includes but are not limited to mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), cougar (*Puma concolor*), coyote (*Canis latrans*), black bear (*Ursus americanus*), squirrels (*Scirius sp*.), muskrat (*Ondatra sp*.), and raccoon (*Procyon lotor*) (Eder 2002). Aquatic fauna in the vicinity include North American beaver (*Castor canadensis*), Western toad (*Anaxyrus boreas*), Van Dyke's salamander (*Plethodon vandykei*), great blue heron (*Ardea* *herodias*), harlequin duck (*Histrionicus histrionicus*), marsh wren (*Cistothorus palustris*), Olympic mudminnow (*Novumbra hubbsi*), Pacific river and brook lamprey (*Lampreta tridentata*), large scale sucker (*Catostomus macrocheilus*), and longnose and speckled dace (*Rhinichthys cataractae*)(Franklin and Dyrness 1998).

Cultural Context

A broad discussion regional land use in the vicinity of the APE provides contextual information regarding past inhabitants and the activities in which they engaged. It is important to note that many of the name designations applied to past peoples (particularly during contact and early historic periods), are those given by European explorers, Euro-American settlers, and others compiling information for treaty purposes.

Human occupation of the Puget Lowland is well documented in a number of archaeological, ethnographic, and oral historic records (e.g., Ames and Maschner 1999; Greengo and Houston 1970; Larson and Lewarch 1995; Moss 2011; Nelson 1990). British Columbia Northwest Coast Culture traditions are closely related and can be viewed in Borden (1950, 1975); Carlson and Dalla Bona (1996); Fladmark (1982); and Matson and Coupland (1995).

Precontact

Puget Lowland archaeology can be subdivided into three time periods: the early (10,500 to 5,000 years BP), middle (5,000 to 1,000 BP) and late periods (1,000 to 250 BP).

The early period is characterized by activities to support habitation within camps along river terraces or outwash channels. Tool technology is primarily characterized by the use of flaked stone tools including fluted projectile points, leaf-shaped points, and cobble-derived tools. These artifacts are often attributed to the “Olcott” phase, named after the site-type near Arlington and Granite Falls (Baldwin 2008; Kidd 1964; Mattson 1985). Suggested by Mattson (1985:83) and Kidd (1964:26), Olcott sites are generally located away from modern shorelines, where occupation took place along terraces of active water courses of the time. Today, these past habitation areas are often found away from modern rivers, as the course of waterways and channels have shifted over time. Besides the lithic assemblage, little faunal or organic evidence dates to this period - likely a result of poor preservation due to the soil composition and elapsed time. The lack of organic evidence and the abundance of lithic materials unintentionally skew the archaeological record to suggest a specialization of terrestrial hunting practices.

The middle period coincides with a stabilization of the physical environment and climate to modern conditions. The middle period is noted for its increased artifact and trait diversity including a full woodworking toolkit comprised of bone and antler implements, art and ornamental objects, status differentiation in burials, and extremely specialized fishing and sea-mammal hunting technologies (Ames and Maschner 1999; Matson and Coupland 1995; Moss 2011; Wessen 1990). Lithic technology becomes specialized to include smaller notched points and ground stone (Moss 2011; Nelson 1990; Wessen 1990). Shell midden sites first appear during this period, indicating a transition to a predominantly maritime-based subsistence pattern (Matson and Coupland 1995;

Nelson 1990; Thompson 1978). Although structural elements such as post molds have been identified (Moss 2011; Nelson 1990), habitation structures have not been excavated.

The late period is dominated by a settlement pattern along the coastline, streams, and rivers that show evidence of increased fortification (Ames and Maschner 1999; Matson and Coupland 1995; Moss 2011). Rising sea levels and riparian environments supporting large salmon runs allowed salmon to become a predominant food source (Moss 2011; Wessen 1990). The late period is generally recognized by an apparent decrease in artifact diversity. Stone carving and chipped stone technologies nearly disappear, while trade goods (indicating extensive trade networks along the coast and with inland plateau peoples), increase (Moss 2011; Nelson 1990; Thompson 1978).

Ethnographic

The Quillayute Prairie and surrounding land are within the traditional territory of the Quileute Indian (Pettitt 1945). Quileute native culture is the southernmost representative of the Northwest Coast cultural complex. Many Quileute cultural traits were shared with their neighbors, including the Makah in the north and Quinault to the south. At the time the first white men arrived, Quillayute tribal organization included a number of settlements within their territory, including major settlements at the Quillayute and Hoh rivers; and at the mouth of Jackson Creek (Pettitt 1945). The Quillayute River, ranging only five-miles long, is the truck of a network of branching streams that are fed by continual glacial meltwaters from the Olympic Mountains.

The settlement of La Push arose due to its proximity with the mouth of the Quillayute River and the Pacific Ocean. During the summer months, families temporarily dispersed in smaller groups to access seasonal resources. While some moved inland to hereditary hunting, fishing, and/or gathering locations in the inland prairies, others kept to the coast seeking out marine resource locations (Powell and Morgenroth 1998).

Regardless of settlement location, the dietary staple of the Quileute has traditionally been fish, primarily salmon. Shellfish, smelt, herring, cod, and halibut are among other species consumed. They are “ranked among all tribes in the area as sealers” and traditionally hunted whales, sea lions, sea otters, and porpoises (Pettitt 1945). While all tribal members may have participated in fishing in a specific season, occupations such a whaler or sealers were exclusive, typically reserved to those whose “guardian spirits” were connected with a specific occupation.

The same type of division of occupation was extended to roles such as medicine men, canon-making, and even designated beggars (Pettitt 1945). The social, as well as logistical roles occupations, served, reflecting the environmental conditions of coastal life. The Quileute were adept at using tools in order to utilize their surroundings. Like all coastal tribes, canon, plank houses, weapons, and other items were manufactured out of felled trees. Cedar bark skirts and other clothes were also created. Animal skins such as rabbits and bears were used for protection against cold weather.

Traditional Quileute language is a part of the Salishan family and is related to Chimakum, part of the Chimakuan Family, once spoken near Port Townsend, but became extinct by the 1930s Many anglicized-Quileute place names are found in the areas but have such as Calawah which translates to “in the middle” and Bogachiel (*bókwaćhi’l)* which means “muddy waters” (Powell and Jensen 1976).

Historic Period

One of the earliest recorded interactions between native peoples of the Olympic Peninsula and Europeans occurred in the 1770s with two separate Spanish expeditions. In 1774, Juan Perez sailed the frigate *Santiago* with a crew comprised of mostly Mexicans. Setting sail from Mexico, Perez surveyed the western coast of the future United States. He reached the Pacific Northwest during the summer of 1774 where he encountered the Haida, a first peoples group located in British Columbia, Canada. A second Spanish expedition commanded by Bruno de Hezeta also reached the northwest coast in 1775. Accompanied by the smaller schooner known as the *Sonora*, the expedition departed from Monterrey. On July 11th, Hezeta anchored several miles south of the mouth of the Quinault River at Point Grenville (Sanchez 2004). The expedition encountered the Quinault Indians at this location which met the Spanish crew of the coast by canoe.

This first interaction included the Spanish accompanying the Indians to shore, making them the first Europeans to set foot in Washington. After several rounds of friendly trading, Commander of the *Sonora*, Juan Francisco de la Bodega y Quadra, sent a party of seven crewmen in a small landing boat to shore. The crew was quickly massacred by several hundred Quinault waiting in ambush. Following the attack, warriors pursued the *Sonora,* anchored offshore in deeper water. Bodega ordered boarding Indians shot, preventing the total annihilation of his crew. After the indecent, the *Sonora* rendezvoused with Commander Hezeta and the *Santiago* who was anchored nearly a mile away. The remaining crew voted to continue their voyage without seeking retribution (Sanchez 2004).

Following the course plotted by Hezeta and Bodega, the expedition established a settlement at Nootka Sound on Vancouver Island in 1789. However, a discrepancy over Spanish claims to the area soon resulted in an attempt by Captain Esteban Jose Martinez to establish Spanish authority over what had become an international trading post (Guzman and Crowley 2006). As a result, the Spanish signed the Nootka Convention with the British on October 28th, 1790, relinquishing their exclusive claim on the area.

Following the incident at Nootka, present-day Vancouver Island, the Spanish established a settlement on the other side of the Strait of Juan de Fuca. The goal was to have a base to project political and military influence within the region. The Viceroy of New Spain sent Salvador Fidalgo to oversee the endeavor. In late May 1792, Fidalgo anchored near Cape Flattery and began clearing trees and building an encampment. The settlement was fortified with mountain guns, and a smithy, bakery, and corral for cattle were built (Banel 2019). Conflicts between the Spanish and nearby Makah Indians soon arose, and violent disputes resulted in deaths on both sides. Within four months of establishing a settlement, the Spanish withdrew from Neah Bay due to ongoing hostilities and the inclement weather of the area.

Euro-American settlement of the Puget Sound region grew steadily in mid-1800s. Timber harvesting operations established mill towns, often located near the coastline due to the difficulty of overland transportation. By the 1850s, large and small mills were operating near the east coast of the Olympic Peninsula in places like Port Gamble. Between 1855 and 1856, Washington Territorial Governor Isaac I. Stevens negotiated a series of treaties with tribes of the Olympia Peninsula. These included the Treaty of Neah Bay and the Quinault Treaty, which dispossessed the Olympic Peninsula tribes of the traditional lands and confined them to specified reservations. A reservation was created around the village of La Push in 1889 (Van Pelt 2007).

Although the land was officially opened to non-native settlement, few white settlers entered the area until the late 1800s. Settlement occurred earlier on the eastern end of the Peninsula with towns such as Port Angeles and Port Townsend being established in the early 1860s. Civilizational staples such as a port, lighthouse, and subdivided lots helped develop these early settlements into burgeoning towns by the 1880s. But American settlement of the Olympic Peninsula's West End was slower to mature. Pioneers did not arrive in the areas around the Quillayute Prairie until the mid-1860s. Prior to overland entrance into the area, whites were known to the Quileute as *ho kawt* ("the drifting house people") in reference to their ships (Powell and Jensen 1976). The terrain of the Peninsula made overland travel between the east and west side nearly impossible. For this reason, early settlers slowly made incursions into the area mainly by following rivers and trails from the Pacific Ocean and Strait of Juan de Fuca (Van Pelt 2007.)

Fur trappers we some of the first white men to settle the area. But by the late 1870s, families began to establish homesteads near the present-day City of Forks. The rich soil of the prairie supported hay, oats, grain, vegetables, and hops. Orchard trees were planted and dairy cows were introduced around 1880. In 1882, a school was established at La Push by A.W. Smith. When a post office was established in 1884, the name *Forks Prairie* was given due to the location between the Calawah and Bogachiel rivers. Still, the area remained largely isolated due to the impenetrable nature of the central peninsula. While the product could be developed, transporting it to market remained a significant problem. Foot trails were the most advanced form of overland travel until the late 1920s when surfaced roads appeared. (Van Pelt 2007).

The hard business of transporting goods to centers such as Port Angeles may have made trade with the nearby Quileute from La Push and Mora a necessity. When the trading post moved to Forks in the early 1890s, the settlement possessed a general store, hardware store, and hotel. Major logging activities in the area employed settlers from Forks in the early 1900s. Despite the designation of over 600,000 acres of forest as reserve land by 1907, logging continued to be a large industry in the area. When the United States entered World War 1, the Aircraft Production Board built the thirty-six-mile-long Spruce Production Division Railroad No. 1 on the Olympia Peninsula near Lake Crescent. In total, thirteen railroad lines were built between Port Angeles to Lake Pleasant (Tonsefeldt 2005).

Following WWI, the town of Forks remained a small community surrounded by prairie homesteads and dense forests. Throughout the 1920s, area logging companies-built hundreds of miles of rail in order to transport timber for milling. But the completion of the Olympic Loop Highway in 1931 proved to be an economic boon for Forks. Now with reliable access to outside markets, area logging continued to grow.

By 1945, the town incorporated and possessed a host of amenities such as a bank, a library, sanitation, electricity, and an airport. The Forks Airport was developed sometime between the 1920s to 1930s (Fleck 2021). Unlike other small airports of its era, the airfield at Forks was built using private money. Primary funding came from the Mansfield family, the area leader in hops cultivation. In the early 1940s, the United States Navy inspected the airfield for potential development due to increasing tensions in Europe and Japan. When the existing Forks Airport was deemed incapable of meeting the Navy's needs, the Quillayute Prairie was selected as the site of a new Naval airfield.

After choosing an area of more than 500-acres, the Navy sought to acquire the necessary land by "taking" or eminent domain. A U.S. District court ruled in favor of the Navy, which resulted in the forcible removal of the existing family farms on the prairie (Pettitt 1945). The City of Forks was soon inundated with Navy personnel and their families. When completed, U.S. Naval Auxiliary Air Station at Quillayute brought nearly 2,500 Navy men with a few miles of the town. Following the end of hostilities in the Pacific, the Navy cannibalized the facility before eventually turning it over to the State of Washington.

Like other logging-dependent communities, Forks saw a significant decline in the 1980s-1990s. Global economic policy and national recession lead to the closures and downsizing of local mills and logging companies. Changing ecological prerogatives also impacted timber harvests on public lands. In total, "forest-related jobs fell by 25 percent after 1990" (Van Pelt 2007). The outflow of capital and industry resulted in large-scale relocation of the local population. In 2018, the population of Forks was estimated to be around 3,800 people. While it is no longer largely reliant on timber, extractive industries, including forestry, persist in the area. Since the late 1990s, Forks has developed a tourist industry centered around outdoor sports and recreation. The teen book and movie series *Twilight*, set in Forks, helped to bring attention to the town.

History of Quillayute Naval Auxiliary Air Station and Quillayute Airport

The beginnings of military aviation in the United States can be traced to the American Civil War with the utilization of air balloons for reconnaissance and supply transport. Heavier than air flight began in the late 1890s when Samuel Pierpont Langley, Secretary of the Smithsonian Institution, designed a steam-powered tandem-winged machine called an "aerodrome" (Kindy 2021). Once Wilbur and Orville Wright successfully developed the airplane into a practical flying machine, military application of the new technology was not far behind.

The first military airplane was built in 1908 by the Wright brothers for the United States Army Signal Corps, the precursor to the Air Force. Although the United States was the first military to field a modern airplane, it failed to develop the infrastructure needed to support commercial and expanded military aviation. At the start of the First World War, many planes owned by the United States military were either obsolete or out of service. Moreover, the country lacked a sufficient number of aeronautical engineers, skilled workers, and airfields.

The Aircraft Production Board was formed in 1917 as a wartime response to build up the country's aviation capacity. The Board prioritized the production of one airplane design, the De Havilland, whose design required spruce lumber for its frame. The Army Signal Corps organized spruce logging and milling operations in the Pacific Northwest, which was the principal source of spruce [Figure 4]. In 1917, the thirty-six-mile-long Spruce Production Division Railroad No. 1 was constructed on the Olympia Peninsula near Lake Crescent. In total, thirteen railroad lines were built in the northwest (Tonsefeldt 2005). Although the war ended before the railroad could be completed, it symbolizes the important role the area has played in the development of U.S. Military aviation.

Figure 4. Frontispiece in a booklet entitled "Minutes of the Convention of the Inland Empire Division of the Loyal Legion of Loggers and Lumbermen, June 22, 1918, Spokane, Washington"
Source: University of Washington Digital Collections, Pacific Northwest Historical Documentation Collection

Support for aviation development floundered in the years following the armistice. The uncertainty of the post-war period saw the Army Air Service reduced in size as the country reestablished its reliance on seapower. Despite these trends, the Navy retained its interest in naval airpower, establishing the Bureau of Aeronautics in 1921. In addition to producing the first aircraft carrier, the Air Service established the components fundamental to military aviation and the establishment of the commercial air industry. Although airmail service had been established by the US Post Office in 1918, the development of an infrastructure of “aerial roads” by the Army Air Service helped it and other commercial aeronautical ventures establish a coherent system of the scheduled flight.

By 1925, airports began to appear along the first Transcontinental Air Route that had been developed by the Air Mail Service. Once the Post Office was authorized to contract air services to private contracts, the industry saw a boom in the establishment of new air routes. The 1926 Air Commerce Act was the first Federal legislation that regulated civil aeronautics. Safety standards, airway routes, and promotion of airports were soon developed by the Department of Commerce’s

Aeronautics Branch. The legislation prohibited the Commerce Department from directly subsidizing airport construction, but relief funds were made available during the Great Depression for the development of airports.

Beginning in the 1930s, a number of Washington communities built or purchased existing airports, in large part to accommodate postal service flights. Using funds provided by the Depression-era Works Progress Administration (WPA) and Public Works Administration (PWA). The Forks Airport was not created using federal aid money. Rather, the airport was developed using private money beginning in the 1920s or 1930s (Fleck 2021). [Mansfield family, hops,] Initial construction of a single landing area measuring approximately 125-feet by 2570-feet. By the 1940s, a stabilized runway was constructed northeast of the existing strip.

Assessment and Selection of the Quillayute Prairie

The slow growth of the American aviation section was soon given a boost by world affairs of the late 1930s. Growing tensions in Europe and fears of an attack by the Japanese Empire on the West Coast led the United States Military to purchase or lease a number of municipal and private airports to be quickly converted to military fields. While the first military Air Station on the Olympic Peninsula had been built in 1935 by the Coast Guard at Ediz Spit in Port Angeles, it was recognized by Thirteenth Naval District that expanded forces were required to adequately defend against invasion (Pettitt 1945).

In 1940, a report was given to the Commandant of Naval Air Center, Seattle, detailing the Quillayute Prairie as a potential site for a Naval landing field. The area was one of several selected sites that were potentially hospitable to construction and within a “reasonable radius of the Naval Air Station and Naval Supply Depot, Seattle.” The report recommends the Quillayute Prairie as the ideal location for an auxiliary air station due to its position approximately 4-miles from the Pacific Ocean and roughly 60-miles south of Cape Flattery and the Juan de Fuca Strait. Naval reports indicate that no other viable alternative existed in the area due to the mountainous and wooded terrain of the western Olympic Peninsula.

In addition, the nearby town of Forks was assessed in tandem with the potential recreation opportunities for Naval personnel. Early assessments of the town were not particularly positive with respect to troop entertainment. The report stated that “…The town is a normal, average town of 600 population, but it is felt that the enlisted personnel would not care much for liberty at this place.” But other opportunities for recreation such as hunting and fishing abound. Additionally, the report highlighted the “three beer parlors dispensing to sailors over 21, and dances are held at least once a week in the Odd Fellows Hall” (Tait 1942).

Photo 1. City of Forks 1935. ***Source, Forks Timber Museum.***

Naval officials considered improving the existing municipal airfield at the town of Forks. However, the field was found to be too small and could not be adequately expanded. It was believed that an airfield at Quillayute might have a "tactical advantage in putting squadron aboard or taking them off carrier" (Dobbins 1944). Additionally, the area possessed a low population which presumably would aid in security.

Initial Development of Naval Auxiliary Air Station Quillayute (NAAS Quillayute)

In November of 1940, a recommendation was made by the Navy to the Bureau of Aeronautics for the purchase of 520-acres of land at the Quillayute Prairie at an estimated cost of $24,400. On the same day, notice to the Clallam County Board of Commissioners was issued by the Navy declining its plans to lease the emergency landing strip at Forks due to its inability to expand the field. The land was officially acquired by "taking" or eminent domain by the ruling of the U.S. District Court Northern Division of Washington. This ruling forcibly removed existing residents, all of which were family farms, from the area. Records do not detail a specific amount paid but appraisals of the land place it roughly between nineteen and eighteen thousand dollars (Pettitt 1945).

The initial plan was that Quillayute Naval Auxiliary Air Station (NAAS) was to be the second outlying field to be developed within proximity to Seattle. The Resident Officer in Charge of contract for construction was authorized to take possession of all unimproved land on April 10, 1941. Construction of the field began on May 2, 1941. Initial work was carried out by the Austin Company, with an allotted budget of $90,823.00. The first landing strip was completed on October 24 of that year. The graveled strip measured 300-feet wide by 4290-feet long. small hanger (20-ft. x 63-ft.) and a restroom that measured 20-ft. by 14-feet. No other buildings were erected. Farm buildings already present on the property were retrofitted to serve as barracks capable of house 25 officers and 50 enlisted men. Construction required the closure of 6000-feet of existing county road. Negotiations to relocate this road began soon after, By December 1942, Clallam County Board of Commissioners deeded the Navy 1,839 acres of land formerly used as County Road.

Join Use and Development with Army Air Corp

Following the attack on Pearl Harbor, the U.S. Army Air Force began opening airstrips with the stated purpose of stationing interceptors and pursuit squadrons. Within four days of December 7, 1941, the Army requested the use of the Quillayute Air Strip and other outlying fields. The Navy immediately authorized joint use of the facility and urged the Army to further develop the field. Naval approval for use by the U.S. Army's Second Air Force was soon extended to the Fourth Army Air Force, who proposed considerable increases to the station's landing strips. The Army also sought acquisition of an additional 525-acres of land adjacent to the Navy's 520-acres (Figure 5). Soon, the Commander of Aircraft for the Northwest Sea Frontier requested that facilities for emergency landings of seaplane be constructed at Lake Ozette, approximately 7-miles north of the air state at Quillayute (Pettitt 1945).

In April 1942, approval was given for the Army to develop Navy fields. After the Fourth Army Air Force was granted priority to make improvements to the airfield at Quillayute, a produced a figure of $856,000 for expansion of its runway and other necessary improvements. This figure was far greater than the expenditures already made by the Navy at Quillayute.

Records report that "little action was taken with regard to establishing of an Auxiliary Air Station on the foundation laid in 1941 [by the Navy] until December 1942." While the existing airstrip and land were owned by the Navy, it was unclear if the Army would be justified in condemning the field as it was the branch proposing the improvements. It was eventually confirmed that the Navy would reimburse the Army for its expenditures on all Navy-owned fields (Pettitt 1945). However, communication between the Army and Navy regarding improvements appears to have been unclear, if not fraught with jurisdictional concerns.

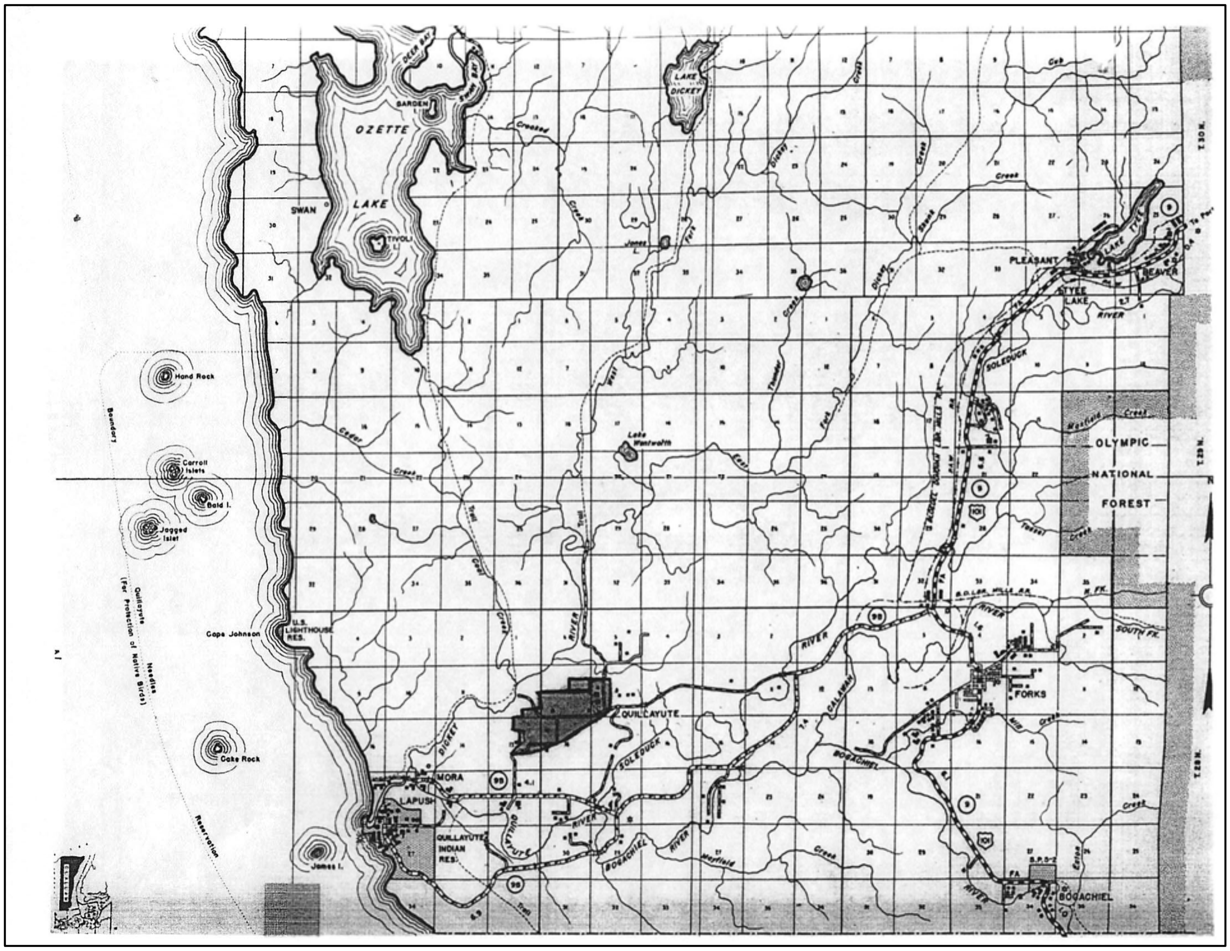

Figure 5. U.S. Army Air Corps maps of Quillayute NAAS, 1942.

Photo 2. Aerial photograph of Airfield Quillayute, 1942. ***Source, U.S. Army Air Corps.***

However, due to the inefficient communication between the two service branches, delays and other logistical issues continued until 1943 when the Army officially withdrew. For example, the Army pressed forward with its plans to develop the facility without consulting the Navy regarding changes to the final plans. Upon authorization of the funds by the Navy, engineers concluded that the new airstrips would be constructed using concrete instead of the more common asphalt due to ready access of the material. This change in design increased the final estimate to $1,166,540. Navy engineers estimated this cost closer to $1,514,970. During construction, the Navy did little to assist in Army's efforts, asides from clearing legal hurdles to relocate a Clallam County Road. The Army sought acquisition of an additional 525-acres of land to the Navy's 520-acres. However, questions soon arose regarding which branch would provide funds for improvements to the air station. Issues surrounding joint usage of the Station plagued the development of the facility through 1942 (Pettitt 1945).

In the fall of 1942, Lieutenant Commander Robert N. Dobbins volunteered to serve as the commanding officer of the new air station. Dobbins brought nearly twenty years of experience in the young field of aviation, primarily gained in the private sector. Dobbins was an experienced aviation machinist and mechanic having worked for companies such as Curtiss-Wright and Canadian Colonial Airlines in that capacity (Pettitt 1945). He was a certified pilot and worked as an aerial photographer, charter pilot, and instructor. He earned his Batchelor's of Science in Mechanical Engineering from Newark College in New Jersey in 1939. Shortly thereafter, he was appointed supervisor of War Production Training for the New Jersey area. In September 1942, Dobbin's was granted a reserve commission by the U.S. Navy. After attending a flight refresher course in Pensacola, Florida, he was ordered to Naval Air Center, Seattle.

Photo 3. Robert N Dobbins, Lieutenant Commander of NAAS Quillayute.

During negotiations between the Navy and Army over development of the Station, Quillayute served as an emergency field solely for Navy use. In November 1942, it was designated as a training center for "one-half a CV group (45 land planes or 12 VB planes, and 2 SNP; Emergency)." By December, it was selected as the future base for 90 carrier vessel (1 CV group) planes, 24 vessel bombers (VB) planes, and two (2) ZNP Emergency; better known as a dirigible, airship, or blimp. These changes would make the air station the largest within the Seattle area. The first contract for construction was let the Army Engineers and called for the clearing and construction of housing. The contract was awarded to Sullivan, Lynch, and Hainsworth for a total cost of approximately $72,000. Working conditions were difficult due to the extreme rainfall of the Quillayute area. Washington newspaper periodically reported on the military's multiple expenditures during the establishment of the Quillayute NAAS.

Construction on the base and newly acquired acreage began in early 1943, using plans designed in 1942. The base was to provide for Navy training and Army defense activities such as protection against aerial attacks. Plans called for housing units located a mile and a half from the hanger. Gasoline storage tanks were to be scattered around the facility's perimeter which was to have approximately "two miles of concrete taxiways and hardstands forming an elaborate dispersal area for planes." The Army did not follow the original grading of the Navy-built runway, instead, shifting direction slightly. Twenty-one buildings were built at the northeast corner of the station and including barracks, mess hall, dispensary, heads (restrooms), and officers' quarters.

Despite the persistent urging of the Navy, official authorization for new construction was not given by Washington as of March 1943. Instead, approvals were given by Washington to develop an air station at Mt. Vernon. On April 15, 1943, the Commander of Fleet Air, Seattle wrote directly to the Commander at Naval Air Center, Seattle stating that the development of the Quillayute station was "emphatically important" based on its location and ability to house ample gunnery stations. The letter further emphasized that the development of the air station at Quillayute would in effect, render the Mr. Vernon base irrelevant.

That May, after endorsement by several naval officials, including the Chief of the Bureau of Aeronautics, the Vice Chief of Naval Operations gave the approval to cancel construction at Auxiliary Air Station, Mt. Vernon in favor of construction at Quillayute. However, approval to proceed with the development of Quillayute was limited to the exact funding amount of $965,000, which was previously authorized for Mr. Vernon.

This amount was well under the estimated cost of construct made by both Army and Navy engineers. On May 4, 1943, the Officer in Charge of Quillayute issued a report that indicated that at least $1,288,000 was required to complete developments planned by the Army. The report and subsequent correspondence further requested new laundry facilities; infrastructure such as power, heating, sewer, water, and phones; a new Hanger, control tower, cold storage; and construction of a second runway to facilitate long-range patrol bombers. The Spokesman-Review of Spokane reported that in May, $71,000 was required to construct a "celestial navigation trainer building". By the end of the month, a new estimated amount between $2,014,000 and $1,049,000 to complete construction at Quillayute.

By late August, personnel began arriving in Seattle, awaiting assignment to Quillayute. By October, approximately 100 men were awaiting living quarters to be constructed at the Air Station. Housing for enlisted men and officers with families was both limited on the station and in the nearby town of Forks. Dilapidated lodgings and other non-residential structures were repaired and converted to house military personnel and civilians. Trailer camps and housing units were built at Forks specifically for "war workers" by the Federal Housing Agency (FHA). Some trailer houses owned by the FHA were eventually converted to use by Navy personnel.

In February 1943, the Navy held a joint conference with Army officials in Seattle. The purpose of the meeting was to inform the Army of the Navy's intentions to further develop its outlying airfields in Washington. It was noted that the Army was not excluded from using these properties, but it was emphasized that the Army was, in fact, not utilizing these facilities.

Return to Navy Occupation and Development

In October 1943, the Army unofficially ended its efforts to improve Navy-owned fields in the State of Washington. The reason given in a letter addressed to the Pacific Division of the U.S. Engineers seemed to return to the initial discrepancy over Navy ownership of the field and joint use by the

Army. However, the official reason was attributed to "change in the war situation" (Pettitt 1945). In November, it was recommended by the Fourth Air Force Operations that all Army facilities be transferred to the Navy. Despite this development, it was not until September 1944 that the Army officially detached from NAAS Quillayute.

Between October to April, the rainfall average was 100-inches or more. The rough terrain of the area and rural location created obstacles in the transportation of materials. With few improved roads and nearly nine miles from the nearest railroad connection, all materials had to be trucked in, typically from Port Angeles, Bremerton, or Seattle. Water wells, electrical power, and housing for civilian contractors and military personnel were also constructed. However, due to the lack of eligible laborers in the area, workmen had to be relocated from other places. Conditions caused by the continuous rain and isolated environment caused heavy staffing turnover, delays, and higher costs.

Photo 4. Apron adjacent to existing hanger, date unknown.

Construction slowed during the month of December. The lack of qualified mechanics resulted in the limited progression of the station's power plant and electrical system. Footings and foundations for the dispensary were poured, and the ground was prepared for the laundry and cold storage buildings (Dobbins 1945). A monthly report addressed to the Commandant at N.A.C., Seattle, reported the status and activities at NAAS Quillayute. The information provided detailed that the majority of personnel stationed to the base were assigned for security as the station was still under construction and "still on a pre-commissioning basis". Some were placed on special assignments with activities located near Seattle. Several commandants from N.A.C., Seattle inspected the Station multiple times during the month of December.

As negotiations between the Navy and Army for decoupling were underway through early 1944, Navy activity at NAAS Quillayute continued. In December 1943, there were thirty-three men under the charge of four officers on station. Although all of the Army's properties had yet to be officially transferred to Navy control, construction continued on Station in 1944. On Christmas Day, the employees of the Public Work Department arrived to build permanent buildings.

By January 1944, the Army Air Force withdrew its guard detachments from all Navy bases in the northwest. Nearly 133 Navy personnel were assigned to NAAS Quillayute, with 47 located on Station. The next month, John J. Bergen, the Commander of U.S. Naval Reserves, visited the Station as the Acting Commandant, representing the Naval Air Center (N.A.C), Seattle. Commander E. J. Sullivan of Squadron 33 accompanied Bergen and represented Naval Air Station (NAS), Tillamook. He and five officers made the trek in a K-33 Airship. These officers, along with others, were in attendance for "commissioning day," both the official opening of NAAS Quillayute as well as the assignment of duties to the Station's officers. Conservative estimates placed the attending crowd around seven hundred people, many civilians from the nearby town of Forks.

Photo 5. Commissioning Day ceremonies, February 29th, 1944. *Sources, Forks Timber Museum Digital Collection.*

The War Manpower Survey Board visited the Station on February 22nd, 1944 to assess the Station's readiness. The survey found the Station to be in good condition with a satisfactory utilization of staffing. After a long delay, mechanics were dispatched by the Radio Materials Officer's office in February 1944 to finally install the necessary radio equipment at the Station. Around that time, telephone systems were installed as well as weather and administrative teletype circuits. As construction continued, clearing operations were required to make way for the new construction. But the work was not without its potential hazards. On March 22nd, two employees of the Dunlop Towing Company reported that two of its employees drowned in the Dickey River, presumably during tree clearing operations.

Despite slow progress and the occasional accident, primary construction was completed in April 1944. However, many small items remained unfinished and would plague the Station over the course of the year. While many of the buildings were completed, installation of equipment and continued electrification efforts were required to finalize construction. This work in the dispensary building was finished on April 30th.

Although the Army no longer had a physical presence at Quillayute, the official transfer of Army property at Quillayute to the Navy occurred on September 18, 1944. The seven-month gap between announcing its withdrawal and officially relinquishing control of Army properties at Quillayute was reportedly due to finalizing reimbursement of its expenses with the Navy. The final agreement stipulated that neither the Army nor the Navy would reimburse costs for facilities utilized by only one branch of service on fields owned by the other service. Presumably, this meant that the Navy did not reimburse the Army for facilities it built at the NAAS Quillayute for sole Army usage (Pettitt 1945).

Pressures to complete the station persisted throughout the first weeks of 1944. Delays caused by inclement weather, labor turnover, and funding approvals, began to mount. The minimum facilities and unfinished nature of the station prevented the assignment of a squadron and hampered the commissioning of any officers. More equipment, such as tractors and trucks, were requested to complete the work. In addition to construction, the organization of various services and infrastructure requirements were needed. Barracks, recreational facilities, and a library all required attention. Moreover, the station required 50 tons of coal, per week, be shoveled and transported by truck from the nearest railroad.

Construction on personnel housing and other related building continued into the summer of 1944. Two Bachelor Officer Quarter's (B.O.Q.) were completed around April. Laundry facilities soon followed. Additional construction was hindered by restraints imposed on NAAS Quillayute by monies obtains by the abandoned station at Mt. Vernon. By the time these issues were resolved, the primary contractor, The Austin Company, had finished its work and vacated the station. By late spring housing, mess facilities, and a host of other operations-related buildings were in place. However, many were still operating with non-permanent arrangements. For example, the completed control tower did not have radio equipment and relied on the use of a "short wave portable" set housed inside the station's ambulance. The vehicle was parked next to the Hanger in order to reach planes on landing and take-off.

Commanding Officers Quarters, NAS Quillayute

Photo 6. Commanding Officers Quarters located on Station. ***Source, R. N. Dobbins, "A Lifetime of Memories," 1993.***

In March, the station's Fire Department experienced its first fire emergency when a contractor accidentally set blaze to nearly 10-acres of grass and wooden land. Operating from its temporary location inside the Hanger, the fire barraged effectively stopped the first before it reached the nearby Quillayute Elementary School. A permanent firehouse was completed in August by Vickers Construction Company.

By June of 1944, requests for housing off base increased due to limited housing available at NAAS Quillayute, particularly for married men with families. Additionally, conditions were not suitable for couples as showers, toilets, and laundry was located far away from living quarters. This was not adequate during the winter months on the pacific coast due to the enormous rainfall. In response, 20 additional housing units were approved for construction in September 1944. The following request secured another 34-housing units with laundry and storage along with an additional relief in the form of Quonset huts.

Soon after, four of the eight 80-man barracks were complete with four requiring some plumbing and finish work. Other infrastructure such as water and sewage systems were near 75-percent completed. Electrical distribution was approximately 95-percent completed but suffered from habitual failure of its two diesel-electric generators. The station ran on these two generators, built in 1914 and obtained from Casper, Wyoming, due to the inability to source adequate power from nearby Forks Light and Power Plant.

The station's main water supply failed in June 1944 due to the breakage of its main turbine pump. Luckily, the turbine was repaired quickly with assistance from Naval Air Station Whidbey and N.A.C Seattle. However, a second failure of the water main occurred in late June when a pump's motor burned out. The problem was attributed to the Station's on-going problems with its power generator.

Around July 1944, the Public Works Department was assigned to build "essential structures" on the station. These included a garage for the Transportation Department, public works shop, recreation buildings, tennis courts, and dormitories for civilian employees. Work involved razing "shacks" left by the Austin Co. in addition to constructing these new structures. However, before this work could be completed, new construction plans were authorized that expanded the scope of buildings to be constructed. Plans authorized in June 1944, called for a "Free Gunnery Training Bldg. and a Class C Overhaul Bldg." Housing for the Commanding Officer and the Senior Medical Officer were included.

Photo 7. Aerial of hanger and adjoined tower, 1945.

After some debate regarding personnel size and the number of complementing officers, it was decided in August 1944 that the station's personnel would increase from "18 officers and 136 men to 27 officers and 199 men." This figure did not include other outfits stationed at Quillayute which brought the "Ship's Company" or total personnel on the station to 67 officers and 453 men.

Development of the Station continued through the end of the war. Interior work on the Married Officers' Quarters was nearly completed in February 1945. An adequate supply of laborers, still an ever-present problem, continued to delay progress on construction efforts. Plans for a gunnery training school had been initially considered in the selection of Quillayute. These plans were to be implemented but were not expected to be in operation until March 1945. Delays pushed the project's start date into February and were finally completed May 7th, 1945. The shooting end of the ginnery ranges were completed in July. By August, the gunnery range was 85-percent complete (Dobbins 1945). Other projects included the construction of the Radar Beacon Shelter and Rocket Range which were both mostly finished in late July.

Energy and Power

The station continued to operate without a reliable power supply as the power plants obtained from Wyoming were plagued with mechanical problems. The station operated with constant electrical issues through Commissioning Day, the official opening of the station. In February 1944, two connecting-rod bearings on one generator burned out. The second soon suffered a bent crankshaft, broken crankcase, and a house of other serious issues (Dobbins 1945). As of March 1, the decision had been reached to replace the antiquate and unreliable generators with six generators in Army and Navy surplus stock. In the interim, "a battery of Buda 37 KW generators" would be used to supplement the existing generators. In the meantime, issues continued with both the station's diesel generators. Continued repairs and periodic outages of each unit were common. The situation became so dire that one generator or power plant was cannibalized for parts to keep the other unit operational. Even then "the plant broke down at irregular and usually embarrassing intervals."

This reconstructed second generator was again off-line in early April due to broken parks such as burned-out bearings. Attempts to repair the power plant continued throughout the month but only resulted in new problems. Components were machined to replace broken parts but these repairs did not produce satisfactory results. The lack of this power plant resulted in serious deficiencies in the operation of the station's electrical and radio equipment.

In May 1944, the power operated at 60-percent. This was down to 25-percent by July. Luckily a new Worthington Diesel-Generator arrived at the base in late July 1944. However, the unit was not operational until September. The new unit, now taking the lead, ran alongside the remaining 1914-vintage generator for only a few days. Finally, the troublesome generator was ordered to be shut down. The engineman on duty is reported to have said "now you can go to hell" as he switched the antique off. In November 1944, new gasoline storage buildings were completed with an additional six (6) standby generators installed in late December.

Transportation

Overland travel was still an issue with regard to safety. Access to the base via primitive roadways caused “an epidemic of automobile wrecks” during the first few months of operation. These accidents involved personnel who were unaccustomed to unimproved roads. A report issued by Station Commander Dobbins, dated December 1943, described the condition of roads on the station as needing grading with much more work to be done (Dobbins 1945). A report written in February 1944 stated that the contractor had made “exceptionally good progress” on the roadways but delays persisted due to slow delivery of equipment. Plans for a new transportation building resulted in construction efforts which continued through June 1944.

Four vehicle accidents that occurred between June and July resulted in the deaths of two enlisted men and major damage to the vehicles involved. During the same period, six vehicles sustained either minor or major damage while traveling on station business while on route to Forks. The primary cause of the wreck was partially the graveled road surface and its extremely narrow prism. However, accidents were not the only problem created by the poor state of transportation at Quillayute. Many disciplinary cases were categorized as absent over leave (AOL) due to inadequate transportation from outlying areas.

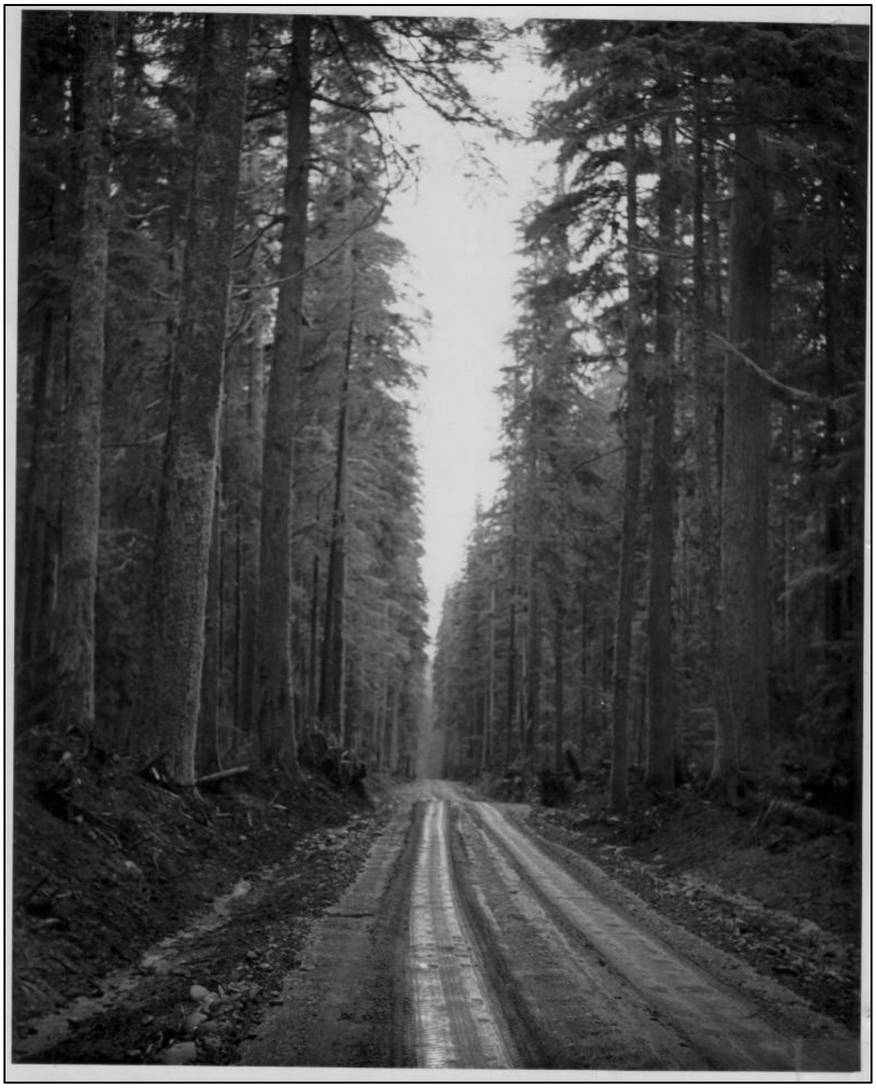

Photo 8. "Quillayute Road". Source, Forks Forum, Quillayute NAAS, December 30, 2020.

A petition to the Washington State Highway Department and Clallam County Board of Commissioners spurred the improvement of a primitive nine-mile-long road that connected NAAS Quillayute with US Highway 101. The Bureau of Yards and Docks (BuDocks), the Navy's engineering and construction branch approved $20,198.00 for surfacing roads on the station. Surveying parties soon began work and continued to layout the next access road.

Due to the heavy need for vehicular transportation at other stations, few motor vehicles could be obtained for the station. This severely restricted the public transportation between the station and Forks. For example, NAAS Quillayute possessed a single bus that sat 32 men on Commissioning Day. Four to five trips to Forks, taking about 50 minutes each way, were required every Friday and Saturday night to facilitate some 150 seamen who visited local taverns. After several requested for additional busses, the Domestic Transportation Officer assigned a second bus to the station.

The Sound Construction Company began work on surfacing roads on Station in late July and completed their efforts on August 10, 1945.

Entertainment, Education, and Faith at NAAS Quillayute

The sizable number of personnel raveled that of the nearby town of Forks. With its population of roughly 600, few activities were available to seamen during leave. Although Forks boasted some entertainment options, the fact that it was the only source of civilization within "some 50-miles in all directions" lead the station's leadership to build its options for entertainment. Thousands of books stocked the station's library as well as over 100 training films to aid in officer training and rating advancement. A wide array of recreational equipment was supplied by the 13th District's Welfare and Recreation Office (WRO).

Hunting was plentiful given the wilderness surroundings of the Station. Deer and bear were regularly encountered on that installation and its runways. Citizens of Forks provided hunting licenses for enlisted men to be passed amongst seamen engaging in recreational hunting. In addition, Officer's Mess was occasionally augmented by area game including salmon, trout, crab, bear, elk, venison, and various bird meat. Halloween 1944 was a feast of 62 geese that were provided by 30-officers. Some officers ranged picnics and swimming parties for enlisted men. A 35 MM motion picture projector was obtained from North Bend. On July 4th, 1944, WRO and the American Legion Sports competition between Quillayute and other area stations was a source of entertainment and pride. NAAS Quillayute won the Olympic Peninsula Invitational Basketball Tournament. Its football team had the second-most wins in the Olympic Peninsula League and won the district championship in December 1944. Its Pistol Team defeated the Port Angles Pistol Team at a competition in August 1944.

Photo 9. Seamen preparing to fish. ***Sources, Forks Timbers Museum.***

The *Quillayute Quill* was the NAAS' newsletter. The publication was intended as another source of recreation in an otherwise isolated environment. The paper was limited to a six-page announcement sheet that informed seamen of upcoming events. Additional special training for sentries, shore patrol, and fire department personnel was developed. Courses on fighting forest fires were particularly pertinent given the station's location. Reading courses designed to increase competency were given to seamen determined to require additional education for advancement. While in-person trainings were given via the Education Officer and applicable staff, many programs were delayed due to inadequate film projecting equipment. The Station's single 16MM project was unable to handle the constant demand of pilots, flight crews, and ground crews in addition to non-operation related trainings. Luckily, two projectors arrived In August 1944 for use by the planned gunnery school, that had yet to be established at NAAS Quillayute.

The United Service Organization (U.S.O.) hosted various events and forms of entertainment. It first assisted in Quillayute's Commissioning Day ceremony. The U.S.O. hosted movies such as "Five Graves to Cairo". Regular boxing and wrestling matches began in April. The first stage shows were put on, replete with an orchestra comprised of enlisted men and some sixty girls from the area. Although not included in the original plans, a baseball diamond and practice football field were cleared, graded, and seeded. By September 1944, two concrete tennis courts had been constructed. In December 1944, a recreation hall under construction by Public works and volunteer labor was nearly complete.

A chapel was not provided as the Station was not large enough. But chaplains were made available through N.A.C. Seattle's "circuit-riding program" provided services to protestant and catholic personnel. Regular chapel services were organized in Forks in a variety of venues. Despite these attempts to provide spiritual support by the Navy's traveling chaplains, the limited resources of local faith leaders were required to supplement the demand for religious services.

In May 1945, NAAS Quillayute participated in the V-E Day program in Forks. A firing squad and color guard was also involved in Memorial Day Services hosted by the Fork's American Legion.

Aircraft, Training, and Rescue Activities

Early reports highlight the use of the Station as helpful in aiding distressed planes. Canadian and American planes utilized the facility's runway in emergency landings. Engine troubles and fuel shortages were common issues that forced landings. Blimps or lighter-than-air craft (LTA) for Naval Air Station, Tillamook, Oregon used the base for touch-and-go landings on numerous occasions. In December 1943 a Douglas-R4D transport plane landed at the station. This was the largest aircraft to have visited the NAAS Quillayute at the time (Dobbins 1945).

Although incomplete, the Station proved to be a valuable resource for Navy aircraft and personnel who utilized its unfinished facilities for emergency repairs. In early 1944, two instances of Navy pilots of the Inshore Patrol used NAAS Quillayute due to mechanical issues. The close proximity of the Station was credited with saving Navy planes and lives. A PBY-5A Catalina seaplane and several other planes were forced to land at the station during the month of February due to bad weather.

In late February, two planes, a J4-F Widgeon and an SB2-A Buccaneer, were assigned to the Station. Two more planes, a Howard GH-2 and GB-2 Traveller were added to the Station's fleet in May. These planes were used in routine flights but experience periodic mechanical problems which put them out of commission for any period of time. Repairs could be delayed due to a shortage or delay in parts. Other planes were assigned to the Station over the course of the war, some being the SNJ-4 Texan "bluebird" and GH-3 Nightengale (Dobbins 1945).

On March 22, 1944, "Composite Squadron VC-96" was assigned to Quillayute by Fleet Air in Seattle. Their stated purpose for being assigned to NAAS Quillayute was for training pilots in carrier operations (Denfeld 1996). Planes arrived on March 23rd and the one-hundred thirty-six (136) enlisted men arrived by bus on March 21st. The first flight of this group consisted of "15 FM1 (Wildcat's) and TEM1's" led by Lieutenant W.S. Woolen which occurred on March 25th. During its six-month tenure, the squadron logged over eleven thousand flight hours while stationed at Quillayute. The training included booming and strafing practice. For this, uninhabited off-shore islands were used in these exercises.

Photo 10. Air crewmen of Composite squadron ninety-six (VC-96), photographed aboard USS RUDYERD BAY (CVE-81) on 24 April 1945. ***Source, Naval History and Heritage Command.***

Around that time, a B25 bomber was forced to land on the beach near Kalaloch, Washington. The Coast Guard responded to this incident and informed NAAS Quillayute which initiated salvage operations. The determined cause for the emergency landing was a lack of fuel due to the plane departure from Anchorage, Alaska. While the entire aircraft could not be rescued from the encroaching tides, important components such as navigational instruments and radio gear were removed before the plane was hauled inland. The incident was reported to McChord field, who sent an Army salvage crew within twenty-six hours.

An ocean crash rescue group was organized around March 1944 in conjunction with the Coast Guard, who occupied the Quillayute Lifeboat Station at the nearby LaPush Indian Reservation. It was agreed that the Coast Guard possess the equipment and experience to lead the effort, the Navy agreed to provide a crash boat, a Pickett-38’ Navy #C018356, for use by the Guard (pg.15). The crash boat arrived via the Coast Guard Air Station, Port Angeles on April 11, 1944 along with a seaplane, the PBY-5A, and Coast Guard Air Sea Rescue Group to operate it. However, the equipment and crew were transferred to the Whidbey Island airbase where “it was felt there was a greater need for it.”

Within a month of its assignment to NAAS Quillayute, Squadron 96 suffered the loss of two planes and one pilot. The two crashes resulted in a request to relocate the PBY-5A Rescue Unit to Quillayute or the base at Lake Ozette. The first occurred on April 22nd when Ensign Robert McGowan crash-landed an FM-1 Wildcat at sea. He and the plane were lost. Within the month, a TBM Avenger crash-landed approx. 60-miles offshore. The crew was able to escape before the plane sank. A Russian freighter rescued the TMB’s crew as the sea-rescue unit at NAAS Quillayute had been ordered off station the day before. The Coast Guard Station at Port Angeles was the nearest air facility to the accident (Dobbins 1945). Negotiations between the Thirteenth Naval District and Clallam County Commissioners eventually resulted in an agreement to dredge portions of the Quillayute River channel in order to facilitate air-sea rescue operations. Dredging began on September 26th and was overseen by engineers from the Army.

From the collection of the Forks Timber Museum

Photo 11. An Airplane that crash-landed at Quillayute Naval Auxiliary Air Station, Circa 1945.

Continuing issues with rocks on the runway caused flat tires upon landing and present a general risk to aviation safety. A request for a motorized runway sweeper was approved with one such vehicle assigned to the station in April. Additional measures to improve runway safety included clearing of stumps and trees within 500-feet of each side. Seamen on loan from Fleet Air in the 13th District, Seattle were put to work "felling trees which projected above the surrounding forest to a dangerous height."

The environmental and climatic conditions of the Quillayute oscillated between extremes. In the winter months, heavy rains and high winds restricted use of LTA craft and created challenging conditions for airplanes. Moreover, the abundant wildlife, namely migratory waterfowl, became a serious hazard to airmen taking off from the runway.

Photo 12. Blimp cockpit and crew on Quillayute runway, circa 1945.

The trouble caused by the two antique generators prevented night flights from occurring. Now, with its new generator, electrical field lighting was installed by the City Electric and Fixture Co in May 1944. Completion of the field lights occurred in September 1944, around the same time as completion on the new power plant. The lighting system was put into service in September, just after Squadron VC-96 left the base (Pg.19.)

After the departure of its first squadron, a flurry of repairs and improvements were made to NAAS Quillayute. This activity was due in no small part to the uncertain arrival of the next squadron. The experience of its first flight crews lead the station's leadership to remove some 250 trees that obstructed the line-of-sight of pilots and tower personnel. Gravelling of roadways, digging drainage ditches, construction of a second tennis court, and "scours of minor jobs" took place over the course of two weeks, likely between August and September 1944. During this period, an SNV Valiant that had been assigned to the Station was returned to NAS, Astoria for other assignments. The next squadron assigned to Quillayute was VC-72, who arrived on September 30th 1944. Good weather allowed for steady flight training over the course of the fall and early winter. One pilot, Ensign Grover C. Consford, died during a training exercise on October 19th, 1944. The accident, a mid-air collision, occurred at an altitude of 9000-feet approximately 3-miles south of Destruction

Island. Records do not report when this squadron departed NAAS Quillayute but it appears to have taken place around December 1944.

In early January, Squadron VC-3 arrived and began training within one day. Unlike prior squadrons, this group had combat experience and was composed mostly of men who had seen action in the South Pacific. The crews trained constantly due to a break in the inclement weather on Olympic Peninsula. The squadron was transferred to San Diego in March 1945. The station's hosted its fourth squadron, composite squadron VC-78, beginning on April 8th. The squadron completed its assigned syllabus in a timely fashion as the weather was relatively hospitable during their month-long assignment. The group depart NAAS Quillayute on May 28th, 1945 (Dobbins 1945).

A contingent of officers and enlisted men from the Army Air Corps at Paine Field reported to NAAS Quillayute between May 4th to 11th. The group brought two P-38 lighting planes. On July 25, Pilot Ensign Lamar C. Fitzpatrick went missing during a routine gunnery hop. Restricted visibility caused by weather and eventual nightfall restricted a two-day search for the downed FM Wildcat. Search and rescue operations involved two LTA crafts from Tillamook and crash boats from Neah Bay, Grays Harbor, and Quillayute were deployed. All efforts were discontinued on July 27th.Squadron VC-82 departed the station on August 5, 1945 and was replaced by squadron VC-85 on August 6th.

While no land incursions were made during the course of the war, aircraft from the air station were reportedly involved in sinking of a submarine "three hundred yards northeast of Wada Island" (King 2005). According to Boyd Rupp, a State Patrol officer assigned to scout for Japanese espionage activities,

> "three Quillayute attack planes that were used for strategic bombing, with single engines, twice as big as a "Hell Cat," swooped over the tree line and each released a can the size of a barrel that exploded in the water three hundred yards northeast of Wada Island. This bombing was never publicized because it might have hurt the war effort."

Blimps

The use of dirigibles or lighter-than-air craft at Quillayute remained limited in scope throughout much of its history. The nearest airships were housed at Tillamook, Oregon, which would deploy them to patrol the coast for enemy submarines. These blimps would use the station at Quillayute for touch and go or emergency lands. In January 1944, a blimp from Naval Air Station, Tillamook attempted an emergency landing due to inclement weather. After struggling to secure the blimp to the mooring mast, the K-39 Blimp was overtaken by heavy winds and crashed in a nearby timber stand approximately one mile north, destroying the blimp (Archibald 97).

Photo 13. Lighter-than-Air craft tethered to Mast. ***Source: Rod Fleck.***

Later that month, the Commanding Officer of NAAS Quillayute and its Public Operation's Officer were assigned to NAS Tillamook for temporary duty. This assignment was arranged in connection with lighter-than-air handling operations. Over the course of this assignment, the officers gained "considerable experience" in the landing of blimps (Dobbins 1945).

In April 1944, a blimp and two aircrews arrived from Tillamook for semi-permanent stationing at Quillayute. These LTA operations began with one blimp assigned two different flight crews and a Hedron (Headquarters Squadron) detachment was based at the station. On June 5th, a blimp was "destroyed by a crash" while on special assignment, searching for a lost plane of the Royal Canadian Air Force" out of British Columbia (pg. 20). The blimp was totally lost but its crew was able to escape. The destroyed vessel was replaced in July with another blimp, presumable from Tillamook. All dirigible activities closed for winter in October of that year.

In February 1945, high winds forced another blimp to make an emergency landing at the station. The LTA vessel was secured to the mooring mast, located on the north side of the airstrip, for two days until the storm cleared. On February 8th, the blimp returned to Tillamook, Oregon. On the 16th the blimp made two more landings and departures (Dobbins 1945).

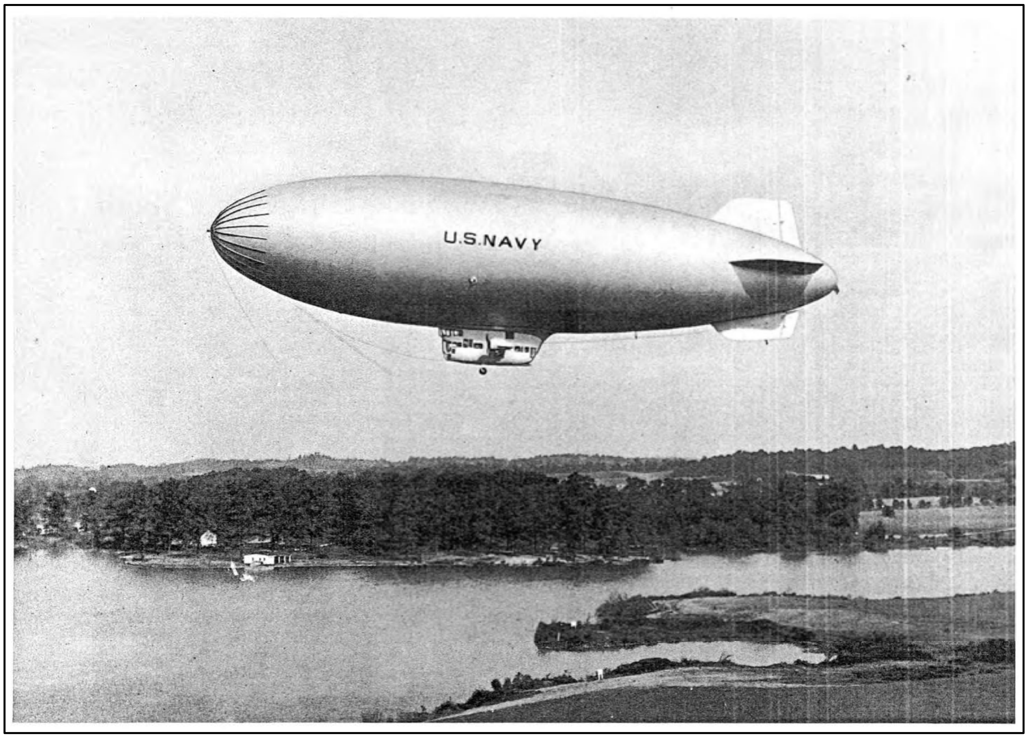

Photo 14. Lighter-than-Air craft, ca. 1944.

Decommission

In January 1945, the Chief of Naval Operations appoint a Historical Officer to NAAS Quillayute. Lieutenant George A. Pettitt was tasked with capturing the history of the station from its initiation to December 1941. A report entitled *History of Naval Auxiliary Air Station, Quillayute Washington* and additional historical materials were submitted in September of 1945.

With the announcement of the surrender of Japan, Station personnel were granted a two-day holiday between August 15th and 16th, 1945. Commissioned officers stayed aboard to execute all necessary duties while many off-duty men celebrated both in Forks and on the station. Within the month, plans to reduce the Station's personnel, both enlisted and officers were under development. Officers from NAS, Seattle came aboard to inspect the handling of ordnance. Soon, many commissioned officers were transferred to other areas of the Navy to assist with other efforts.

The final squadron, VC-85, departed on September 22, 1945. Around the same time, Captains from Fleet Air Seattle came aboard to inspect the station to "evaluate its post-war possibilities." By the end of the month, the station was placed on "caretaker status". All buildings deemed non-essential to the caretaker operations were secured. Equipment no longer needed was shipped to other naval properties in accordance with NAC, Seattle's direction.

An appraisal of the facility produced in 1947 reported that the station consisted of approximately 110-structures located on-site during the Navy's tenure. Many of the buildings were declared surplus inventory by the War Assets Administration and were deemed non-essential to the continued operation of the facility as an airfield (King 2005). These structures were sold to private entities or other agencies are no longer extant.

Post-Military Use

The State of Washington acquired the property in 1962 for us as “an emergency landing field.” In 1997, the City of Fork began a correspondence with the Federal Aviation Administration and the Washington State Department of Transportation Aviation branch regarding thirty-three years of alleged mismanagement of the facility. This included neglect of maintenance, removal of structures, and mishandling of proceeds from the airport property. The City claimed that WSDOT has extracted a combined 1.5 million dollars from the property per timber harvest, gravel extraction, leasing agreements, and salvage of existing structures. Additionally, these proceeds were not used to improve the property but rather to fund other projects.

The final act of administrative malfeasance and WSDOT-A’s request to the Federal Aviation Administration to demolish five existing buildings on the property. The City of Forks believed that the continued decay of the airport, due to deferred maintenance by WSDOT, risked the future development of what was then known as the Quillayute State Airport. At the time, the City desired to rehabilitate the airport as part of a larger vision to make the facility “the region’s airport of the future” (Arbeiter 1997). In February 1997, negotiations began to transfer the airport from WSDOT-Aviation to the City of Fork (Brubaker 1997).

Historic Property Inventories

No historic properties have been surveyed within the project or within one-mile of the APE. The nearest historic properties inventories were located with within an approximate 3.5-mile radius of the APE. Located at La Push, the three properties included:

Table 1. Historic Property Inventories in the vicinity.

Property ID:	**Resource Name**:	**Resource ID:**	**Address**:	**Determination of Eligibility**
724727	Quillayute Timber Breakwater/ Timber Breakwater	707037	71 Main St, La Push, Washington, 98350	Determined Not Eligible
724237	Mora Apartment Building	705966	3283 Mora Rd, Forks, Washington, 98331	Determined Not Eligible
724174	Mora Campground and Ranger Station	705838	3283 Mora Rd, Forks, Washington, 98331	Not Determined

CULTURAL RESOURCE EXPECTATIONS

Based on background research of the Quillayute Airport, Drayton concludes that the project is located within an area of high probability for historic-era structures associated with Navy occupation of the property. The survey was restricted to above ground survey, which precluded testing for precontact and historic-era archaeological materials.

FIELD INVESTIGATION

Drayton's Deputy Principal, Stephen Austin, employs standard intensive level survey and evaluation methods to assess the potential built environment resources within the APE/APE. Field methods include a thorough visual reconnaissance of the property and surface survey of extant buildings and structures. Background research of the property included a review of historical documentation concerning the Quillayute Naval Auxiliary Air Station and archival materials located at the City of Forks. Mr. Austin's survey was conducted January 21, 2022. A pedestrian survey of the APE was conducted to examine the condition of all extant buildings on the project (Photos 15 - 17).

Photo 15. Eastern overview of the APE.

Photo 16. Western overview of the APE.

Photo 17. Western overview of the APE.

Quillayute Airport Hanger:

Constructed for the hanger was requested in May 1943 as part of the Army's planned development for the Naval Auxiliary Air Station Quillayute. Due to jurisdictional conflicts between the Army and Navy and the difficult conditions of the Quillayute area, the hanger was not completed until early 1944. The hanger is the southernmost building located at the southwest end of the Quillayute Airport, adjacent to the apron or tarmac.

The building is positioned on an east-west orientation and measures approximately 166-feet by 122-feet. Its large timber hanger doors measure roughly 75-ft. wide and consist of eight moving panels. Its doors on each end are largely intact but some decay is observable on its west-facing door. The main hanger bay has a convexed roofline. It is abutted by moderate pitched shed-roofed wings on its south and north elevation.

Photo 18. Southern view of APE, hanger building on

Following the end of World War II, the Station was placed on "caretaker status," and the majority of its buildings mothballed. In 1962, the State of Washington acquired the property for us as "an emergency land field." In the late 1990s, the City of Forks acquired the property and began the development of what was then known as the Quillayute State Airport. Since the acquisition of the airport by the City, the few remaining buildings on the property have succumbed to collapse or fire.

The hanger is one of only three remaining structures on the property. The control tower, which stood adjacent to the hanger, burned in a fire ca. 2008. Other structures, such as the cold storage building, decayed in place and are no longer extant. In 2009, the north wing was rehabilitated, resulting in replacing all original windows and siding. The south elevation remains intact but is in a state of decay. A majority of these window are either missing panes, boarded-up, or collapsed. A large section on its southeast detracts from its overall historical character and feeling. Its large timber hanger doors on its east and west elevation are in varying states of decay.

Photo 19. Former control tower that burned in 2008. Photo taken in 2002.

National Oceanic and Atmospheric Administration (NOAA) Relay Building (Armory and Instruments Building):

Identified as the Armory and Instruments Building by a 1945 station map, the building was initially requested in May 1943 as part of the Army's planned development for the Naval Auxiliary Air Station Quillayute. Jurisdictional conflicts between the Army and Navy, as well as the difficult conditions of the Quillayute area, delayed completion of the building until early 1944.

The building is located near the southwest end of the Quillayute Airport, adjacent to the warming apron. It is oriented north-south and measures approximately 71-feet long by 45-ft. wide. The only obvious addition to the structure is an enclosed awning on its main entrance and a pre-fabricated metal shed attached to its southwest corner. The entire building is clad in a pre-fabricated pressboard. Ribbon windows comprised every elevation. The main façade (north) possesses three pedestrian doors with two located on the northwest. Four side-by-side ribbon windows on its east elevation. Its main entrance is centered on the façade and is abutted by a ribbon of windows on the west elevation. A metal sign near the main door reads “U.S. Department of Commerce: National Oceanic and Atmospheric Administration: National Weather Service.”

Photo 20. Southern view, NOAA Relay building.

Photo 21. Rear (south) of NOAA building, monitoring instruments in foreground.

Following the end of World War II, the Station was placed on "caretaker status" and the majority of its buildings mothballed and all useful equipment relocated to other military installations. By 1947, approximately 110 buildings were declared surplus inventory by the War Assets Administration and sold. In 1962, the State of Washington acquired the property for us as "an emergency land field". In the late 1990s, the City of Fork acquired the property and began the development of what was then known as the Quillayute State Airport. While officially owned by the City of Forks, the building has been occupied by the National Oceanic and Atmospheric Administration since the 1960s. Few alterations have been made to its original design.

CONCLUSIONS AND RECOMMENDATIONS

Drayton's assessment of extant built environment resources consisted of a thorough background examination, field investigation, and production of this report. A professional architectural history who meets or exceeds the criteria set forth in the Secretary of the Interior Professional Qualifications Standards conducted this review and subsequently concluded that the project is located in an area of high for historic resources.

Based on field investigations and a thorough review of archival resources, Drayton recommends that both the NOAA Relay Building and the Quillayute Airport Hanger are eligible for listing to the National Register of Historic Places. The Hanger is eligible per Criterions A, B, and C. The NOAA Relay Building is NRHP-eligible under Criterion A and C. Historic Property Inventory forms were produced for each building and uploaded to DAHP's online WISAARD system.

Hanger:

The hanger is NRHP-eligible under Criterion A as it possesses an important association with the development and operations of Naval Auxiliary Air Station (NAAS), Quillayute. It thus has a significant connection with World War II military mobilization and operations in the Pacific Northwest. The property is connected with the working life of Captain Robert N. Dobbins, Sr., Commander of NAAS Quillayute. While the building has sustained alterations and degradation of its materials, the hanger is eligible per Criterion C as it represents a distinctive type, period, and method of construction. Alterations to the building have resulted in diminished integrity of materials. Changes to the airport detract from the hanger's integrity of feeling and setting. It retains the integrity of location, workmanship, and design.

NOAA Relay Building (Armory and Instrument Building):

The Armory and Instruments Building is NRHP-eligible under Criterion A as it possesses an important association with the development and operations of Naval Auxiliary Air Station (NAAS), Quillayute. It thus has a significant connection with World War II military mobilization and operations in the Pacific Northwest. The building is eligible per Criterion C as it is an intact representation of the distinctive type, period, and method of construction. Minimal alterations to the building have resulted in some minor incursions to its integrity of materials. Overall, the building retains quality integrity of design, location, materials, workmanship, and feeling.

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Historic Property Report

Resource Name: NAAS Quillayute Hanger

Property ID: 727119

Location

Geographic Areas: Clallam County, T28R14W18, QUILLAYUTE PRAIRIE Quadrangle

Information

Number of stories: N/A

Construction Dates:

Construction Type	Year	Circa
Built Date	1944	☐
Remodel	2009	☐

Historic Use:

Category	Subcategory
Defense	Defense - Air Facility
Defense	Defense - Air Facility

Historic Context:

Category
Military

Architect/Engineer:

Category	Name or Company
Builder	United States Navy

Wednesday, March 16, 2022

Historic Property Report

Resource Name: NAAS Quillayute Hanger   Property ID: 727119

Thematics:

Local Registers and Districts

Name	Date Listed	Notes

Project History

Project Number, Organization, Project Name	Resource Inventory	SHPO Determination	SHPO Determined By, Determined Date
2022-03-01565, , 0621Q Quillayute Airport MP	3/16/2022	Survey/Inventory	

DEPT OF ARCHAEOLOGY + HISTORIC PRESERVATION

Historic Property Report

Resource Name: NAAS Quillayute Hanger

Property ID: 727119

Photos

20220113_120958.jpg

K87_Quillayute.JPG

APE_GM_aerial.JPG

RobertNDobbins_report.JPG

NAASQ_apron.jpg

NAAS photo.JPG

blimp on runway.jpg

at attention.jpg

Aerial of the Quillayute Air Station.jpg

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QNAAS Air Corps 1942.png

hangar_tower_2002_color.png

hangar_tower_99_color.png

Historic Property Report

Resource Name: NAAS Quillayute Hanger

Property ID: 727119

Inventory Details - 3/16/2022

Common name:	Quillayute Airport Hanger
Date recorded:	3/16/2022
Field Recorder:	Stephen Austin
Field Site number:	
SHPO Determination	

Detail Information

Characteristics:

Category	Item
Roof Type	Dome
Cladding	Wood - Clapboard
Cladding	Asbestos - Shingles

Surveyor Opinion

Significance narrative:

The NAAS Quillayute Hanger is eligible for listing in the National Register of Historic Places for its important association with Naval Auxiliary Air Station Quillayute (NAASQ). It is also eligible as an intact representation of an aviation hangar designed and constructed by the United States Navy during the Second World War. Construction of the hanger building was initially requested in May 1943 as part of the Army's planned development for the Naval Auxiliary Air Station Quillayute. However, jurisdictional conflicts between the Army and Navy, as well as the difficult conditions of the Quillayute area, delayed its completion until early 1944.

Following the end of World War II, the NAASQ was placed on "caretaker status" and the majority of its buildings mothballed. All useful equipment was relocated to other military installations. By 1947, approximately 110 buildings were declared surplus inventory by the War Assets Administration and sold. In 1962, the State of Washington acquired the property for use as "an emergency landing field". In the late 1990s, the City of Fork acquired the property and began the development of what was then known as the Quillayute State Airport.

Since acquisition of the airport by the City, several of the remaining buildings on the property have succumbed to collapse or fire. The control tower, which stood adjacent to the hanger, burned in a fire ca. 2008. Other structures, such as the cold storage building, decayed in place and are no longer extant. The hanger is one of only three remaining structures on the property.

In 2009, the north wing was rehabilitated, resulting in the replacement of all original windows and siding. The south elevation remains intact but is in a state of decay. Every window is either missing panes, boarded-up, or collapsed. A large section on its southeast detracts from its overall historical character and feeling. Its large timber hanger doors on its east and west elevation are in varying states of decay.

The hanger is NRHP-eligible under Criterion A as it possesses an important association with the development and operations of Naval Auxiliary Air Station (NAAS), Quillayute. It thus has a significant connection with World War II military mobilization and operations in the Pacific Northwest. The property is connected with the working life of Captain Robert N. Dobbins, Sr., Commander of NAAS Quillayute. While the building has sustained alterations and degradation of its materials, the hanger is eligible per Criterion C as it represents a distinctive type, period, and method of construction. Alterations to the building have resulted in diminished integrity of materials. Changes to the airport detract from the hanger's integrity of feeling and setting. It retains the integrity of location, workmanship, and design.

Initial Development:
As early as 1940, leadership at the Thirteenth Naval District recognized the vital need for a naval auxiliary air station on the western end of the Olympic Peninsula. A survey of potential locations identified the Quillayute Prairie as the only viable site near the western coastline due to the difficult terrain of the area. A report given to the Commandant of Naval Air Center, Seattle detailed the Quillayute Field and nearby town of Forks. The purpose of the station was to support coastal air defense, training of squadrons, and facilitate gunnery operations.
In November of 1940, a recommendation was made by the Navy to the Bureau of Aeronautics for the purchase of 520-acres of land at the Quillayute Prairie. The land was officially acquired by the Navy on March 31, 1941. Records do not detail a specific amount paid but appraisals of the land place it roughly between nineteen and eighteen thousand dollars.

Construction of the field began on May 2, 1941. Initial work was carried out by the Austin Company, with an allotted budget of $90,823.00. The first landing strip was completed on October 24 of that year. The graveled strip measured 500-feet wide by 4290-feet long. Construction required the closure of an existing county road. A small hanger (20-ft. x 63-ft.) and a restroom that measured 20-ft. by 14-feet. No other buildings were erected. Farm buildings already present on the property were retrofitted to serve as barracks capable of house 25 officers and 50 enlisted men.

Joint Use and Development:
Around the same time, the Army purchased land at Cape Flattery and the Quillayute Prairie. This newly acquired property stood adjacent to the Navy's planned installation. At Quillayute, the Army's sought to create a support center for a "major Coast Artillery Installation" it planned to build on Cape Flattery (Dobbins 1993). Following the attack on Pearl Harbor, the U.S. Army Air Force began opening airstrips with the stated purpose of stationing interceptors and pursuit squadrons. Within four days of December 7, 1941, the Army requested the use of the Quillayute Air Strip and other outlying fields.

The Navy immediately authorized joint use of the facility and urged the Army to further develop the field. Naval approval for use by the U.S. Army's Second Air Force was soon extended to the Fourth Army Air Force, who proposed considerable increases to the station's landing strips. After the Fourth Army Air Force was granted priority, it produced a figure of $856,000 for proposed improvements. The Army sought acquisition of an additional 525-acres of land to the Navy's 520-acres.

However, issues surrounding joint usage of the air station and Army expenditures on Navy property plagued the development of the facility. As result, "little action was taken with regard to establishing of an Auxiliary Air Station on the foundation laid in 1941 [by the Navy] until December 1942" due largely to inefficient communication between the two service branches and logistical delays.

In October 1943, the Army announced its intentions to abandoned further plans to develop the landing strip and ordered a withdrawal of its personnel. In October 1943, the Army officially ended its efforts to improve Navy-owned fields in the State of Washington. The reason given in a letter addressed to the Pacific Division of the U.S. Engineers seemed to return to the initial discrepancy over Navy ownership of the field and joint use by the Army. Upon separation, it was confirmed that the Navy would reimburse the Army for its expenditures on all Navy-owned fields and all Army property would be officially transferred to the Navy. By January 1944, the Army Air Force had withdrawn all of its guard detachments from all Navy bases in the northwest. The official transfer of Army property at Quillayute to the Navy occurred on September 18, 1944.

Return to Navy Operations:
While development was stalled between 1941-1942, the facilities already in existence at Quillayute served as an emergency field solely for Navy use. In November 1942, it was designated as a training center for "one-half a CV group (45 land planes or 12 VB planes, and 2 SNP; Emergency)." By December, it was selected as the future base for 90 carrier vessel (1 CV group) planes, 24 vessel bombers (VB) planes, and two (2) ZNP Emergency; better known as a dirigible, airship, or blimp. These changes would make the air station the largest within the Seattle area.

After the Army relinquished all interests in the development of Quillayute in October 1943, the Navy was tasked with finishing construction begun by the Army. On May 4, 1943, the Officer in Charge of Quillayute issued a report that indicated that at least $1,288,000 was required to complete developments planned by the Army. The report and subsequent correspondence further requested new laundry facilities; infrastructure such as power, heating, sewer, water, and phones; a new Hanger, control tower, cold storage; and construction of a second runway to facilitate long-range patrol bombers.

By late August, personnel began arriving in Seattle, awaiting assignment to Quillayute. Efforts to complete the planned development of the station continued through VJ-Day in 1945. Inclement weather, labor turnover, and funding approvals slowed the rate of competition throughout 1944. Essential structures and infrastructure such as power generation, water, communications, and housing were built throughout 1943 and 1944. The addition of supplementary facilities such as laundry and dining continued to expand through 1945.

During its operations, the air station was used as a training center for squadrons for the training of pilots and carrier operations. It served as a base for coastal patrol operations, emergency landing locations, and a training facility for light-than-air craft based in Tillamook, Oregon. The facility reportedly possessed upwards of 110 structures related to daily operations. Training activities included practice B-24 bombing missions, P-38 fighter aircraft missions, and deployment of surveillance blimps. While no land incursions were made, aircraft from the air station were reportedly involved in the sinking of a submarine "three hundred yards northeast of Wada Island" (King 2005).

Lt. Comm. Robert N. Dobbins, Sr.:
In the fall of 1942, Lieutenant Commander Robert N. Dobbins volunteered to serve as the commanding officer of the new air station. Dobbins brought nearly twenty years of experience in the young field of aviation, primarily gained in the private sector. Dobbins was an experienced aviation machinist and mechanic having worked for companies such

as Curtiss-Wright and Canadian Colonial Airlines in that capacity (Pettitt 1945). He was a certified pilot and worked as an aerial photographer, charter pilot, and instructor. He earned his Batchelor's of Science in Mechanical Engineering from Newark College in New Jersey in 1939. Shortly thereafter, he was appointed supervisor of War Production Training for the New Jersey area. In September 1942, Dobbins' was granted a reserve commission by the U.S. Navy. After attending a flight refresher course in Pensacola, Florida, he was ordered to Naval Air Center, Seattle.

On September 1, 1943, Dobbins took charge of the development of the air station as a prospective commanding officer. He has officially presented duties on Commissioning Day, February 29, 1944. In his official duties, Dobbins hosted many Naval officials from Washington and the Naval Air Command, Seattle in the Thirteenth Naval District, often visiting to inspect the station. Dobbins managed the long-range development of NAAS Quillayute and oversaw the day-to-day activities on the station. Oral interviews with seamen communicate the power and influence Dobbins had as Commanding Officer. His daily offices were located in the hanger and helped to illustrate the importance of the building in NAAS Quillayute's daily functioning. Dobbins was transferred to Naval Air Station Alemeda in late July 1945.

Decommissioning and Post-War Use:
Following the surrender of Japan, plans to reduce the Station's personnel, both enlisted and officers were under development. Officers from Fleet Air Seattle came aboard to inspect the handling of ordnance and evaluate the Station's possible post-war uses. By the end of September 1945, the station was placed on "caretaker status". All buildings deemed non-essential to the caretaker operations were secured. Equipment no longer needed was shipped to other naval properties in accordance with NAC Seattle's direction.

In 1947, many of the buildings were declared surplus inventory by the War Assets Administration and were deemed non-essential to the continued operation of the facility as an airfield (King 2005). The State of Washington acquired the property in 1962 for us as "an emergency landing field" and operated the Quillayute State Airport until 1997. The City of Fork took ownership of the property in the late 1990s.
While the core components of the airport remain intact, it lacks sufficient integrity of feeling due to the loss of its above-ground infrastructure and associated buildings. Only two buildings that remain on the property are contemporary with the Navy's occupation of the airfield.

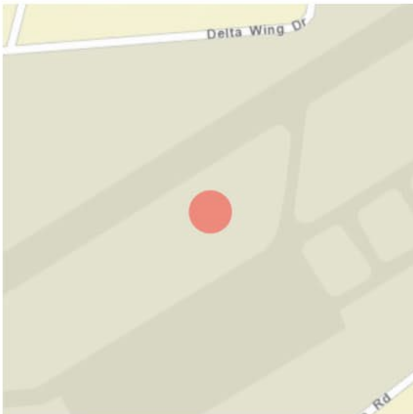
Physical description:	The hanger is the southernmost building located at the southwest end of the Quillayute Airport, adjacent to the apron or tarmac. The building is positioned on an east-west orientation and measures approximately 166-feet by 122-feet. Its large timber hanger doors measure roughly 75-ft. wide and consist of eight moving panels. Its doors on each end are largely intact but some decay is observable on its west-facing door. The main hanger bay has a convexed roofline. It is abutted by moderate pitched shed-roofed wings on its south and north elevation. Its north elevation is comprised of a stepped two-story wing measuring approx. 55-ft. by 123-feet. All 27 windows were replaced with modern vinyl framed windows as part of a 2009 restoration. The entire wing is clad in painted shiplap siding and has asphalt roof shingles. Pedestrian doors on the east and face façade are the only exterior entrance to the wing. Its south elevation is comprised of a two-story wing measuring approx. 25-ft. by 123-feet. It is in a state of decay with sections appearing to be structurally unsound. A large section at its east end is has been replaced with OBS plywood. It is unclear if these changes are covering a door or masking structural repairs. A majority of its windows have either been removed, covered, or are missing glass panes. It is clad in clapboard asbestos shingles throughout.
Bibliography:	Archibald, Lonnie. Here on the Home Front: WWII In Clallam County. 2014 Bell-Walker Engineers, Inc. "Forks Municipal Airport, Airport Master Plan." City of Forks, WA, May 1987. Dobbins, Lieut. USNR Robert N. "Monthly Report of Station Activities for War Diary." Naval Auxiliary Air Station, Quillayute, Washington, NAAS14/A12-1, Serial, December 1943-October 1945. Dobbins Sr., Captain Robert N. A Lifetime of Experiences. 1993. Tait, Captain George F., C.E. et al. "Report of Air Corps Site Selection Board on Quillayute Air Field, Clallam County." United States Navy Washington. May 12, 1942. United States Navy. "History of NAAS Quillayute." Declassified: Confidential, Lieutenant Commander Robert N. Dobbins, Commanding Officer, pp. XI- Feb 29, 1944.

Historic Property Report

Resource Name: NAAS Quillayute Armory and Instruments Building

Property ID: 727122

Location



Address: 5144 Quillayute Rd, Forks, Washington, 98331

Geographic Areas: Clallam County, T28R14W18, QUILLAYUTE PRAIRIE Quadrangle

Information

Number of stories: N/A

Construction Dates:

Construction Type	Year	Circa
Built Date	1944	☐

Historic Use:

Category	Subcategory
Defense	Defense - Arms Storage
Defense	Defense - Arms Storage

Historic Context:

Category
Military

Architect/Engineer:

Category	Name or Company
Builder	United States Navy

Historic Property Report

Resource Name: NAAS Quillayute Armory and Instruments Building

Property ID: 727122

Thematics:

Local Registers and Districts

Name	Date Listed	Notes

Project History

Project Number, Organization, Project Name	Resource Inventory	SHPO Determination	SHPO Determined By, Determined Date
2022-03-01565, , 0621Q Quillayute Airport MP	3/16/2022	Survey/Inventory	

Historic Property Report

Resource Name: NAAS Quillayute Armory and Instruments Building

Property ID: 727122

Photos

20220113_115047.jpg

20220113_115225.jpg

20220113_124501.jpg

20220113_115431.jpg

20220113_115246.jpg

20220113_115303.jpg

Historic Property Report

Resource Name: NAAS Quillayute Armory and Instruments Building

Property ID: 727122

20220113_115204.jpg

20220113_115359.jpg

20220113_115339.jpg

20220113_115313.jpg

QNAAS Air Corps 1942.png

Quillayute Naval Auxiliary Air Station, aerial view ca. 1945.png

Historic Property Report

Resource Name: NAAS Quillayute Armory and Instruments Building

Property ID: 727122

20220113_115330.jpg

Wednesday, March 16, 2022

Page 5 of 9

Inventory Details - 3/16/2022

Common name:	National Oceanic And Atmospheric Administration Relay Building
Date recorded:	3/16/2022
Field Recorder:	Stephen Austin
Field Site number:	
SHPO Determination	

Detail Information

Characteristics:

Category	Item
Roof Type	Flat with Eaves
Cladding	Asbestos - Shingles

Surveyor Opinion

Significance narrative:

The NAAS Quillayute Armory and Instruments Building is eligible for listing in the National Register of Historic Places for its important association with Naval Auxiliary Air Station Quillayute. It is also eligible as an intact representation of a key piece of air station infrastructure designed and built by the United States Navy during the Second World War. Construction of the building was initially requested in May 1943 as part of the Army's planned development for the Naval Auxiliary Air Station Quillayute. However, jurisdictional conflicts between the Army and Navy, as well as the difficult conditions of the Quillayute area, delayed completion of the building until early 1944.

Following the end of World War II, the Station was placed on "caretaker status" and the majority of its buildings mothballed and all useful equipment relocated to other military installations. By 1947, approximately 110 buildings were declared surplus inventory by the War Assets Administration and sold. In 1962, the State of Washington acquired the property for us as "an emergency land field". In the late 1990s, the City of Fork acquired the property and began the development of what was then known as the Quillayute State Airport. The is currently utilized as an equipment relay building by the National Oceanic and Atmospheric Administration.

The Armory and instruments Building is NRHP-eligible under Criterion A as it possesses an important association with the development and operations of Naval Auxiliary Air Station (NAAS), Quillayute. It thus has a significant connection with World War II military mobilization and operations in the Pacific Northwest. The building is eligible per Criterion C as it is an intact representation of the distinctive type, period, and method of construction. Minimal alterations to the building have resulted in some minor incursions to its integrity of materials. Overall, the building retains quality integrity of design, location, materials, workmanship, and feeling.

Initial Development:
As early as 1940, leadership at the Thirteenth Naval District recognized the vital need for a naval auxiliary air station on the western end of the Olympic Peninsula. A survey of potential locations identified the Quillayute Prairie as the only viable site near the western coastline due to the difficult terrain of the area. A report given to the

Commandant of Naval Air Center, Seattle detailed the Quillayute Field and nearby town of Forks. The purpose of the station was to support coastal air defense, training of squadrons, and facilitate gunnery operations.

In November of 1940, a recommendation was made by the Navy to the Bureau of Aeronautics for the purchase of 520-acres of land at the Quillayute Prairie. The land was officially acquired by the Navy on March 31, 1941. Records do not detail a specific amount paid but appraisals of the land place it roughly between nineteen and eighteen thousand dollars.

Construction of the field began on May 2, 1941. Initial work was carried out by the Austin Company, with an allotted budget of $90,823.00. The first landing strip was completed on October 24 of that year. The graveled strip measured 500-feet wide by 4290-feet long. Construction required the closure of an existing county road. A small hanger (20-ft. x 63-ft.) and a restroom that measured 20-ft. by 14-feet. No other buildings were erected. Farm buildings already present on the property were retrofitted to serve as barracks capable of house 25 officers and 50 enlisted men.

Joint Use and Development:
Around the same time, the Army purchased land at Cape Flattery and the Quillayute Prairie. This newly acquired property stood adjacent to the Navy's planned installation. At Quillayute, the Army's sought to create a support center for a "major Coast Artillery Installation" it planned to build on Cape Flattery (Dobbins 1993). Following the attack on Pearl Harbor, the U.S. Army Air Force began opening airstrips with the stated purpose of stationing interceptors and pursuit squadrons. Within four days of December 7, 1941, the Army requested the use of the Quillayute Air Strip and other outlying fields.

The Navy immediately authorized joint use of the facility and urged the Army to further develop the field. Naval approval for use by the U.S. Army's Second Air Force was soon extended to the Fourth Army Air Force, who proposed considerable increases to the station's landing strips. After the Fourth Army Air Force was granted priority, it produced a figure of $856,000 for proposed improvements. The Army sought acquisition of an additional 525-acres of land to the Navy's 520-acres.
However, issues surrounding joint usage of the Station and Army expenditures on Navy property plagued the development of the facility. As result, "little action was taken with regard to establishing of an Auxiliary Air Station on the foundation laid in 1941 [by the Navy] until December 1942" due largely to inefficient communication between the two service branches and logistical delays.

In October 1943, the Army announced its intentions to abandoned further plans to develop the landing strip and ordered a withdrawal of its personnel. In October 1943, the Army officially ended its efforts to improve Navy-owned fields in the State of Washington. The reason given in a letter addressed to the Pacific Division of the U.S. Engineers seemed to return to the initial discrepancy over Navy ownership of the field and joint use by the Army. Upon separation, it was confirmed that the Navy would reimburse the Army for its expenditures on all Navy-owned fields and all Army property would be officially transferred to the Navy. By January 1944, the Army Air Force had withdrawn all of its guard detachments from all Navy bases in the northwest. The official transfer of Army property at Quillayute to the Navy occurred on September 18, 1944.

Return to Navy Operations:
While development was stalled between 1941-1942, the facilities already in existence at

Quillayute served as an emergency field solely for Navy use. In November 1942, it was designated as a training center for "one-half a CV group (45 land planes or 12 VB planes, and 2 SNP; Emergency)." By December, it was selected as the future base for 90 carrier vessel (1 CV group) planes, 24 vessel bombers (VB) planes, and two (2) ZNP Emergency; better known as a dirigible, airship, or blimp. These changes would make the air station the largest within the Seattle area.

After the Army relinquished all interests in the development of Quillayute in October 1943, the Navy was tasked with finishing construction begun by the Army. On May 4, 1943, the Officer in Charge of Quillayute issued a report that indicated that at least $1,288,000 was required to complete developments planned by the Army. The report and subsequent correspondence further requested new laundry facilities; infrastructure such as power, heating, sewer, water, and phones; a new Hanger, control tower, cold storage; and construction of a second runway to facilitate long-range patrol bombers.

By late August, personnel began arriving in Seattle, awaiting assignment to Quillayute. Efforts to complete the planned development of the station continued through VJ-Day in 1945. Inclement weather, labor turnover, and funding approvals slowed the rate of competition throughout 1944. Essential structures and infrastructure such as power generation, water, communications, and housing were built throughout 1943 and 1944. The addition of supplementary facilities such as laundry and dining continued to expand through 1945.

During its operations, the air station was used as a training center for squadrons for the training of pilots and carrier operations. It served as a base for coastal patrol operations, emergency landing locations, and a training facility for light-than-air craft based in Tillamook, Oregon. The facility reportedly possessed upwards of 110 structures related to daily operations. Training activities included practice B-24 bombing missions, P-38 fighter aircraft missions, and deployment of surveillance blimps. While no land incursions were made, aircraft from the air station were reportedly involved in the sinking of a submarine "three hundred yards northeast of Wada Island" (King 2005).

Decommissioning and Post-War Use:
Following the surrender of Japan, plans to reduce the Station's personnel, both enlisted and officers were under development. Officers from Fleet Air Seattle came aboard to inspect the handling of ordnance and evaluate the Station's possible post-war uses. By the end of September 1945, the station was placed on "caretaker status". All buildings deemed non-essential to the caretaker operations were secured. Equipment no longer needed was shipped to other naval properties in accordance with NAC Seattle's direction.
In 1947, many of the buildings were declared surplus inventory by the War Assets Administration and were deemed non-essential to the continued operation of the facility as an airfield (King 2005). The State of Washington acquired the property in 1962 for us as "an emergency landing field" and operated the Quillayute State Airport until 1997. The City of Fork took ownership of the property in the late 1990s.

While the core components of the airport remain intact, it lacks sufficient integrity of feeling due to the loss of its above-ground infrastructure and associated buildings. Only two buildings that remain on the property are contemporary with the Navy's occupation of the airfield.

Physical description:

The building is located near the southwest end of the Quillayute Airport, adjacent to the warming apron. The building is oriented north-south and measures approximately 71-feet long by 45-ft. wide. The only obvious addition to the structure is an enclosed awning on its main entrance and a prefabricated metal shed attached to its southwest corner. The entire building is clad in a pre-fabricated pressboard or asbestos tiles. Ribbons of two-over-two single hung windows comprised every elevation. The main façade (north) possesses three pedestrian doors with two located on the northwest. Four side-by-side ribbon windows on its east elevation. Its main entrance is centered on the façade and is abutted by a ribbon of windows on the west elevation. A metal sign near the main door reads "U.S. Department of Commerce: National Oceanic And Atmospheric Administration: National Weather Service."

Its south (rear) façade is characterized by ribbon windows and a partially enclosed entrance measuring approximately 10-ft. by 10-ft. near its southwest corner. Various antennas and other instruments are located south of the building. Two ribbons of four windows separated by T1-11 siding comprise its east and west facades. A large radio town located approx. 5-ft. east of the building.

Bibliography:

Archibald, Lonnie. Here on the Home Front: WWII In Clallam County. 2014

Bell-Walker Engineers, Inc. "Forks Municipal Airport, Airport Master Plan." City of Forks, WA, May 1987.

Dobbins, Lieut. USNR Robert N. "Monthly Report of Station Activities for War Diary." Naval Auxiliary Air Station, Quillayute, Washington, NAAS14/A12-1, Serial, December 1943-October 1945.

Dobbins Sr., Captain Robert N. A Lifetime of Experiences. 1993.

Tait, Captain George F., C.E. et al. "Report of Air Corps Site Selection Board on Quillayute Air Field, Clallam County." United States Navy Washington. May 12, 1942.

United States Navy. "History of NAAS Quillayute." Declassified: Confidential, Lieutenant Commander Robert N. Dobbins, Commanding Officer, pp. XI- Feb 29, 1944.

Appendix C

Clallam County Zoning

33.15.045 Western Region Rural Center (WRC).

The purpose of the Western Region Rural Center zone is a land use classification intended for areas with a mixture of land uses, including commercial, residential and industrial.

(1) *Allowed Land Uses.* The following land uses should be allowed outright in the Western Region Rural Center zoning district:

- Agricultural activities
- Bed and breakfast inns
- Cemeteries
- Child daycare center
- Commercial storage
- Duplexes
- Family daycare providers
- Gas stations
- Grocery stores
- Home-based industries
- Home enterprises
- Indoor shooting range
- Medical service facilities
- Motels
- Outdoor-oriented recreational activity
- Primitive campgrounds
- Professional offices
- Restaurants
- Retail stores
- RV parks
- Single-family dwellings

- Timber harvesting
- Tourist shops
- Vehicular repair

(2) *Conditional Land Uses.* The following land uses should be permitted in the Western Region Rural Center zoning district through a special permitting process with public input and a determination that the proposed use is consistent with applicable land use regulations and the character of the neighborhood:

- Airports
- Asphalt plants
- Business parks
- Churches
- Commercial greenhouses
- Commercial horse facility
- Industrial uses
- Lodges
- Mineral extraction
- Mobile home parks
- Multiple-family dwellings
- Planned unit developments
- Private schools with less than fifty (50) students
- Race tracks
- Research facilities
- Schools
- Shooting ranges
- Taverns
- Timber labor camps
- Veterinarian clinics/kennels
- Wood manufacturing

- Wrecking yards

(3) *Prohibited Land Uses.* The following land uses should be prohibited in the Western Region Rural Center zoning district: None.

(4) *Maximum Residential Density.* One dwelling unit per one-half acre.

(5) *Minimum Lot Size.* None.

(6) *Minimum Lot Width.* Fifty (50) feet.

(7) *Maximum Width to Depth Ratio.* 1:5 (0.20).

(8) Setbacks:

(a) Front yard – forty-five (45) feet from a local access street, fifty (50) feet from an arterial street, sixty (60) feet from a highway.

(b) Side yard – ten (10) feet (forty (40) feet from the centerline of the right-of-way of a side street).

(c) Rear yard – fifteen (15) feet (forty (40) feet from the centerline of the right-of-way of a rear street).

The Clallam County Code is current through Ordinance 980, passed February 15, 2022.

Chapter 33.22
LAMIRD STANDARDS

Sections:

33.22.100 Applicability, purpose, and inconsistencies.
33.22.200 Commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs.
33.22.300 Minimizing impacts of commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs.

SOURCE:	ADOPTED:
Ord. 856	11/17/09

33.22.100 Applicability, purpose, and inconsistencies.

(1) This chapter applies to any commercial, industrial, mixed use, duplex, and multifamily in-fill or redevelopment within areas zoned on the Official Comprehensive Land Use and Zoning Map of Clallam County with a land use and zoning designation identified in Table 31.02.263(A) of the County-wide Comprehensive Plan as a LAMIRD Land Use and Zoning Designation, and not to home businesses or home enterprises, which are subject to the standards of Chapter 33.47 CCC, Home Enterprise and Home-Based Industry Standards.

(2) The purpose of this chapter is to minimize impacts on the rural character of neighboring less intensive rural residential zoning districts as a result of commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs.

(3) To the extent that this chapter calls for a different standard than that of the underlying zoning district, the more restrictive standard shall apply.

33.22.200 Commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs.

To maintain a more “open” or “rural” atmosphere, commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs shall comply with the following provisions:

(1) Total impervious surface is limited to 35 percent.

(2) Total lot coverage is limited to 20 percent.

(3) No structure shall be located closer than 70 feet from the boundary with a less intensive rural residential zoning district. When a road or highway is on the boundary between a LAMIRD and a less intensive rural residential zoning district, the 70-foot setback shall be measured from the more intensive parcel boundary at the edge of the road or highway.

33.22.300 Minimizing impacts of commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs.

In addition to meeting all applicable laws and regulations regarding noise and air emission, commercial, industrial, mixed use, duplex, and multifamily in-fill and redevelopment within LAMIRDs that abut a less intensive rural residential zoning district are subject to the following additional requirements, which are designed to further reduce the impacts of noise, odor, glare, and traffic:

(1) The following activities shall be located at least 70 feet from the boundary with a less intensive rural residential zoning district with the 70-foot setback measured consistent with subsection (3) of this section:

(a) The rear elevation of commercial and industrial buildings.

(b) Outdoor storage areas.

(c) Truck and/or trailer parking.

(d) Trash collection and/or compaction.

(e) Recycling areas.

(f) Cargo containers.

(g) Loading docks.

(h) Major machinery or areas housing a manufacturing process.

(i) Major on-site traffic circulation areas.

(j) HVAC equipment.

(k) Utility meters.

(l) Other sources of glare, noise, or other environmental effects.

(2) In addition, a buffer and screening plan shall be submitted that describes how natural topography, fencing, walls, berms, existing vegetation, and/or landscaping will be utilized so that the activities listed in the above subsection are adequately minimized and/or mitigated. As much as possible, these activities should be incorporated into the overall design of the buildings and/or oriented away from the boundary with lower density rural residential zoning districts so that the visual and acoustic impacts of these functions are contained and out of

view from such zoning districts. If otherwise visible from the boundary with a less intensive rural residential zoning district, these activities shall be buffered and screened.

(3) Buffer and screening required under this section should take advantage of natural topography or existing vegetation wherever possible. Where natural topography or existing vegetation is not available or insufficient, an opaque barrier of at least 10 feet high shall be installed no closer than one-half the width of the required setback, as follows:

(a) A hedge-like screen or a random or informal screen of evergreen or approved deciduous plant material of at least 15 feet wide, capable of providing a substantially opaque barrier year-round and attaining a minimum height of 10 feet within two years of planting.

(b) A landscaped earth berm with a maximum slope of three to one, rising no less than 10 feet above the existing grade of the lot line separating the zoning districts.

(c) Any combination of these methods, which may also include a solid wood and/or masonry fence or wall, that achieves a cumulative opaque barrier of at least 10 feet high. When a fence or wall is used, it must be landscaped on the outside so that there will be a substantially opaque vegetative barrier year-around within two years of planting that masks at least 50 percent of the fence or wall.

(d) Native and/or drought-tolerant landscape materials shall be utilized whenever possible.

(e) The barrier shall not adversely affect surface water drainage.

(f) To ensure continued compliance with the landscaping requirements, a notice on title shall be filed and recorded with the Clallam County Auditor, and shall "run with the land." The notice shall state the particular landscaping requirements and a landowner shall submit proof that such a notice has been recorded for future development approvals on the property.

(4) Parking for commercial, industrial, mixed use, duplex, and multifamily developments shall comply with Chapter 33.55 CCC, Parking Standards. The parking plan shall also demonstrate compliance with the following performance standards:

(a) Parking areas shall be located behind or under buildings where practical; except that attached garages shall be allowed for duplexes.

(b) When abutting a less intensive rural residential zoning district, parking areas shall include fencing, berming, and/or landscaping as specified in this section.

(c) Parking lighting shall not create off-site glare, and shall utilize "cut-off" type fixtures that ensure glare will be downward facing and/or shielded and directed away from neighboring properties.

Chapter 33.08
AIRPORT OVERLAYDISTRICT

Sections:

33.08.010 Purpose and intent.
33.08.020 Applicability.
33.08.030 Regulated activities.
33.08.040 Exemptions.
33.08.050 Airport land use compatibility overlay.
33.08.060 Federal Aviation Regulations (FAR) Part 77, surfaces and height hazard overlay.
33.08.070 Notification of airport owner or manager.

SOURCE:	ADOPTED:
Ord. 837	12/16/08

33.08.010 Purpose and intent.

The purpose of the Airport Overlay District is to:

(1) Establish land uses that are compatible with continued airport operations.

(2) Reduce hazards that may endanger the lives and property of the public and aviation users.

(3) Protect the viability of Clallam County public use airports.

(4) Promote public use general aviation airports as essential public facilities.

(5) Discourage siting of incompatible land uses that may impair the future development and operation of public use general aviation airports as required by the Washington State Growth Management Act (GMA), RCW 36.70A.510 and 36.70.547.

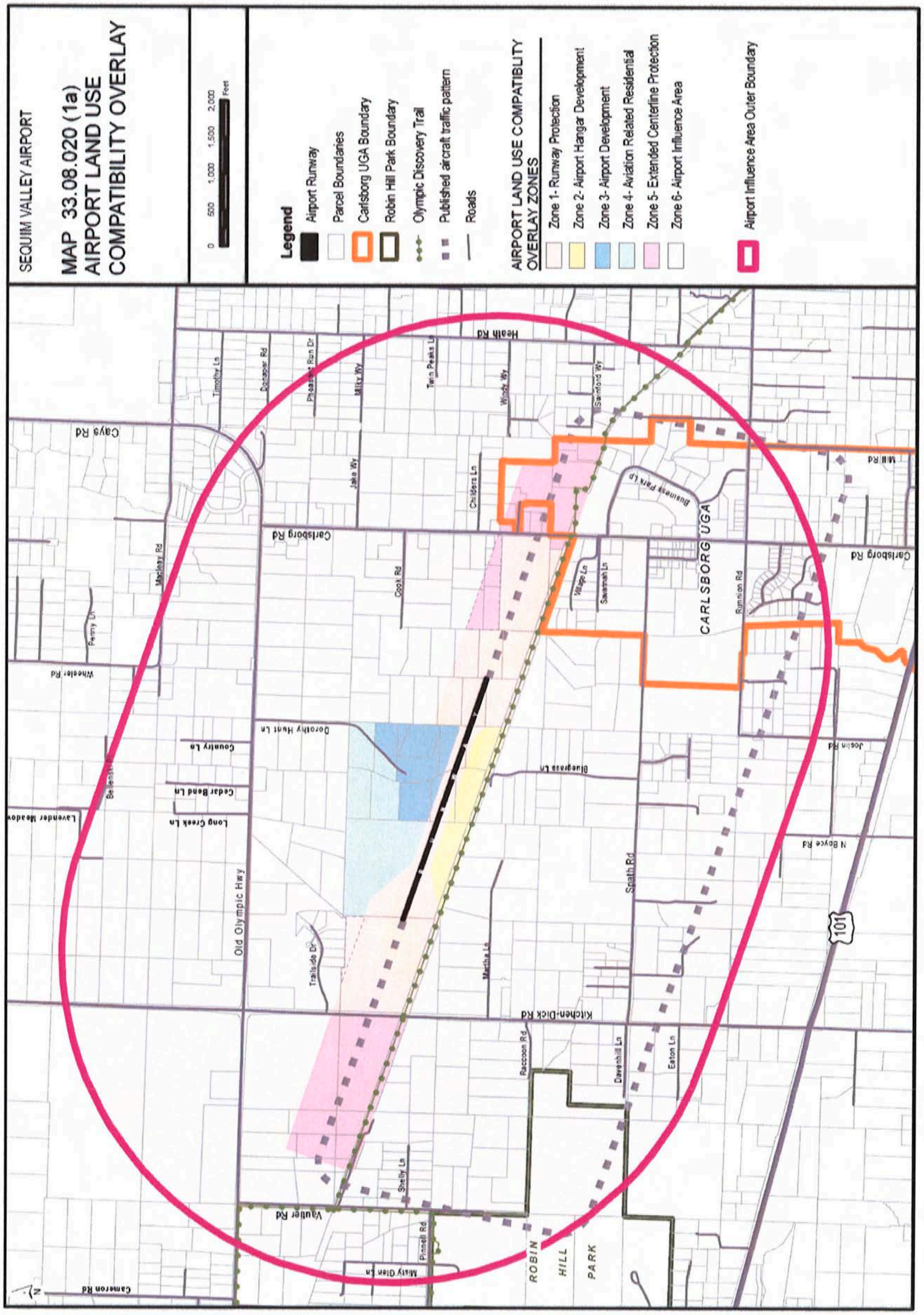
(6) Protect navigable airspace from obstructions which are of sufficient height as to constitute a danger to aircraft flight.

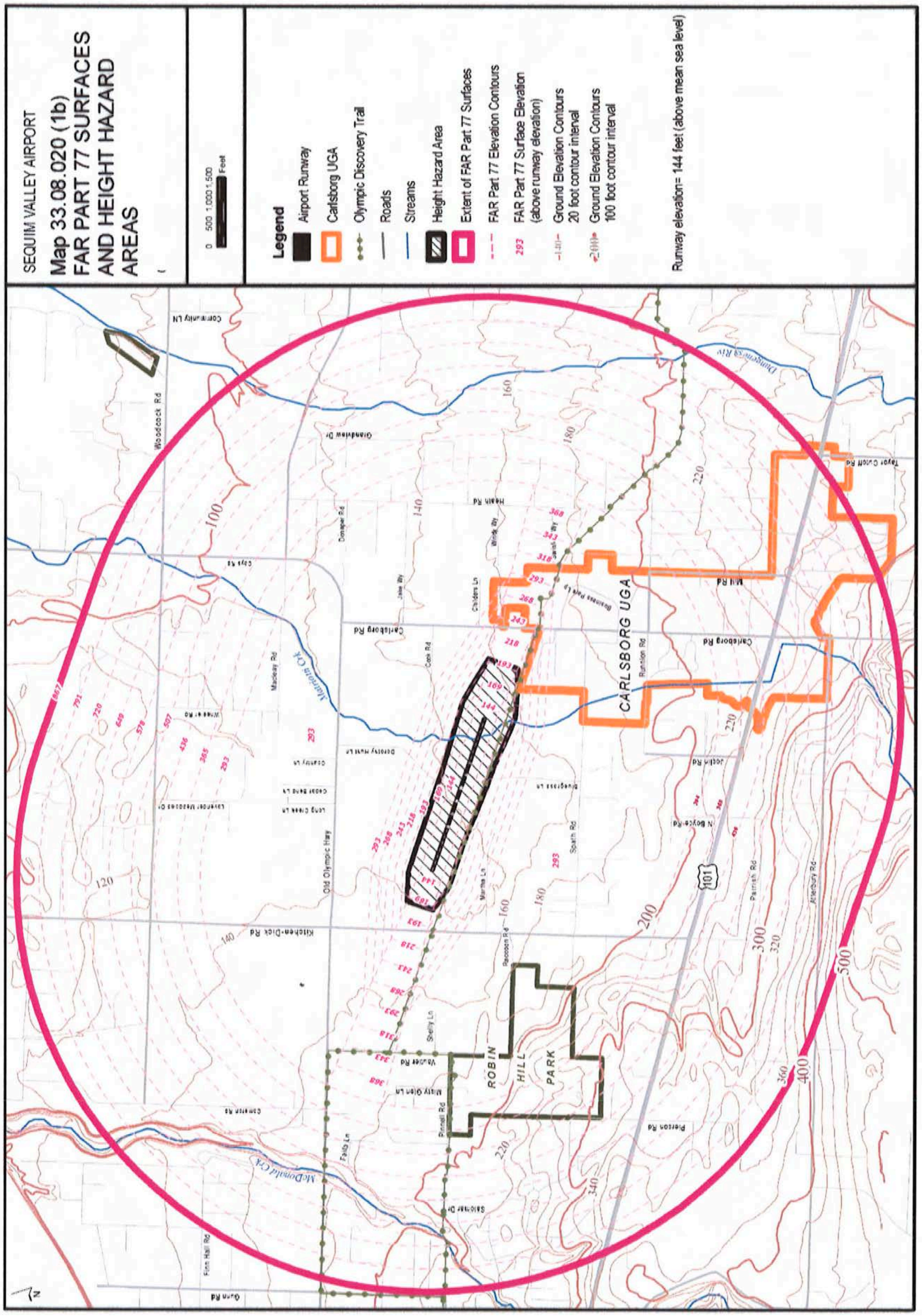
(7) Promote the public health, safety, and general welfare of County residents and aviation users.

33.08.020 Applicability.

The provisions of this chapter apply to unincorporated lands located within the Airport Land Use Compatibility Overlay and Height Hazard Overlay depicted on the following maps:

(1) *Sequim Valley Airport, Map 33.08.020 (1a, 1b).*


SEQUIM VALLEY AIRPORT
MAP 33.08.020 (1a)
AIRPORT LAND USE
COMPATIBILITY OVERLAY
0 500 1,000 1,500 2,000 Feet
Legend
Airport Runway
Parcel Boundaries
Carlsborg UGA Boundary
Robin Hill Park Boundary
Olympic Discovery Trail
Published aircraft traffic pattern
Roads
AIRPORT LAND USE COMPATIBILITY OVERLAY ZONES
Zone 1- Runway Protection
Zone 2- Airport Hangar Development
Zone 3- Airport Development
Zone 4- Aviation Related Residential
Zone 5- Extended Centerline Protection
Zone 6- Airport Influence Area
Airport Influence Area Outer Boundary
CARLSBORG UGA
ROBIN HILL PARK


SEQUIM VALLEY AIRPORT
Map 33.08.020 (1b)
FAR PART 77 SURFACES AND HEIGHT HAZARD AREAS
0 500 1,000 1,500 Feet
Legend
Airport Runway
Carlsborg UGA
Olympic Discovery Trail
Roads
Streams
Height Hazard Area
Extent of FAR Part 77 Surfaces
FAR Part 77 Elevation Contours
FAR Part 77 Surface Elevation (above runway elevation)
Ground Elevation Contours 20 foot contour interval
Ground Elevation Contours 100 foot contour interval
Runway elevation= 144 feet (above mean sea level)
CARLSBORG UGA
ROBIN HILL PARK

(2) *William Fairchild International Airport.* (Reserved).

(3) *Sekiu Airport.* (Reserved).

(4) *Quillayute Airport.* (Reserved).

(5) *Forks Municipal Airport.* (Reserved).

The airport land use compatibility overlay and the height hazard overlay are laid over the existing Clallam County zoning districts and do not alter the underlying zoning designation. Development standards in this chapter shall be in addition to those of the underlying zone and, where explicitly noted, supersede the underlying zoning. If implementation of this chapter conflicts with other provisions of the Clallam County Code, State or federal law, the more restrictive requirement applies.

33.08.030 Regulated activities.

Uses and activities within the Airport Overlay District that are subject to the requirements of this chapter include:

(1) Land divisions pursuant to CCC Title 29.

(2) Any building, land use, or environmental permit, action, or license required by Clallam County pursuant to Chapter 21.01 CCC and Chapter 26.10 CCC.

(3) Any use that creates potential hazards to aircraft in flight within the Airport Overlay District, including but not limited to:

(a) Electrical interference with airport radio communications or navigational signals;

(b) Lighting or other installations that cause glare that could be mistaken for airport lighting;

(c) Installations or activities which could result in impaired visibility near an airport;

(d) Emissions of fly ash, dust, vapor, gases or other forms of emissions;

(e) Areas of standing water greater than one-half acre; and/or

(f) Structures, trees, or other objects that cause an obstruction to navigable airspace as defined in Title 14 of the Code of Federal Regulations Part 77, Imaginary Surfaces.

33.08.040 Exemptions.

The following land uses, structures, or activities are exempt from the provisions of the Airport Overlay District when permitted in the underlying zoning district:

(1) A land use, lot, building, or structure not conforming to this chapter that was lawfully permitted and established prior to the adoption of this chapter, except as may be compelled by State or federal regulations. The land use, lot, building or structure must adhere to the regulations prescribed in Chapter 33.43 CCC, Status of Nonconforming Use, Parcels, and Pre-existing Uses; provided, that no building, structure, or use shall be changed in any manner that results in a greater degree of nonconformity with respect to this chapter.

(2) Airport landing facilities, necessary aviation uses, and the manner in which aircraft operate on the airport or in the surrounding airspace approved by the Federal Aviation Administration.

(3) Temporary uses lasting no more than five consecutive days within any 180-day period when located within Airport Land Use Compatibility Overlay Zones 1, 2, 3, 4, and 5, subject to approval by the Department of Community Development or applicable review authority for consistency with the intent of this chapter.

33.08.050 Airport land use compatibility overlay.

The airport land use compatibility overlay and related overlay zone classifications are designated on Map 33.08.020 (1a). Overlay designations and classifications are based on many factors including, but not limited to: extent of airport ownership and operations; aircraft traffic patterns; National Transportation Safety Board aircraft accident data; state airport land use compatibility guidelines; airport and surrounding land uses; existing limitations and easements to protect the airport from incompatible adjacent land uses; and State, federal, and local policies, guidelines, and regulations. All aviation-related allowed land uses must be consistent with applicable Federal Aviation Administration (FAA) regulations.

(1) *Runway Protection (Zone 1).* The runway protection zone contains the airport runway, areas immediately adjacent to the runway, and areas where low altitude aircraft traffic patterns occur near the ends of the runway. The purpose of this zone is to maintain areas that are generally free of structures and other obstructions, and avoid uses that allow human occupation or significant concentrations of people for any significant period of time. Compatible land uses include those aviation uses directly related to the operation of the airport and non-aviation uses such as crops, pasture, and other open lands.

(a) *Land Use.* Allowed land uses are limited to the following:

(i) Agriculture (no structures or livestock);

(ii) Aircraft runways and taxiways;

(iii) Aviation navigational aids;

(iv) Structures required for airport operation (no human occupation);

(v) Open lands.

(b) *Protection Standards.*

(i) All other aviation and nonaviation uses not listed as allowed are prohibited.

(ii) Existing residential development rights allowed by the underlying zoning district may be transferred to contiguous areas that are part of a residential land division.

(2) *Airport Hangar Development (Zone 2).* The purpose of this zone is to allow opportunities for limited aviation land uses on airport associated properties that are consistent with the character of existing airport uses and that minimize impacts to adjacent lands outside the overlay district.

(a) *Land Use.* Allowed land uses are limited to the following:

(i) Agriculture (no livestock);

(ii) Aircraft hangars (24,000 square feet or less);

(iii) Aircraft maintenance and service;

(iv) Aircraft taxiways;

(v) Aviation navigational aids;

(vi) Structure required for airport operation (no human occupation);

(vii) Open lands.

(b) *Protection Standards.*

(i) All other aviation and nonaviation uses not listed as allowed are prohibited.

(ii) Existing residential development rights allowed by the underlying zoning district may be transferred to contiguous areas that are part of a residential land division.

(iii) Tiedowns must be set back 200 feet from the centerline of the runway.

(iv) All structures must be set back 275 feet from the centerline of the runway.

(v) A minimum of 30 percent of the parcel must remain free of structures and impervious surfaces (e.g., parking lots).

(vi) New aviation development must provide for a visual screen along all property lines that border areas located outside of the Airport Land Use Compatibility Overlay consistent with the landscaping requirements in Chapter 33.53 CCC.

(vii) No land use, building, or structure shall be permitted that promotes above ground storage of bulk fuel, flammable substances, or materials with a tank size greater than 6,000 gallons.

(viii) All aircraft hangars and other facilities must be separated from other structures by a minimum of 75 feet subject to any additional separation requirements to satisfy building requirements or FAA design standards.

(3) *Airport Development (Zone 3).* The purpose of this zone is to allow for aviation-related land uses and limited, nonaviation uses that are compatible with airport operations and character on airport property. Lands within this zone are already characterized by airport development such as aircraft maintenance and servicing, aircraft hangers, fueling facilities, taxiways, and aircraft tiedown areas.

(a) *Land Use.* Allowed land uses are limited to the following:

(i) Agriculture;

(ii) Aircraft or aviation related business (10,000 square feet or less);

(iii) Aircraft fueling facilities;

(iv) Aircraft hangars (24,000 square feet or less);

(v) Aircraft maintenance and service;

(vi) Aircraft taxiways;

(vii) Aircraft tiedowns;

(viii) Airport towers and terminals;

(ix) Aviation navigational aids;

(x) Storage facility (10,000 square feet or less);

(xi) Other aviation operation uses (no human occupation);

(xii) Open lands;

(xiii) Public buildings (10,000 square feet or less).

(b) *Protection Standards.*

(i) All other aviation and nonaviation uses not listed as allowed are prohibited.

(ii) Existing residential development rights allowed by the underlying zoning district may be transferred to contiguous areas that are part of a residential land division.

(iii) Commercial storage must be fully contained within buildings.

(iv) New development must provide for a visual screen along all property lines that border areas located outside of the Airport Land Use Compatibility Overlay consistent with the landscaping requirements in Chapter 33.53 CCC.

(v) A minimum of 30 percent of the parcel must remain free of structures and impervious surfaces (e.g., parking lots).

(vi) New structures must be located a minimum of 50 feet from all property lines that border areas located outside of the Airport Protection Zone Overlay.

(vii) All aircraft hangars and other facilities must be separated from other structures by a minimum of 75 feet subject to any additional separation requirements to satisfy building requirements or FAA design standards.

(4) *Aviation Related Residential (Zone 4).* The purpose of this zone is to allow opportunities for aviation-related single-family residential development compatible with airport operations and consistent with the standards of the underlying agriculture retention zone on property connected with the airport.

(a) *Land Use.* Allowed land uses are limited to the following:

(i) Agriculture;

(ii) Aircraft hangars (Less than 4,000 square feet);

(iii) Aircraft taxiways;

(iv) Aviation navigational aids;

(v) Open lands;

(vi) Single-family dwelling and accessory uses.

(b) *Protection Standards.*

(i) Residential development subject to the standards of the underlying zoning district.

(ii) No land use, building, or structure shall be permitted that promotes above ground storage of bulk fuel, flammable substances, or materials with a tank size greater than 6,000 gallons.

(5) *Extended Runway Centerline Protection (Zone 5).* The purpose of this zone is to promote compatible land uses in areas in close proximity to aircraft landing and take-off patterns, and to retain open lands along the extended runway centerline in case of need for emergency landing.

(a) Land use. Subject to the standards of the underlying zoning district.

(b) Protection standards.

(i) Asphalt plants are prohibited.

(ii) Schools, child daycare centers, family childcare homes, hospitals, convalescent and nursing homes, or other uses where the mobility of occupants is compromised are prohibited.

(iii) Conditional use permit is required for any allowed uses within the zoning district that allow public use and access.

(iv) No land use, building, or structure shall be permitted that promotes above ground storage of bulk fuel, flammable substances, or materials with a tank size greater than 6,000 gallons.

(c) *Sequim Valley Airport Specific Protection Standards.* New structures must be set back a minimum of 75 feet from the extended runway centerline in Zone 5 areas west of Sequim Valley Airport. This requirement does not apply to Zone 5 areas located within the Carlsborg urban growth area (UGA) where the extended runway centerline and adjoining areas are already significantly developed.

(6) *Airport Influence Area (Zone 6).* The Airport Influence Area (Map 33.08.020 (1a)) covers Airport Land Use Compatibility Overlay Zones 1 through 6 and approximates the area subject to the regular or potential traffic pattern of the airport. The purpose of this zone is to inform current, future, and prospective residents, businesses, and landowners of potential increased noise levels, vibration, fumes, smell, low-flying aircraft, and other aviation related disturbances, and to avoid uses that may create potential hazards to aircraft in flight.

(a) *Land Use.* Subject to the standards of the underlying zoning district.

(b) *Protection Standards.*

(i) No land use shall be made of any land within the Airport Influence Area that will cause electrical interference with navigational signals or radio communications at the airport or with radio or electronic communications between the airport and aircraft. Said interference will be regulated in accordance with and enforced by the Federal Communication Commission (FCC) and the FAA.

(ii) No land use, building, or structure shall emit emissions of fly ash, dust, vapor, gases or other forms of emissions within the Airport Influence Area that may conflict with any current and planned operations of the airport.

(iii) No land use requiring a Clallam County building or land use permit or approval shall be permitted that would foster an increase in the bird population within the Airport Influence Area and thereby increase the likelihood of causing a bird-aircraft impact, including, but not limited to, solid waste landfills, sewage lagoons, or creation of standing areas of water greater than one-half acre.

(iv) No structure, device or other object located within Airport Influence Area shall be placed or erected that makes it difficult for pilots to distinguish between airport lights and other lights, results in glare in the eyes of pilots using the airports, impairs visibility in the vicinity of the airport, or otherwise endangers the landing, taking off, or maneuvering of aircraft. This includes but is not limited to reflective roofing, siding material, and standing areas of water greater than one-half acre.

33.08.060 Federal Aviation Regulations (FAR) Part 77, surfaces and height hazard overlay.

Protection of navigable airspace from obstructions that can be hazards to aircraft flight requires establishment of limits on the height of structures, trees, and other objects. Navigable airspace is defined by the FAA pursuant to Title 14 of the Code of Federal Regulations Part 77, Imaginary Surfaces, referred to herein as Federal Aviation

Regulations (FAR) Part 77 Surfaces. FAR Part 77 surfaces are those air spaces above and around airports that require protection from potential obstructions that might interfere with airport traffic and potentially create a safety risk to aircraft occupants and citizens on the ground.

An object or structure with an elevation higher than the FAR Part 77 Surface elevation is considered to penetrate the FAR Part 77 Surface and constitute an obstruction to navigable airspace. The vertical elevations of the FAR Part 77 Surfaces are determined above the runway elevation and are based on the approach classification of the runway (Map 33.08.020 (1b)). Based on existing topography and the FAR Part 77 Surfaces elevations, height hazard areas are identified where structures and other obstructions have a high likelihood of penetrating a FAR Part 77 Surface. The boundary and elevation of the FAR Part 77 Surfaces relative to the ground topography and the height hazard area is designated and shown on Map 33.08.020 (1b).

(1) No structure, landscaping, or other object shall be permitted, approved, or authorized to have a height exceeding the FAR Part 77 Surfaces shown on Map 33.08.020 (1b).

(2) The airport owner or manager will be notified and provided an opportunity for comment pursuant to CCC 33.08.070 for proposals for new structures within the height hazard areas depicted on Map 33.08.020 (1b) equal to or less than 36 feet. Proposals for new structures greater than 36 feet within the boundaries of the height hazard area and structures greater than 75 feet within the boundaries of FAR Part 77 Surfaces are not permitted unless applicant for proposal submits documentation of one of the following:

(a) The FAA has conducted an aeronautical study of the proposed object, as per FAA Form 7460-1 “Notice of Proposed Construction or Alteration” as amended and determined that the object would not create a hazard to the navigable airspace of the airport; and/or

(b) The FAA has made an official determination via FAA Form 7460-1 “Notice of Proposed Construction or Alteration” as amended on terrain, trees, or other objects of equal or greater height situated within a 100-foot radius of the proposed object and determined that the object would not create a hazard to the navigable airspace of the airport or impede the operations of the airport.

(3) Nothing in this chapter shall diminish the responsibility of project proponents to submit a FAA Form 7460-1 “Notice of Proposed Construction or Alteration” as amended to the FAA if required in accordance with Title 14 of the Code of Federal Regulations Part 77, “Objects Affecting Navigable Airspace.”

33.08.070 Notification of airport owner or manager.

The Department of Community Development (DCD) shall provide notice and opportunity for comment to the airport owner or manager for any building or land use permit application located within Airport Land Use Compatibility Overlay Zones 1 through 5 shown on Map 33.08.020(1a) or for proposals for structures less than or equal to 36 feet within the height hazard areas shown on Map 33.08.020 (1b). DCD has the discretion to request airport owner or manager comment for proposals within the Airport Influence Area (Map 33.08.020 (1a)). If airport owner or manager does not submit comment within 14 days to DCD, DCD will consider the proposal to have no adverse effects on the ongoing flight operations at said airport from the perspective of the airport owner or manager.

The Clallam County Code is current through Ordinance 980, passed February 15, 2022.

Disclaimer: The Commissioner's Office has the official version of the Clallam County Code. Users should contact the Commissioner's Office for ordinances passed subsequent to the ordinance cited above.

Note: This site does not support Internet Explorer. To view this site, Code Publishing Company recommends using one of the following browsers: Google Chrome, Firefox, or Safari.

County Website: www.clallam.net
Code Publishing Company

Appendix D

FAA Forecast Approval

U.S. Department
of Transportation
Federal Aviation Administration

Northwest Mountain Region
Colorado · Idaho · Montana · Oregon · Utah
Washington · Wyoming

Seattle Airports District Office
2200 S 216th Street, Rm 1W-422
Des Moines, WA 98198

August 19, 2022

Mr. Rod Fleck
Director of Public Works
City of Forks
500 E. Division Street
Forks, WA 98331

Quillayute Airport, City of Forks, Washington
AIP: 3-53-0168-009-2021
Approval of Forecast

Dear Mr. Fleck:

The Federal Aviation Administration (FAA) reviewed forecast information for Quillayute airport. The forecast was received July 19, 2022. FAA approves the forecast as presented in Chapter 3 of the Master Plan and as shown below:

TABLE 3-10: FORECAST ANNUAL AIRCRAFT OPERATIONS (UIL)

Forecast	AAGR	2021	2026	2031	2036	2041
Scenario 1 – Status Quo	3.27%	570	997	1,024	1,054	1,085
Scenario 2 – Basic Facility Improvements	6.02%	570	997	1,274	1,554	1,835
Scenario 3 – Moderate Facility Improvements (Recommended)	**7.07%**	**570**	**997**	**1,524**	**1,804**	**2,235**
Scenario 4 – Full Facility Improvements; Forks Municipal Airport Closed by 2035	10.00%	570	1,247	1,774	2,304	3,835
UIL TAF (2021-2041)	2.48%	6,905	7,826	8,818	9,939	11,208

Airport Planning and TAF Forecast Comparison

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Total Operations				
Base yr.	2021	570	6,700	-91.5%
Base yr. + 5yrs.	2026	997	7,826	-87.3%
Base yr. + 10yrs.	2031	1,524	8,818	-82.7%
Base yr. + 15yrs.	2036	1,804	9,939	-81.8%

The FAA also approves the A-II (small) family of aircraft for the existing and future critical aircraft. The forecast is supported by reasonable planning assumptions and current data. The forecast appears to be developed using acceptable forecasting methodologies.

This forecast was prepared during the impacts of COVID-19. The forecast approval is based on reference to the data and methodologies used and the conclusions at the time the document was prepared. However, consideration must still be given to the significant impacts of COVID-19 on aviation activity and the historical changes around Quillayute airport in its role within the National Plan of Integrated Airports System [NPIAS]. As a result of these factors, there is lower than normal confidence in future growth projections. FAA approval of the forecast does not provide justification to begin airport development.

Justification for future projects will be made based on activity levels at the time the project is requested for development, rather than this forecast approval. Further documentation of actual activity levels reaching the planning activity levels will be needed prior to FAA participation in funding for eligible projects. The approved forecasts may also be subject to additional analysis or the FAA may request a sensitivity analysis if this data is to be used for environmental or Part 150 noise planning purposes.

If you have questions, please call me at 206 231-3498

Sincerely,

AGNES O. FISHER

Digitally signed by AGNES O. FISHER
Date: 2022.08.19 11:29:52 -07'00'

Community Planner, SEA - 637
Seattle Airports District Office

Attachments: (i) FAA TAF and ALP Forecast Comparison.
(ii) 2021 – 2041 Quillayute Airport Master Plan - Planning Criteria

Forecast Summary

UIL				Base Year: 2021					
						Average Annual Compound Growth Rates			
	Base Yr. Level	Base Yr.+1yr.	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+15yrs.	Base Yr. to +1	Base Yr. to +5	Base Yr. to +10	Base Yr. to +15
Operations									
Itinerant									
Air carrier	0	0	0	0	0	N/A	N/A	N/A	N/A
Commuter/air taxi	20	20	50	50	50	0.0%	20.1%	9.6%	6.3%
Total Commercial Operations	20	20	50	50	50	0.0%	20.1%	9.6%	6.3%
General aviation	170	175	287	544	674	2.9%	11.0%	12.3%	9.6%
Military	20	20	20	20	20	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	180	190	310	580	730	5.6%	11.5%	12.4%	9.8%
Military	180	330	330	330	330	83.3%	12.9%	6.2%	4.1%
TOTAL OPERATIONS	570	735	997	1,524	1,804	28.9%	11.8%	10.3%	8.0%
Instrument Operations	**0**	**0**	**50**	**50**	**50**	n/a	n/a	n/a	n/a
Peak Hour Operations	**2**	**3**	**3**	**4**	**5**	50.0%	8.4%	7.2%	6.3%
Cargo/mail (enplaned + deplaned tons)	**0**	**0**	**0**	**0**	**0**	N/A	N/A	N/A	N/A
Based Aircraft									
Single Engine (Nonjet)	0	0	1	3	4	n/a	n/a	n/a	n/a
Multi Engine (Nonjet)	0	0	0	0	0	n/a	n/a	n/a	n/a
Jet Engine	0	0	0	0	0	n/a	n/a	n/a	n/a
Helicopter	0	0	0	0	0	n/a	n/a	n/a	n/a
Other	0	0	0	0	0	n/a	n/a	n/a	n/a
TOTAL	0	0	1	3	4	n/a	n/a	n/a	n/a
GA Operations Per Based Aircraft	n/a	n/a	**997**	**508**	**451**	n/a	n/a	n/a	n/a

Note: TAF data is on a U.S. government fiscal year basis (October through September).

Legend:
"N/A" No Activity for this Category
"n/a" formula error generated for forecasts due to "0" base year data

2021-2041 Quillayute Airport Master Plan – Planning Criteria

Forecasts

Existing/Future Critical Aircraft Designation and Airport Reference Code (ARC)

- *Runway 4/22: Large multi-engine turboprop (King Air 350 typical). **ARC: B-II**. These standards will apply to the runway and all major taxiways on the Airport.*
- *Second runway (formerly 12/30) is currently closed. If recommended for re-opening, it's critical aircraft will be a small single-engine piston aircraft. **ARC A-I Small Aircraft**.*

Facility Requirements (Existing and Future Standards)

Design Standards: Aircraft Approach Category (AAC) and Airplane Design Group (ADG)

- *Runway 4/22: **A/B-II, Visibility Minimums Not Lower than 1 mile** (Table G-4, FAA AC 150/5300-13B).*
- *Second runway is currently closed. If recommended for re-opening, it will be **A/B-I Small Aircraft, Visibility Minimums Visual**. (Table G-1, FAA AC 150/5300-13B).*

Part 77 Airspace

- *Runway 4/22: **Non-Precision Instrument (NPI), visibility minimums >3/4 statute mile**.*
- *Second runway is currently closed. If recommended for re-opening, it will be **Visual**.*

Appendix E

Instrument Approach Development – Technical Information

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Memo

To:	**Rod Fleck, City of Forks**
From:	**Century West Engineering, David Miller, AICP**
Date:	**11/11/2022**
Project:	**Quillayute Airport Master Plan**
Re:	**Olympic Coast National Marine Sanctuary (OCNMS) Overflight Regulations and Flight Operations at Quillayute Airport**

Internal Review Copy 11.11.22

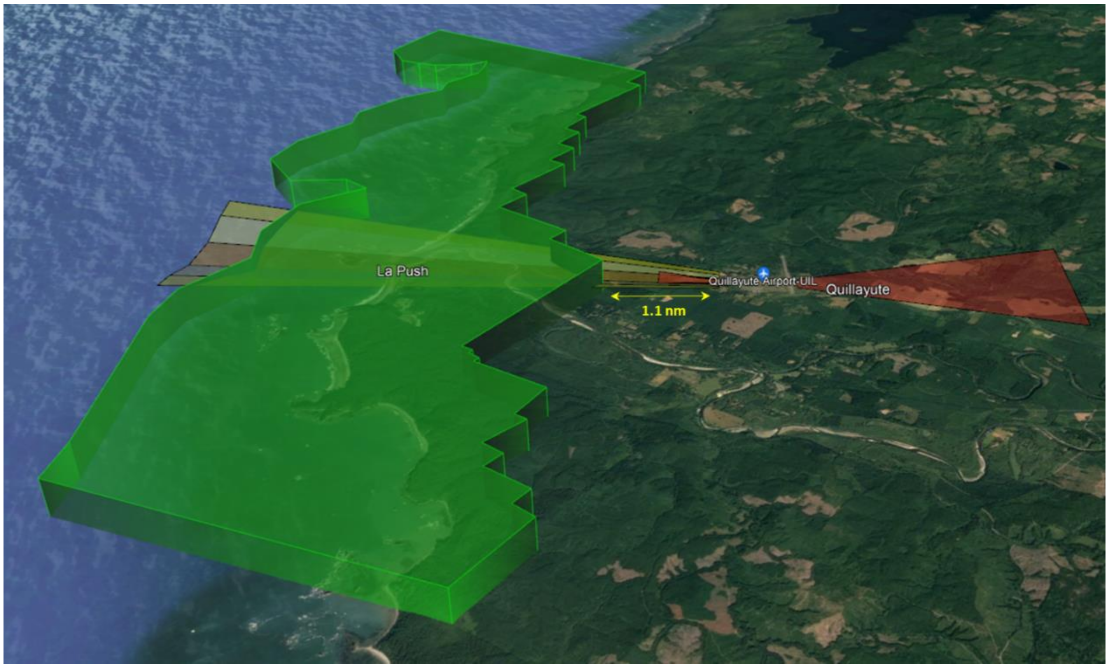
Introduction

The purpose of this memorandum is to briefly summarize instrument procedure options for Quillayute Airport. A preliminary conceptual evaluation was performed by FAA Flight Procedures staff in conjunction with the current Airport Master Plan update. The evaluation examined FAA terrain clearance requirements for procedures and noted constraints created by the proximity to OCNMS areas with specific aircraft overflight restrictions. The technical evaluation focused on potential instrument approach/departure paths and permitted aircraft altitudes when operating in and out of Quillayute Airport. The goal of this analysis is to support a local request for an OCNMS overflight exemption for (future) aircraft operating under instrument flight plans at Quillayute Airport (existing airport), similar to that granted by NOAA to Copalis Airport (existing airport) for visual flight activity.

Supplemental information is provided in Addenda 1 and 2, and the attachment (Federal Register excerpt and NOAA overflight guidelines public information).

Issue

Quillayute Airport is a locally owned public use airport (City of Forks, Washington) included in the federal airport system (National Plan of Integrated Airport Systems – NPIAS). The Airport is located approximately 1.1 miles east of the Olympic Coast National Marine Sanctuary (OCNMS) boundary, at its nearest point. The image below depicts both the OCNMS area and the adjacent Quillayute Needles National Wildlife Refuge within the green shaded area. The depicted approach surfaces are intended to illustrate the proximity of the runway to the adjacent federally protected areas, west of the Airport. These surfaces do not necessarily represent instrument approaches that have been determined to be feasible by FAA in their preliminary assessments.



The Code of Federal Regulations (15 CFR, Part 922) defines aircraft overflight regulations for the OCNMS and several other national marine sanctuaries of the United States. Overflight rules are standard for national marine sanctuaries and other sensitive habitat areas under federal protection. The overflight regulations and the policy promulgated by NOAA/FAA for the OCNMS prohibit aircraft flight below 2,000 feet (above the surface), with specific exceptions. These include military and emergency operations such as search and rescue, and normal aircraft takeoffs and landings at Copalis Airport, a public use beach runway located partially within the OCNMS boundary, 49.9 miles south of Quillayute Airport. The comment and response process for the overflight regulations was documented in the Federal Register (January 26, 2012) for final rulemaking for the OCNMS. Comments and responses for items affecting Quillayute Airport are summarized below.

<u>OCNMS Impacts on Aircraft Operations at Quillayute Airport and Other Airports in the Vicinity</u>

During the agency rulemaking comment and response process, a question was raised about potential impacts associated with OCNMS overflight rules on three existing airports (Quillayute, Sekiu, and Copalis).

In the agency response, it was stated that potential OCNMS overflight restrictions would not be significant for aircraft operations at **Quillayute Airport** based on the distance between the visual traffic pattern for Runway 4/22 and the OCNMS boundary. This assessment did not consider the planned addition of instrument procedures at Quillayute Airport defined in its 2003 FAA-funded Airport Master Plan, and subsequently maintained in the current 2022-2042 FAA-funded Airport Master Plan. Specifically, the agency assessment limits the Airport's ability to implement facility improvements (e.g., instrument flight procedures) needed to support a variety of life and safety functions, including local air ambulance flights and support for critical emergency operations for both civilian and military users. Quillayute Airport is the nearest airport to the Quileute Reservation (10.1 road miles to La Push) and is available for general air transportation and emergency flights including air ambulance.

Based on the 2022 FAA-approved airport master plan twenty-year activity forecasts, the volume of flight activity at Quillayute Airport is significantly lower than the other public use airports in Clallam County. As a result, the volume of aircraft overflights within the boundaries of the OCNMS would be low with the addition of instrument procedures at the Airport. Depending on the final procedure design developed by FAA, OCNMS overflights are expected to be significantly mitigated based on other factors including terrain clearance requirements for both arrival and departure procedures. The volume of instrument activity at Quillayute Airport and any associated impacts could be mitigated in a manner similar to the requirements established by NOAA/FAA in permitting aircraft operations at Copalis Airport within the OCNMS (see below).

During rulemaking and subsequent policy development, the controlling agency indicated that there was no intent to prohibit aircraft use of **Copalis Airport**, where a portion of its beach runway (at sea level) and most of the 1,000-foot above ground level (AGL) aircraft traffic pattern sit within the OCNMS boundary. Aircraft operating at the airport are below the 2,000-foot published overflight altitude when landing or taking off. Guidance provided by NOAA and FAA directs pilots recognizes this use and request that pilots maintain a 2,000-foot altitude whenever possible when operating in and out of the Copalis Airport, and to climb to this altitude immediately after takeoff for all departures. The federal agencies have worked closely with the airport owner (WSDOT Aviation Division) to develop pilot education materials to effectively protect the resource.

The agency response for **Sekiu Airport** concluded that there would be no impacts attributable to the OCNMS since the Airport was 10 miles from the nearest OCNMS boundary.

These items are noted in the attached copy of the Federal Register.

Emergency Operations

As part of the rulemaking process for the OCNMS, a specific exemption to the 2,000-foot overflight rule was defined for emergency flights (search and rescue, etc.). This activity routinely includes military, U.S. Coast Guard (USCG), and privately-owned aircraft. Quillayute Airport is the only airport in western Clallam County capable of accommodating the full range of aircraft normally used to support emergency operations. As such, the overflight exemption is expected to apply to some aircraft operating at Quillayute Airport.

Aircraft commonly used in search and rescue operate under both visual flight rules (VFR) and instrument flight rules (IFR) conditions, including mission staging and operations. Quillayute Airport does not currently support IFR approach and departure procedures. However, the addition of instrument procedures was recommended in the first FAA-funded master plan for the airport, completed in 2003, and is currently a high priority improvement recommended in the current 2022-2042 airport master plan update. The need to upgrade instrument capabilities at Quillayute Airport is also consistent with the Airport's current role in supporting potential emergency response events including the Cascadia subduction zone event.

Airfield Background

Quillayute Airport was established by the U.S. War Department in the early 1940s for joint U.S. Army and U.S. Navy use. The U.S. Navy began construction of the current airfield facilities in 1941 as the Quillayute Naval Auxiliary Air Station. The Airport was surplused by the federal government following World War II. Quillayute Airport is currently owned and operated by the City of Forks, Washington. Prior to city ownership, the Airport was owned and operated by the State of Washington Department of Transportation – Aviation Division as Quillayute State Airport. The transfer of ownership to local government coincided with the FAA's reassignment of the National Plan of Integrated Airport Systems (NPIAS) designation formerly applied to nearby Forks Municipal Airport, due to issues related to site constraints and the impracticality of meeting FAA airfield design standards at the smaller airport.

Quillayute Airport is only public use airport located on the western Olympic Peninsula included in the NPIAS. The NPIAS designation for Quillayute Airport reflects the national airport system's ability to serve both the local community and the expansive, sparsely populated Olympic Peninsula. From basic air transportation and medical evacuations to supporting response for major emergencies, Quillayute Airport is a major strategic asset that is

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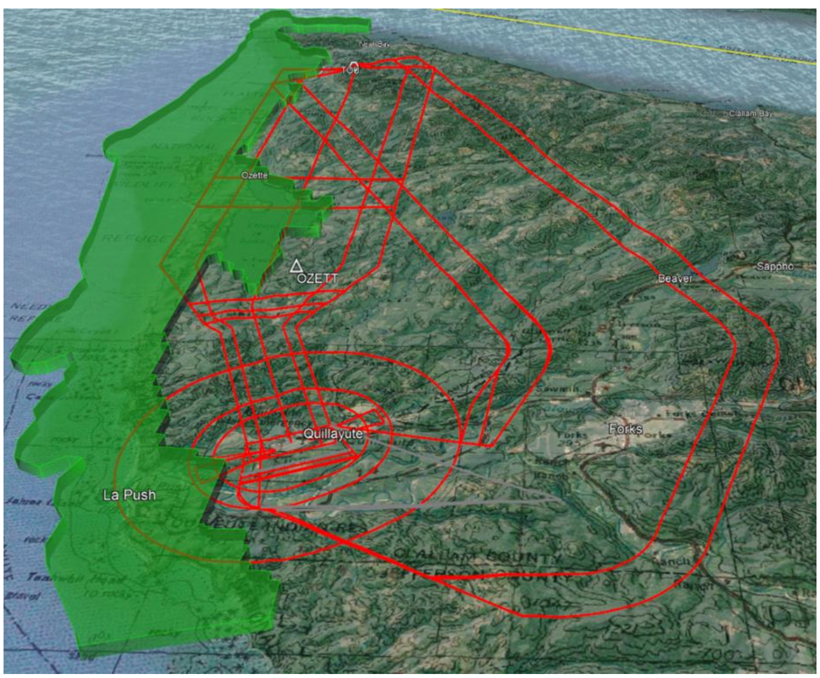
both unique and critically important. Sitting at an elevation of 194 feet above mean sea level (MSL), Quillayute Airport is well protected from potential tsunami events that threaten the numerous lower-lying coastal airports and communities in the region.

<u>Technical Feasibility – Instrument Procedures</u>

<u>Instrument Approach Development Options – Quillayute Airport</u>

As an element of the current airport master planning process, a preliminary evaluation of approach procedure options for Quillayute Airport was conducted by FAA Flight Procedures Staff based on the design criteria defined in FAA Order 8260.3E – United States Standard Terminal Instrument Procedures (TERPS). The evaluation determined that mountainous terrain in the vicinity of Quillayute Airport (east) limits the ability to design non-precision instrument approach directly to the Runway 22 end based on defined descent gradients for specific segments of the approach procedure.

The analysis indicates that a non-precision instrument procedure to the Airport from the north could be designed to clear nearby terrain on the arrival and departure routes for the Airport. The procedure would guide aircraft to a missed approach point north of the Airport, where pilots would be required to establish and maintain visual contact with the airport environment before choosing a runway end for landing. If visual contact cannot be made or maintained at and beyond this point, the pilot is required to execute a missed approach procedure which would require turns to effectively reverse the aircraft's inbound path to the Airport back to the initial approach fix (ground based navigational aid or GPS waypoint). The missed approach path for such a procedure may require OCNMS overflights depending on the best routing available to avoid high terrain and coastal sensitive areas.



Additional analysis is required to determine final feasibility and the determine approach descent minimums and minimum climb gradients for departure and missed approach segments. However, it appears that a circling procedure to the airport, commonly referred to as an RNAV-A approach, is among the most feasible options available.

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Attempts to design procedures to completely avoid the OCNMS are limited and may eliminate specific aircraft categories based on procedure design parameters. Evaluations of approach options for Runway 4 were not performed by FAA at this time due to the close proximity of OCNMS airspace to the Runway 4 end. However, if an exception was made allowing aircraft overflights specific to Quillayute Airport, similar to the allowances for Copalis Airport authorized by NOAA, a review of procedure feasibility may be warranted.

OCNMS overflight restrictions also appear to be limiting for potential Runway 22 instrument departures (to the west) and for aircraft circling west of the Airport while inbound for landing on Runway 4. The evaluation of instrument department surfaces will also define the ability of specific aircraft categories to meet the FAA-defined minimum climb gradient for aircraft departing (east) on Runway 4.

Air Traffic Overview

In August 2022, the FAA approved the updated (2021-2041) airport master plan aircraft operations forecasts for Quillayute Airport (Century West Engineering). This forecast projects annual aircraft operations during the twenty-year period to range from 570 to 2,235. This level of activity results in an average of approximately 1.6 to 6.1 local and itinerant aircraft movements (takeoff or landing) per day.

Instrument flight activity is assumed to account for approximately 10 percent of annual flight volume in the forecast. This activity represents a portion of itinerant operations (e.g., flights between two airports). The forecast projects annual itinerant aircraft operations during the twenty-year period to range from 274 to 1,073. This level of activity results in an average of approximately 0.8 to 2.9 itinerant aircraft movements (takeoff or landing) per day. The frequency of missed approaches is estimated to be 20% of actual instrument approaches based on local weather conditions (particularly cloud cover).

A summary of the 2021-2041 master plan itinerant aircraft operations forecast is provided below, with secondary breakdowns of instrument activity segments.

	2021	2026	2031	2036	2041
2022 AMP Forecast Itinerant Annual Operations	274	479	732	866	1,073
Annual Landings (50% of total operations)	137	240	366	433	537
Annual Instrument Approaches (estimated to be 10% of all landings) (A)	14	24	37	43	54
Average Instrument Approaches per day (A/365)	0.04	0.07	0.10	0.12	0.15
Annual Missed Approaches (estimated to be 20% of instrument approaches) (B)	2.8	4.8	7.4	8.6	10.8
Average Missed Approaches per day (B/365)	0.008	0.014	0.020	0.024	0.030

*Annual numbers rounded up to next full number.

It is noted that the volume of flight activity at Quillayute Airport is expected to remain significantly lower than the other public use airports in Clallam County. As a result, the volume of aircraft overflights within the boundaries of the OCNMS would be low with the addition of instrument procedures at the Airport. It is noted that the forecast level of flight activity does not assume any specific level of sustained emergency response, such as what might be expected in a Cascadia subduction event or major oil spill response.

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Addendum 1 – Excerpt from Copalis State Airport – Airport Layout Plan Report (Century West Engineering, 2022)

Olympic Coast National Marine Sanctuary (OCNMS)

The Olympic Coast National Marine Sanctuary (OCMNS) is a federally protected coastal area that extends seaward from the mouth of the Copalis River to Koitlah Point at Neah Bay on the Olympic Peninsula. The OCNMS is under the jurisdiction of the U.S. National Oceanic and Atmospheric Administration (NOAA). The OCNMS directly abuts the west edge of Copalis State Airport and encompasses its airport traffic pattern. A description of the OCNMS is provided below.

> *What is the Olympic Coast National Marine Sanctuary?*
>
> *"Olympic Coast National Marine Sanctuary includes 3,188 square miles of marine waters off the rugged Olympic Peninsula coastline. The sanctuary extends 25 to 50 miles seaward, covering much of the continental shelf and several major submarine canyons. The sanctuary protects a productive upwelling zone – home to marine mammals and seabirds. Along its shores are thriving kelp and intertidal communities, teeming with fishes and other sea life. In the darkness of the seafloor, scattered communities of deep sea coral and sponges form habitats for fish and other important marine wildlife."* (NOAA website, 2020)

The Code of Federal Regulations (CFR), Title 15, Part 922, Subpart O, defines the OCNMS, including its geographic boundary that consists of 21 surveyed coordinates. The eastern boundary of the OCNMS is defined by only three surveyed points located over more than 100 miles that roughly correspond to the low tide line of the Pacific coast.

The Washington State Department of Transportation (WSDOT) completed an sundry site plan in 2020 that provides the best available definition of the Copalis Airport's boundary. The Grays Harbor County Sundry Site Plan – Copalis Airport[1] depicts the western boundary of the Copalis Airport as a line representing "approximate extreme low tide." Based on available survey data, the OCMNS boundary and western edge of the Airport (located in the Washington State Seashore Conservation Area) appear to overlap slightly, depending on the interpretation of surveyed low tide lines for this section of beach. Although the mapping and survey documentation may not be entirely consistent, it appears that the operational limitations for the Airport, as defined in 15 CFR 922, adequately addressed aircraft use issues and the physical runway related to the OCNMS.

Aircraft flight operations at, and in the vicinity of Copalis State Airport, are subject to FAA regulations. FAA Visual Flight Rules (VFR) for aircraft operation near noise-sensitive areas are in effect for the OCNMS. These rules limit flights below 2,000 feet above ground level (AGL), where practical as defined in FAA Advisory Circular (AC) 91-36D.[2] Aircraft operations at Copalis Airport are specifically permitted under NOAA OCNMS guidelines.

[1] Grays Harbor County Sundry Site Plans – Copalis Airport (Sheets 23 and 24), recorded by Grays Harbor County April, 2020.

[2] FAA Advisory Circular 91-36D – Visual Flight Rules (VFR) Flight Near Noise Sensitive Areas (9/14/2004)

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<u>Addendum 2 – Excerpt from Federal Register/ Vo. 77, No. 17/ Thursday, January 26, 2012 / Rules and Regulations, Page 3921.</u>

Department of Commerce, National Oceanic and Atmospheric Administration

15 CFR, Part 922

Overflight Regulations for the Channel Islands, Monterey Bay. Gulf of the Farallones, and Olympic Coast National Marine Sanctuaries

Section III. Response to Comments

9. *Comment:* The final rule for the Olympic Coast National Marine Sanctuary should exempt flight operations for the purposes of taking off and landing at Copalis, Quillayute, or Sekiu airports.

Response: NOAA agrees that exemptions for flight operations to and from Copalis airport may be necessary because the proximity of the airport to the Olympic Coast National Marine Sanctuary makes it difficult for pilots to comply with sanctuary regulations when merely flying in and out of the airport. However, since such a change in ONMS regulations is beyond the scope of this action, NOAA will consider this in a separate rulemaking action, subject to review and comment. NOAA disagrees, however, that exemptions are necessary for Quillayute or Sekiu airports because both airports are far enough inland that no exemption is necessary. The configuration and location of Quillayute Airport (KUIL) does not require general aviation aircraft to descend below 2,000 feet above ground level (AGL) over the ocean during downwind or straight-in approach to this airport's only open runway, Runway 04/22 (RWY 04/22). Sekiu Airport (11S) is located on the Strait of Juan de Fuca and is over 10 nautical miles from the boundary of Olympic Coast National Marine Sanctuary.

10. *Comment:* Search and rescue operations should be exempted from the final rule.

Response: Current ONMS regulations specifically exempt activities as may be necessary to respond to an emergency threatening life, property, or the environment. Search and rescue operations would be considered an emergency activity and are therefore exempt from the regulations. Accordingly, NOAA made no changes to the regulations in response to this comment.

Appendix F

Grant Assurances

FAA
Airports

ASSURANCES

AIRPORT SPONSORS

A. General.

1. These assurances shall be complied with in the performance of grant agreements for airport development, airport planning, and noise compatibility program grants for airport sponsors.
2. These assurances are required to be submitted as part of the project application by sponsors requesting funds under the provisions of Title 49, U.S.C., subtitle VII, as amended. As used herein, the term "public agency sponsor" means a public agency with control of a public-use airport; the term "private sponsor" means a private owner of a public-use airport; and the term "sponsor" includes both public agency sponsors and private sponsors.
3. Upon acceptance of this grant offer by the sponsor, these assurances are incorporated in and become part of this Grant Agreement.

B. Duration and Applicability.

1. **Airport development or Noise Compatibility Program Projects Undertaken by a Public Agency Sponsor.**

   The terms, conditions and assurances of this Grant Agreement shall remain in full force and effect throughout the useful life of the facilities developed or equipment acquired for an airport development or noise compatibility program project, or throughout the useful life of the project items installed within a facility under a noise compatibility program project, but in any event not to exceed twenty (20) years from the date of acceptance of a grant offer of Federal funds for the project. However, there shall be no limit on the duration of the assurances regarding Exclusive Rights and Airport Revenue so long as the airport is used as an airport. There shall be no limit on the duration of the terms, conditions, and assurances with respect to real property acquired with federal funds. Furthermore, the duration of the Civil Rights assurance shall be specified in the assurances.

2. **Airport Development or Noise Compatibility Projects Undertaken by a Private Sponsor.**

   The preceding paragraph (1) also applies to a private sponsor except that the useful life of project items installed within a facility or the useful life of the facilities developed or equipment acquired under an airport development or noise compatibility program project shall be no less than ten (10) years from the date of acceptance of Federal aid for the project.

3. **Airport Planning Undertaken by a Sponsor.**

   Unless otherwise specified in this Grant Agreement, only Assurances 1, 2, 3, 5, 6, 13, 18, 23, 25, 30, 32, 33, 34, and 37 in Section C apply to planning projects. The terms, conditions, and assurances of this Grant Agreement shall remain in full force and effect during the life of the project; there shall be no limit on the duration of the assurances regarding Exclusive Rights and Airport Revenue so long as the airport is used as an airport.

C. Sponsor Certification.

The sponsor hereby assures and certifies, with respect to this grant that:

1. General Federal Requirements

It will comply with all applicable Federal laws, regulations, executive orders, policies, guidelines, and requirements as they relate to the application, acceptance, and use of Federal funds for this Grant including but not limited to the following:

FEDERAL LEGISLATION

a. 49 U.S.C. subtitle VII, as amended.

b. Davis-Bacon Act, as amended — 40 U.S.C. §§ 3141-3144, 3146, and 3147, et seq.[1]

c. Federal Fair Labor Standards Act – 29 U.S.C. § 201, et seq.

d. Hatch Act – 5 U.S.C. § 1501, et seq.[2]

e. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. § 4601, et seq.[1, 2]

f. National Historic Preservation Act of 1966 – Section 106 – 54 U.S.C. § 306108.[1]

g. Archeological and Historic Preservation Act of 1974 – 54 U.S.C. § 312501, et seq.[1]

h. Native Americans Grave Repatriation Act – 25 U.S.C. § 3001, et seq.

i. Clean Air Act, P.L. 90-148, as amended – 42 U.S.C. § 7401, et seq.

j. Coastal Zone Management Act, P.L. 92-583, as amended – 16 U.S.C. § 1451, et seq.

k. Flood Disaster Protection Act of 1973 – Section 102(a) - 42 U.S.C. § 4012a.[1]

l. 49 U.S.C. § 303, (formerly known as Section 4(f)).

m. Rehabilitation Act of 1973 – 29 U.S.C. § 794.

n. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin).

o. Americans with Disabilities Act of 1990, as amended, (42 U.S.C. § 12101 et seq.) (prohibits discrimination on the basis of disability).

p. Age Discrimination Act of 1975 – 42 U.S.C. § 6101, et seq.

q. American Indian Religious Freedom Act, P.L. 95-341, as amended.

r. Architectural Barriers Act of 1968, as amended – 42 U.S.C. § 4151, et seq.[1]

s. Powerplant and Industrial Fuel Use Act of 1978 – Section 403 – 42 U.S.C. § 8373.[1]

t. Contract Work Hours and Safety Standards Act – 40 U.S.C. § 3701, et seq.[1]

u. Copeland Anti-kickback Act – 18 U.S.C. § 874.[1]

v. National Environmental Policy Act of 1969 – 42 U.S.C. § 4321, et seq.[1]

w. Wild and Scenic Rivers Act, P.L. 90-542, as amended – 16 U.S.C. § 1271, et seq.

x. Single Audit Act of 1984 – 31 U.S.C. § 7501, et seq.[2]

y. Drug-Free Workplace Act of 1988 – 41 U.S.C. §§ 8101 through 8105.

z. The Federal Funding Accountability and Transparency Act of 2006, as amended (P.L. 109-282, as amended by section 6202 of P.L. 110-252).

aa. Civil Rights Restoration Act of 1987, P.L. 100-259.

bb. Build America, Buy America Act, P.L. 117-58, Title IX.

EXECUTIVE ORDERS

a. Executive Order 11246 – Equal Employment Opportunity[1]

b. Executive Order 11990 – Protection of Wetlands

c. Executive Order 11998 – Flood Plain Management

d. Executive Order 12372 – Intergovernmental Review of Federal Programs

e. Executive Order 12699 – Seismic Safety of Federal and Federally Assisted New Building Construction[1]

f. Executive Order 12898 – Environmental Justice

g. Executive Order 13166 – Improving Access to Services for Persons with Limited English Proficiency

h. Executive Order 13985 – Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

i. Executive Order 13988 – Preventing and Combating Discrimination on the Basis of Gender Identity or Sexual Orientation

j. Executive Order 14005 – Ensuring the Future is Made in all of America by All of America's Workers

k. Executive Order 14008 – Tackling the Climate Crisis at Home and Abroad

FEDERAL REGULATIONS

a. 2 CFR Part 180 – OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement).

b. 2 CFR Part 200 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. [4, 5]

c. 2 CFR Part 1200 – Nonprocurement Suspension and Debarment.

d. 14 CFR Part 13 – Investigative and Enforcement Procedures.

e. 14 CFR Part 16 – Rules of Practice for Federally-Assisted Airport Enforcement Proceedings.

f. 14 CFR Part 150 – Airport Noise Compatibility Planning.

g. 28 CFR Part 35 – Nondiscrimination on the Basis of Disability in State and Local Government Services.
h. 28 CFR § 50.3 – U.S. Department of Justice Guidelines for the Enforcement of Title VI of the Civil Rights Act of 1964.
i. 29 CFR Part 1 – Procedures for Predetermination of Wage Rates.[1]
j. 29 CFR Part 3 – Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States.[1]
k. 29 CFR Part 5 – Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (Also Labor Standards Provisions Applicable to Nonconstruction Contracts Subject to the Contract Work Hours and Safety Standards Act).[1]
l. 41 CFR Part 60 – Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor (Federal and Federally-assisted contracting requirements).[1]
m. 49 CFR Part 20 – New Restrictions on Lobbying.
n. 49 CFR Part 21 – Nondiscrimination in Federally-Assisted Programs of the Department of Transportation - Effectuation of Title VI of the Civil Rights Act of 1964.
o. 49 CFR Part 23 – Participation by Disadvantage Business Enterprise in Airport Concessions.
p. 49 CFR Part 24 – Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally-Assisted Programs.[1, 2]
q. 49 CFR Part 26 – Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs.
r. 49 CFR Part 27 – Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance.[1]
s. 49 CFR Part 28 – Enforcement of Nondiscrimination on the Basis of Handicap in Programs or Activities Conducted by the Department of Transportation.
t. 49 CFR Part 30 – Denial of Public Works Contracts to Suppliers of Goods and Services of Countries That Deny Procurement Market Access to U.S. Contractors.
u. 49 CFR Part 32 – Governmentwide Requirements for Drug-Free Workplace (Financial Assistance).
v. 49 CFR Part 37 – Transportation Services for Individuals with Disabilities (ADA).
w. 49 CFR Part 38 – Americans with Disabilities Act (ADA) Accessibility Specifications for Transportation Vehicles.
x. 49 CFR Part 41 – Seismic Safety.

Footnotes to Assurance (C)(1)

[1] These laws do not apply to airport planning sponsors.
[2] These laws do not apply to private sponsors.
[3] 2 CFR Part 200 contains requirements for State and Local Governments receiving Federal assistance. Any requirement levied upon State and Local Governments by this regulation shall

apply where applicable to private sponsors receiving Federal assistance under Title 49, United States Code.

[4] Cost principles established in 2 CFR part 200 subpart E must be used as guidelines for determining the eligibility of specific types of expenses.

[5] Audit requirements established in 2 CFR part 200 subpart F are the guidelines for audits.

Specific Assurances

Specific assurances required to be included in grant agreements by any of the above laws, regulations or circulars are incorporated by reference in this Grant Agreement.

2. Responsibility and Authority of the Sponsor.

a. Public Agency Sponsor:

It has legal authority to apply for this Grant, and to finance and carry out the proposed project; that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing body authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

b. Private Sponsor:

It has legal authority to apply for this Grant and to finance and carry out the proposed project and comply with all terms, conditions, and assurances of this Grant Agreement. It shall designate an official representative and shall in writing direct and authorize that person to file this application, including all understandings and assurances contained therein; to act in connection with this application; and to provide such additional information as may be required.

3. Sponsor Fund Availability.

It has sufficient funds available for that portion of the project costs which are not to be paid by the United States. It has sufficient funds available to assure operation and maintenance of items funded under this Grant Agreement which it will own or control.

4. Good Title.

a. It, a public agency or the Federal government, holds good title, satisfactory to the Secretary, to the landing area of the airport or site thereof, or will give assurance satisfactory to the Secretary that good title will be acquired.

b. For noise compatibility program projects to be carried out on the property of the sponsor, it holds good title satisfactory to the Secretary to that portion of the property upon which Federal funds will be expended or will give assurance to the Secretary that good title will be obtained.

5. Preserving Rights and Powers.

a. It will not take or permit any action which would operate to deprive it of any of the rights and powers necessary to perform any or all of the terms, conditions, and assurances in this Grant Agreement without the written approval of the Secretary, and will act promptly to acquire, extinguish or modify any outstanding rights or claims of right of others which would interfere with such performance by the sponsor. This shall be done in a manner acceptable to the Secretary.

b. Subject to the FAA Act of 2018, Public Law 115-254, Section 163, it will not sell, lease, encumber, or otherwise transfer or dispose of any part of its title or other interests in the property shown on Exhibit A to this application or, for a noise compatibility program project, that portion of the property upon which Federal funds have been expended, for the duration of the terms, conditions, and assurances in this Grant Agreement without approval by the Secretary. If the transferee is found by the Secretary to be eligible under Title 49, United States Code, to assume the obligations of this Grant Agreement and to have the power, authority, and financial resources to carry out all such obligations, the sponsor shall insert in the contract or document transferring or disposing of the sponsor's interest, and make binding upon the transferee all of the terms, conditions, and assurances contained in this Grant Agreement.

c. For all noise compatibility program projects which are to be carried out by another unit of local government or are on property owned by a unit of local government other than the sponsor, it will enter into an agreement with that government. Except as otherwise specified by the Secretary, that agreement shall obligate that government to the same terms, conditions, and assurances that would be applicable to it if it applied directly to the FAA for a grant to undertake the noise compatibility program project. That agreement and changes thereto must be satisfactory to the Secretary. It will take steps to enforce this agreement against the local government if there is substantial non-compliance with the terms of the agreement.

d. For noise compatibility program projects to be carried out on privately owned property, it will enter into an agreement with the owner of that property which includes provisions specified by the Secretary. It will take steps to enforce this agreement against the property owner whenever there is substantial non-compliance with the terms of the agreement.

e. If the sponsor is a private sponsor, it will take steps satisfactory to the Secretary to ensure that the airport will continue to function as a public-use airport in accordance with these assurances for the duration of these assurances.

f. If an arrangement is made for management and operation of the airport by any agency or person other than the sponsor or an employee of the sponsor, the sponsor will reserve sufficient rights and authority to ensure that the airport will be operated and maintained in accordance with Title 49, United States Code, the regulations and the terms, conditions and assurances in this Grant Agreement and shall ensure that such arrangement also requires compliance therewith.

g. Sponsors of commercial service airports will not permit or enter into any arrangement that results in permission for the owner or tenant of a property used as a residence, or zoned for residential use, to taxi an aircraft between that property and any location on airport. Sponsors of general aviation airports entering into any arrangement that results in permission for the owner of residential real property adjacent to or near the airport must comply with the requirements of Sec. 136 of Public Law 112-95 and the sponsor assurances.

6. Consistency with Local Plans.

The project is reasonably consistent with plans (existing at the time of submission of this application) of public agencies that are authorized by the State in which the project is located to plan for the development of the area surrounding the airport.

7. **Consideration of Local Interest.**

   It has given fair consideration to the interest of communities in or near where the project may be located.

8. **Consultation with Users.**

   In making a decision to undertake any airport development project under Title 49, United States Code, it has undertaken reasonable consultations with affected parties using the airport at which project is proposed.

9. **Public Hearings.**

   In projects involving the location of an airport, an airport runway, or a major runway extension, it has afforded the opportunity for public hearings for the purpose of considering the economic, social, and environmental effects of the airport or runway location and its consistency with goals and objectives of such planning as has been carried out by the community and it shall, when requested by the Secretary, submit a copy of the transcript of such hearings to the Secretary. Further, for such projects, it has on its management board either voting representation from the communities where the project is located or has advised the communities that they have the right to petition the Secretary concerning a proposed project.

10. **Metropolitan Planning Organization.**

    In projects involving the location of an airport, an airport runway, or a major runway extension at a medium or large hub airport, the sponsor has made available to and has provided upon request to the metropolitan planning organization in the area in which the airport is located, if any, a copy of the proposed amendment to the airport layout plan to depict the project and a copy of any airport master plan in which the project is described or depicted.

11. **Pavement Preventive Maintenance-Management.**

    With respect to a project approved after January 1, 1995, for the replacement or reconstruction of pavement at the airport, it assures or certifies that it has implemented an effective airport pavement maintenance-management program and it assures that it will use such program for the useful life of any pavement constructed, reconstructed or repaired with Federal financial assistance at the airport. It will provide such reports on pavement condition and pavement management programs as the Secretary determines may be useful.

12. **Terminal Development Prerequisites.**

    For projects which include terminal development at a public use airport, as defined in Title 49, it has, on the date of submittal of the project grant application, all the safety equipment required for certification of such airport under 49 U.S.C. § 44706, and all the security equipment required by rule or regulation, and has provided for access to the passenger enplaning and deplaning area of such airport to passengers enplaning and deplaning from aircraft other than air carrier aircraft.

13. **Accounting System, Audit, and Record Keeping Requirements.**

    a. It shall keep all project accounts and records which fully disclose the amount and disposition by the recipient of the proceeds of this Grant, the total cost of the project in connection with which this Grant is given or used, and the amount or nature of that portion of the cost of the project supplied by other sources, and such other financial records pertinent to the project. The accounts and records shall be kept in accordance with an accounting system that will facilitate an effective audit in accordance with the Single Audit Act of 1984.

b. It shall make available to the Secretary and the Comptroller General of the United States, or any of their duly authorized representatives, for the purpose of audit and examination, any books, documents, papers, and records of the recipient that are pertinent to this Grant. The Secretary may require that an appropriate audit be conducted by a recipient. In any case in which an independent audit is made of the accounts of a sponsor relating to the disposition of the proceeds of a grant or relating to the project in connection with which this Grant was given or used, it shall file a certified copy of such audit with the Comptroller General of the United States not later than six (6) months following the close of the fiscal year for which the audit was made.

14. Minimum Wage Rates.

It shall include, in all contracts in excess of $2,000 for work on any projects funded under this Grant Agreement which involve labor, provisions establishing minimum rates of wages, to be predetermined by the Secretary of Labor under 40 U.S.C. §§ 3141-3144, 3146, and 3147, Public Building, Property, and Works), which contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work.

15. Veteran's Preference.

It shall include in all contracts for work on any project funded under this Grant Agreement which involve labor, such provisions as are necessary to insure that, in the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns owned and controlled by disabled veterans as defined in 49 U.S.C. § 47112. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

16. Conformity to Plans and Specifications.

It will execute the project subject to plans, specifications, and schedules approved by the Secretary. Such plans, specifications, and schedules shall be submitted to the Secretary prior to commencement of site preparation, construction, or other performance under this Grant Agreement, and, upon approval of the Secretary, shall be incorporated into this Grant Agreement. Any modification to the approved plans, specifications, and schedules shall also be subject to approval of the Secretary, and incorporated into this Grant Agreement.

17. Construction Inspection and Approval.

It will provide and maintain competent technical supervision at the construction site throughout the project to assure that the work conforms to the plans, specifications, and schedules approved by the Secretary for the project. It shall subject the construction work on any project contained in an approved project application to inspection and approval by the Secretary and such work shall be in accordance with regulations and procedures prescribed by the Secretary. Such regulations and procedures shall require such cost and progress reporting by the sponsor or sponsors of such project as the Secretary shall deem necessary.

18. Planning Projects.

In carrying out planning projects:

a. It will execute the project in accordance with the approved program narrative contained in the project application or with the modifications similarly approved.

b. It will furnish the Secretary with such periodic reports as required pertaining to the planning project and planning work activities.

c. It will include in all published material prepared in connection with the planning project a notice that the material was prepared under a grant provided by the United States.

d. It will make such material available for examination by the public, and agrees that no material prepared with funds under this project shall be subject to copyright in the United States or any other country.

e. It will give the Secretary unrestricted authority to publish, disclose, distribute, and otherwise use any of the material prepared in connection with this grant.

f. It will grant the Secretary the right to disapprove the sponsor's employment of specific consultants and their subcontractors to do all or any part of this project as well as the right to disapprove the proposed scope and cost of professional services.

g. It will grant the Secretary the right to disapprove the use of the sponsor's employees to do all or any part of the project.

h. It understands and agrees that the Secretary's approval of this project grant or the Secretary's approval of any planning material developed as part of this grant does not constitute or imply any assurance or commitment on the part of the Secretary to approve any pending or future application for a Federal airport grant.

19. Operation and Maintenance.

a. The airport and all facilities which are necessary to serve the aeronautical users of the airport, other than facilities owned or controlled by the United States, shall be operated at all times in a safe and serviceable condition and in accordance with the minimum standards as may be required or prescribed by applicable Federal, state, and local agencies for maintenance and operation. It will not cause or permit any activity or action thereon which would interfere with its use for airport purposes. It will suitably operate and maintain the airport and all facilities thereon or connected therewith, with due regard to climatic and flood conditions. Any proposal to temporarily close the airport for non-aeronautical purposes must first be approved by the Secretary. In furtherance of this assurance, the sponsor will have in effect arrangements for:

   1. Operating the airport's aeronautical facilities whenever required;

   2. Promptly marking and lighting hazards resulting from airport conditions, including temporary conditions; and

   3. Promptly notifying pilots of any condition affecting aeronautical use of the airport. Nothing contained herein shall be construed to require that the airport be operated for aeronautical use during temporary periods when snow, flood, or other climatic conditions interfere with such operation and maintenance. Further, nothing herein shall be construed as requiring the maintenance, repair, restoration, or replacement of any structure or

facility which is substantially damaged or destroyed due to an act of God or other condition or circumstance beyond the control of the sponsor.

b. It will suitably operate and maintain noise compatibility program items that it owns or controls upon which Federal funds have been expended.

20. Hazard Removal and Mitigation.

It will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

21. Compatible Land Use.

It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

22. Economic Nondiscrimination.

a. It will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.

b. In any agreement, contract, lease, or other arrangement under which a right or privilege at the airport is granted to any person, firm, or corporation to conduct or to engage in any aeronautical activity for furnishing services to the public at the airport, the sponsor will insert and enforce provisions requiring the contractor to:

   1. Furnish said services on a reasonable, and not unjustly discriminatory, basis to all users thereof, and

   2. Charge reasonable, and not unjustly discriminatory, prices for each unit or service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.

c. Each fixed-based operator at the airport shall be subject to the same rates, fees, rentals, and other charges as are uniformly applicable to all other fixed-based operators making the same or similar uses of such airport and utilizing the same or similar facilities.

d. Each air carrier using such airport shall have the right to service itself or to use any fixed-based operator that is authorized or permitted by the airport to serve any air carrier at such airport.

e. Each air carrier using such airport (whether as a tenant, non-tenant, or subtenant of another air carrier tenant) shall be subject to such nondiscriminatory and substantially comparable rules, regulations, conditions, rates, fees, rentals, and other charges with respect to facilities directly and substantially related to providing air transportation as are applicable to all such air carriers which make similar use of such airport and utilize similar facilities, subject to reasonable classifications such as tenants or non-tenants and signatory carriers and non-signatory carriers. Classification or status as tenant or signatory shall not be unreasonably withheld by any airport provided an air carrier assumes obligations substantially similar to those already imposed on air carriers in such classification or status.

f. It will not exercise or grant any right or privilege which operates to prevent any person, firm, or corporation operating aircraft on the airport from performing any services on its own aircraft with its own employees (including, but not limited to maintenance, repair, and fueling) that it may choose to perform.

g. In the event the sponsor itself exercises any of the rights and privileges referred to in this assurance, the services involved will be provided on the same conditions as would apply to the furnishing of such services by commercial aeronautical service providers authorized by the sponsor under these provisions.

h. The sponsor may establish such reasonable, and not unjustly discriminatory, conditions to be met by all users of the airport as may be necessary for the safe and efficient operation of the airport.

i. The sponsor may prohibit or limit any given type, kind or class of aeronautical use of the airport if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public.

23. Exclusive Rights.

It will permit no exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. For purposes of this paragraph, the providing of the services at an airport by a single fixed-based operator shall not be construed as an exclusive right if both of the following apply:

a. It would be unreasonably costly, burdensome, or impractical for more than one fixed-based operator to provide such services, and

b. If allowing more than one fixed-based operator to provide such services would require the reduction of space leased pursuant to an existing agreement between such single fixed-based operator and such airport. It further agrees that it will not, either directly or indirectly, grant or permit any person, firm, or corporation, the exclusive right at the airport to conduct any aeronautical activities, including, but not limited to charter flights, pilot training, aircraft rental and sightseeing, aerial photography, crop dusting, aerial advertising and surveying, air carrier operations, aircraft sales and services, sale of aviation petroleum products whether or not conducted in conjunction with other aeronautical activity, repair and maintenance of aircraft, sale of aircraft parts, and any other activities which because of their direct relationship to the operation of aircraft can be regarded as an aeronautical activity, and that it will terminate any exclusive right to conduct an aeronautical activity now existing at such an airport before the grant of any assistance under Title 49, United States Code.

24. Fee and Rental Structure.

It will maintain a fee and rental structure for the facilities and services at the airport which will make the airport as self-sustaining as possible under the circumstances existing at the particular airport, taking into account such factors as the volume of traffic and economy of collection. No part of the Federal share of an airport development, airport planning or noise compatibility project for which a Grant is made under Title 49, United States Code, the Airport and Airway Improvement Act of 1982, the Federal Airport Act or the Airport and Airway Development Act of 1970 shall be included in the rate basis in establishing fees, rates, and charges for users of that airport.

25. Airport Revenues.

a. All revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport. The following exceptions apply to this paragraph:

1. If covenants or assurances in debt obligations issued before September 3, 1982, by the owner or operator of the airport, or provisions enacted before September 3, 1982, in governing statutes controlling the owner or operator's financing, provide for the use of the revenues from any of the airport owner or operator's facilities, including the airport, to support not only the airport but also the airport owner or operator's general debt obligations or other facilities, then this limitation on the use of all revenues generated by the airport (and, in the case of a public airport, local taxes on aviation fuel) shall not apply.
2. If the Secretary approves the sale of a privately owned airport to a public sponsor and provides funding for any portion of the public sponsor's acquisition of land, this limitation on the use of all revenues generated by the sale shall not apply to certain proceeds from the sale. This is conditioned on repayment to the Secretary by the private owner of an amount equal to the remaining unamortized portion (amortized over a 20-year period) of any airport improvement grant made to the private owner for any purpose other than land acquisition on or after October 1, 1996, plus an amount equal to the federal share of the current fair market value of any land acquired with an airport improvement grant made to that airport on or after October 1, 1996.
3. Certain revenue derived from or generated by mineral extraction, production, lease, or other means at a general aviation airport (as defined at 49 U.S.C. § 47102), if the FAA determines the airport sponsor meets the requirements set forth in Section 813 of Public Law 112-95.

b. As part of the annual audit required under the Single Audit Act of 1984, the sponsor will direct that the audit will review, and the resulting audit report will provide an opinion concerning, the use of airport revenue and taxes in paragraph (a), and indicating whether funds paid or transferred to the owner or operator are paid or transferred in a manner consistent with Title 49, United States Code and any other applicable provision of law, including any regulation promulgated by the Secretary or Administrator.

c. Any civil penalties or other sanctions will be imposed for violation of this assurance in accordance with the provisions of 49 U.S.C. § 47107.

26. Reports and Inspections.

It will:

a. submit to the Secretary such annual or special financial and operations reports as the Secretary may reasonably request and make such reports available to the public; make available to the public at reasonable times and places a report of the airport budget in a format prescribed by the Secretary;

b. for airport development projects, make the airport and all airport records and documents affecting the airport, including deeds, leases, operation and use agreements, regulations and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request;

c. for noise compatibility program projects, make records and documents relating to the project and continued compliance with the terms, conditions, and assurances of this Grant Agreement including deeds, leases, agreements, regulations, and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request; and

d. in a format and time prescribed by the Secretary, provide to the Secretary and make available to the public following each of its fiscal years, an annual report listing in detail:

    1. all amounts paid by the airport to any other unit of government and the purposes for which each such payment was made; and

    2. all services and property provided by the airport to other units of government and the amount of compensation received for provision of each such service and property.

27. Use by Government Aircraft.

It will make available all of the facilities of the airport developed with Federal financial assistance and all those usable for landing and takeoff of aircraft to the United States for use by Government aircraft in common with other aircraft at all times without charge, except, if the use by Government aircraft is substantial, charge may be made for a reasonable share, proportional to such use, for the cost of operating and maintaining the facilities used. Unless otherwise determined by the Secretary, or otherwise agreed to by the sponsor and the using agency, substantial use of an airport by Government aircraft will be considered to exist when operations of such aircraft are in excess of those which, in the opinion of the Secretary, would unduly interfere with use of the landing areas by other authorized aircraft, or during any calendar month that:

a. Five (5) or more Government aircraft are regularly based at the airport or on land adjacent thereto; or

b. The total number of movements (counting each landing as a movement) of Government aircraft is 300 or more, or the gross accumulative weight of Government aircraft using the airport (the total movement of Government aircraft multiplied by gross weights of such aircraft) is in excess of five million pounds.

28. Land for Federal Facilities.

It will furnish without cost to the Federal Government for use in connection with any air traffic control or air navigation activities, or weather-reporting and communication activities related to air traffic control, any areas of land or water, or estate therein as the Secretary considers necessary or desirable for construction, operation, and maintenance at Federal expense of space or facilities for such purposes. Such areas or any portion thereof will be made available as provided herein within four months after receipt of a written request from the Secretary.

29. Airport Layout Plan.

a. Subject to the FAA Reauthorization Act of 2018, Public Law 115-254, Section 163, it will keep up to date at all times an airport layout plan of the airport showing:

   1. boundaries of the airport and all proposed additions thereto, together with the boundaries of all offsite areas owned or controlled by the sponsor for airport purposes and proposed additions thereto;
   2. the location and nature of all existing and proposed airport facilities and structures (such as runways, taxiways, aprons, terminal buildings, hangars and roads), including all proposed extensions and reductions of existing airport facilities;
   3. the location of all existing and proposed non-aviation areas and of all existing improvements thereon; and
   4. all proposed and existing access points used to taxi aircraft across the airport's property boundary.

   Such airport layout plans and each amendment, revision, or modification thereof, shall be subject to the approval of the Secretary which approval shall be evidenced by the signature of a duly authorized representative of the Secretary on the face of the airport layout plan. The sponsor will not make or permit any changes or alterations in the airport or any of its facilities which are not in conformity with the airport layout plan as approved by the Secretary and which might, in the opinion of the Secretary, adversely affect the safety, utility or efficiency of the airport.

b. Subject to the FAA Reauthorization Act of 2018, Public Law 115-254, Section 163, if a change or alteration in the airport or the facilities is made which the Secretary determines adversely affects the safety, utility, or efficiency of any federally owned, leased, or funded property on or off the airport and which is not in conformity with the airport layout plan as approved by the Secretary, the owner or operator will, if requested, by the Secretary:

   1. eliminate such adverse effect in a manner approved by the Secretary; or
   2. bear all costs of relocating such property (or replacement thereof) to a site acceptable to the Secretary and all costs of restoring such property (or replacement thereof) to the level of safety, utility, efficiency, and cost of operation existing before the unapproved change in the airport or its facilities except in the case of a relocation or replacement of an existing airport facility due to a change in the Secretary's design standards beyond the control of the airport sponsor.

30. Civil Rights.

It will promptly take any measures necessary to ensure that no person in the United States shall, on the grounds of race, color, and national origin (including limited English proficiency) in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4); creed and sex (including sexual orientation and gender identity) per 49 U.S.C. § 47123 and related requirements; age per the Age Discrimination Act of 1975 and related requirements; or disability per the Americans with Disabilities Act of 1990 and related requirements, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in any program and activity conducted with, or benefiting from, funds received from this Grant.

a. Using the definitions of activity, facility, and program as found and defined in 49 CFR §§ 21.23(b) and 21.23(e), the sponsor will facilitate all programs, operate all facilities, or conduct all programs in compliance with all non-discrimination requirements imposed by or pursuant to these assurances.

b. Applicability

   1. Programs and Activities. If the sponsor has received a grant (or other federal assistance) for any of the sponsor's program or activities, these requirements extend to all of the sponsor's programs and activities.

   2. Facilities. Where it receives a grant or other federal financial assistance to construct, expand, renovate, remodel, alter, or acquire a facility, or part of a facility, the assurance extends to the entire facility and facilities operated in connection therewith.

   3. Real Property. Where the sponsor receives a grant or other Federal financial assistance in the form of, or for the acquisition of real property or an interest in real property, the assurance will extend to rights to space on, over, or under such property.

c. Duration.

   The sponsor agrees that it is obligated to this assurance for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the assurance obligates the sponsor, or any transferee for the longer of the following periods:

   1. So long as the airport is used as an airport, or for another purpose involving the provision of similar services or benefits; or

   2. So long as the sponsor retains ownership or possession of the property.

d. Required Solicitation Language. It will include the following notification in all solicitations for bids, Requests For Proposals for work, or material under this Grant Agreement and in all proposals for agreements, including airport concessions, regardless of funding source:

   "The (**[Selection Criteria: Sponsor Name]**), in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, [select businesses, or disadvantaged business enterprises or airport concession disadvantaged business enterprises] will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award."

e. Required Contract Provisions.

   1. It will insert the non-discrimination contract clauses requiring compliance with the acts and regulations relative to non-discrimination in Federally-assisted programs of the Department of Transportation (DOT), and incorporating the acts and regulations into the contracts by reference in every contract or agreement subject to the non-discrimination in Federally-assisted programs of the DOT acts and regulations.

2. It will include a list of the pertinent non-discrimination authorities in every contract that is subject to the non-discrimination acts and regulations.
3. It will insert non-discrimination contract clauses as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a sponsor.
4. It will insert non-discrimination contract clauses prohibiting discrimination on the basis of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability as a covenant running with the land, in any future deeds, leases, license, permits, or similar instruments entered into by the sponsor with other parties:
    a. For the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
    b. For the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

f. It will provide for such methods of administration for the program as are found by the Secretary to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the acts, the regulations, and this assurance.

g. It agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the acts, the regulations, and this assurance.

31. Disposal of Land.

a. For land purchased under a grant for airport noise compatibility purposes, including land serving as a noise buffer, it will dispose of the land, when the land is no longer needed for such purposes, at fair market value, at the earliest practicable time. That portion of the proceeds of such disposition which is proportionate to the United States' share of acquisition of such land will be, at the discretion of the Secretary, (1) reinvested in another project at the airport, or (2) transferred to another eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order:

1. Reinvestment in an approved noise compatibility project;
2. Reinvestment in an approved project that is eligible for grant funding under 49 U.S.C. § 47117(e);
3. Reinvestment in an approved airport development project that is eligible for grant funding under 49 U.S.C. §§ 47114, 47115, or 47117;
4. Transfer to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport; or
5. Payment to the Secretary for deposit in the Airport and Airway Trust Fund.

If land acquired under a grant for noise compatibility purposes is leased at fair market value and consistent with noise buffering purposes, the lease will not be considered a disposal of the land. Revenues derived from such a lease may be used for an approved airport development project that would otherwise be eligible for grant funding or any permitted use of airport revenue.

b. For land purchased under a grant for airport development purposes (other than noise compatibility), it will, when the land is no longer needed for airport purposes, dispose of such land at fair market value or make available to the Secretary an amount equal to the United States' proportionate share of the fair market value of the land. That portion of the proceeds of such disposition which is proportionate to the United States' share of the cost of acquisition of such land will, upon application to the Secretary, be reinvested or transferred to another eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order:

   1. Reinvestment in an approved noise compatibility project;
   2. Reinvestment in an approved project that is eligible for grant funding under 49 U.S.C. § 47117(e);
   3. Reinvestment in an approved airport development project that is eligible for grant funding under 49 U.S.C. §§ 47114, 47115, or 47117;
   4. Transfer to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport; or
   5. Payment to the Secretary for deposit in the Airport and Airway Trust Fund.

c. Land shall be considered to be needed for airport purposes under this assurance if (1) it may be needed for aeronautical purposes (including runway protection zones) or serve as noise buffer land, and (2) the revenue from interim uses of such land contributes to the financial self-sufficiency of the airport. Further, land purchased with a grant received by an airport operator or owner before December 31, 1987, will be considered to be needed for airport purposes if the Secretary or Federal agency making such grant before December 31, 1987, was notified by the operator or owner of the uses of such land, did not object to such use, and the land continues to be used for that purpose, such use having commenced no later than December 15, 1989.

d. Disposition of such land under (a), (b), or (c) will be subject to the retention or reservation of any interest or right therein necessary to ensure that such land will only be used for purposes which are compatible with noise levels associated with operation of the airport.

32. Engineering and Design Services.

If any phase of such project has received Federal funds under Chapter 471 subchapter 1 of Title 49 U.S.C., it will award each contract, or sub-contract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design, engineering, surveying, mapping or related services in the same manner as a contract for architectural and engineering services is negotiated under Chapter 11 of Title 40 U S.C., or an equivalent qualifications-based requirement prescribed for or by the sponsor of the airport.

33. Foreign Market Restrictions.

It will not allow funds provided under this Grant to be used to fund any project which uses any product or service of a foreign country during the period in which such foreign country is listed by the United States Trade Representative as denying fair and equitable market opportunities for products and suppliers of the United States in procurement and construction.

34. Policies, Standards, and Specifications.

It will carry out any project funded under an Airport Improvement Program Grant in accordance with policies, standards, and specifications approved by the Secretary including, but not limited to, current FAA Advisory Circulars (https://www.faa.gov/airports/aip/media/aip-pfc-checklist.pdf) for AIP projects as of [Selection Criteria: Project Application Date].

35. Relocation and Real Property Acquisition.

a. It will be guided in acquiring real property, to the greatest extent practicable under State law, by the land acquisition policies in Subpart B of 49 CFR Part 24 and will pay or reimburse property owners for necessary expenses as specified in Subpart B.

b. It will provide a relocation assistance program offering the services described in Subpart C of 49 CFR Part 24 and fair and reasonable relocation payments and assistance to displaced persons as required in Subpart D and E of 49 CFR Part 24.

c. It will make available within a reasonable period of time prior to displacement, comparable replacement dwellings to displaced persons in accordance with Subpart E of 49 CFR Part 24.

36. Access By Intercity Buses.

The airport owner or operator will permit, to the maximum extent practicable, intercity buses or other modes of transportation to have access to the airport; however, it has no obligation to fund special facilities for intercity buses or for other modes of transportation.

37. Disadvantaged Business Enterprises.

The sponsor shall not discriminate on the basis of race, color, national origin, or sex, in the award and performance of any DOT-assisted contract covered by 49 CFR Part 26, or in the award and performance of any concession activity contract covered by 49 CFR Part 23. In addition, the sponsor shall not discriminate on the basis of race, color, national origin or sex in the administration of its Disadvantaged Business Enterprise (DBE) and Airport Concessions Disadvantaged Business Enterprise (ACDBE) programs or the requirements of 49 CFR Parts 23 and 26. The sponsor shall take all necessary and reasonable steps under 49 CFR Parts 23 and 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts, and/or concession contracts. The sponsor's DBE and ACDBE programs, as required by 49 CFR Parts 26 and 23, and as approved by DOT, are incorporated by reference in this agreement. Implementation of these programs is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the sponsor of its failure to carry out its approved program, the Department may impose sanctions as provided for under Parts 26 and 23 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. § 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. §§ 3801-3809, 3812).

38. Hangar Construction.

If the airport owner or operator and a person who owns an aircraft agree that a hangar is to be constructed at the airport for the aircraft at the aircraft owner's expense, the airport owner or operator will grant to the aircraft owner for the hangar a long term lease that is subject to such terms and conditions on the hangar as the airport owner or operator may impose.

39. Competitive Access.

a. If the airport owner or operator of a medium or large hub airport (as defined in 49 U.S.C. § 47102) has been unable to accommodate one or more requests by an air carrier for access to gates or other facilities at that airport in order to allow the air carrier to provide service to the airport or to expand service at the airport, the airport owner or operator shall transmit a report to the Secretary that:

   1. Describes the requests;
   2. Provides an explanation as to why the requests could not be accommodated; and
   3. Provides a time frame within which, if any, the airport will be able to accommodate the requests.

b. Such report shall be due on either February 1 or August 1 of each year if the airport has been unable to accommodate the request(s) in the six month period prior to the applicable due date.

Appendix G

NRA Notification

Federal Aviation Administration

January 03, 2024

TO:
Quillayute Airport
Attn: Rod Fleck
500 East Division Street
Forks, WA 98331
rodf@forkswashington.org

CC:
Century West Engineering
Attn: Samantha Peterson
33308 13th Pl S #2
Federal Way, WA 98003
SPeterson@CenturyWest.com

RE: *(See attached Table 1 for referenced case(s))*
ALP 7460 No Objection Letter
FINAL DETERMINATION

Table 1 - Letter Referenced Case(s)

ASN	Prior ASN	Location	Latitude (NAD83)	Longitude (NAD83)	AGL (Feet)	AMSL (Feet)
2023-ANM-5281-NRA		QUILLAYUTE,WA	47-56-11.69N	124-33-45.42W	1	195

Description: Quillayute Airport Master Plan and Airport Layout Plan including: - With AGIS & Instrument Approach Feasibility assessment - Runway Lighting, PAPI and Beacon upgrades - Obstruction Survey Reports - Hangar construction / rehabilitation - Runway 4/22 Reconfiguration of pavements

The proposed change to your currently approved Airport Layout Plan (ALP) submitted, 2023-11-06 00:00:00.0 has been reviewed under the authority of Part 77 and under the requirements of the Terms and Conditions of Accepting Airport Improvement Program Grants dated September 1, 1999. This review has considered the safety and utility of aircraft operations and planned navigational aids as related to this proposal.

The proposal does not exceed any federal obstruction standard and has no effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, we have no objection to this proposal.

It should be noted that this study did not consider the height of construction equipment. This information needs to be coordinated with this office via an "Airspace Study Checklist" before construction begins.

This study did not evaluate the plans for operational safety during construction. Those plans should be submitted to this office for coordination and review prior to construction.

This determination does not include any environmental analysis or environmental approval for this proposal. All local and state requirements and/or permits must be obtained to prior to construction of this proposal.

This determination does not include approval of any lease, does not release any surplus or grant agreement acquired airport property, nor does it relieve the airport owner or the proponent of compliance with Part 155, or any other law, ordinance, or regulation of federal, state, or local government body or organization. Furthermore, the design and location of any stormwater retention/detention facilities on or near the airport must comply with FAA Advisory Circular 150/5200-33 "Hazardous Wildlife Attractants on or Near Airports", and must be approved on the ALP prior to construction.

We look forward to working with you in the continued development of your airport. If you have any questions, please contact me at (206) 231-3984, agnes.fisher@faa.gov.

Agnes Fisher
ADO
Signature Control No: 603985545-608622313

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