Appendix E:

Noise and Traffic Analyses

Page intentionally left blank.

MEMORANDUM

TO:	Kelli Cropper, CBS, Project Manager
FROM:	Ken Nichols, PE, Sr. Aviation Engineer
DATE:	March 24, 2021
SUBJECT:	Sitka SPB – Noise Re-Evaluation

Seaplane operations at the proposed Sitka Seaplane Base (SPB) will be well below the level at which Federal Aviation Administration (FAA) environmental review guidelines call for noise analysis. Noise analysis is generally required when flight operations would exceed 90,000 operations annually, or 243 operations per day.

Although the proposed SPB operations would fall well below this threshold, concerns raised about noise impacts on facilities on the west shore of Sitka Channel were raised during scoping and therefore noise analysis was conducted for the Draft Environmental Assessment (EA) released in January 2021. Noise impacts from the proposed SPB were modeled using the FAA's Aviation Environmental Design Tool (AEDT) version 3C. The noise analysis documented that average noise levels on the west shore of the channel would be below the 65 dB Day-Night Level (DNL) and would therefore considered to be compatible with the types of uses located there. The DNL level has been correlated with land use compatibility over decades and was most recently documented as the most appropriate measure for long-term noise land use compatibility in an FAA report to Congress in 2020.

After the Draft EA was released to the public, CBS and DOWL staff followed up with the largest commercial seaplane operator to confirm projected operations levels. The operator indicated that they would increase their projected operations levels beyond what had been provided earlier in the study process, due to increased interest from potential customers. With this information, the aircraft noise analysis was updated from what was provided in the Draft EA.

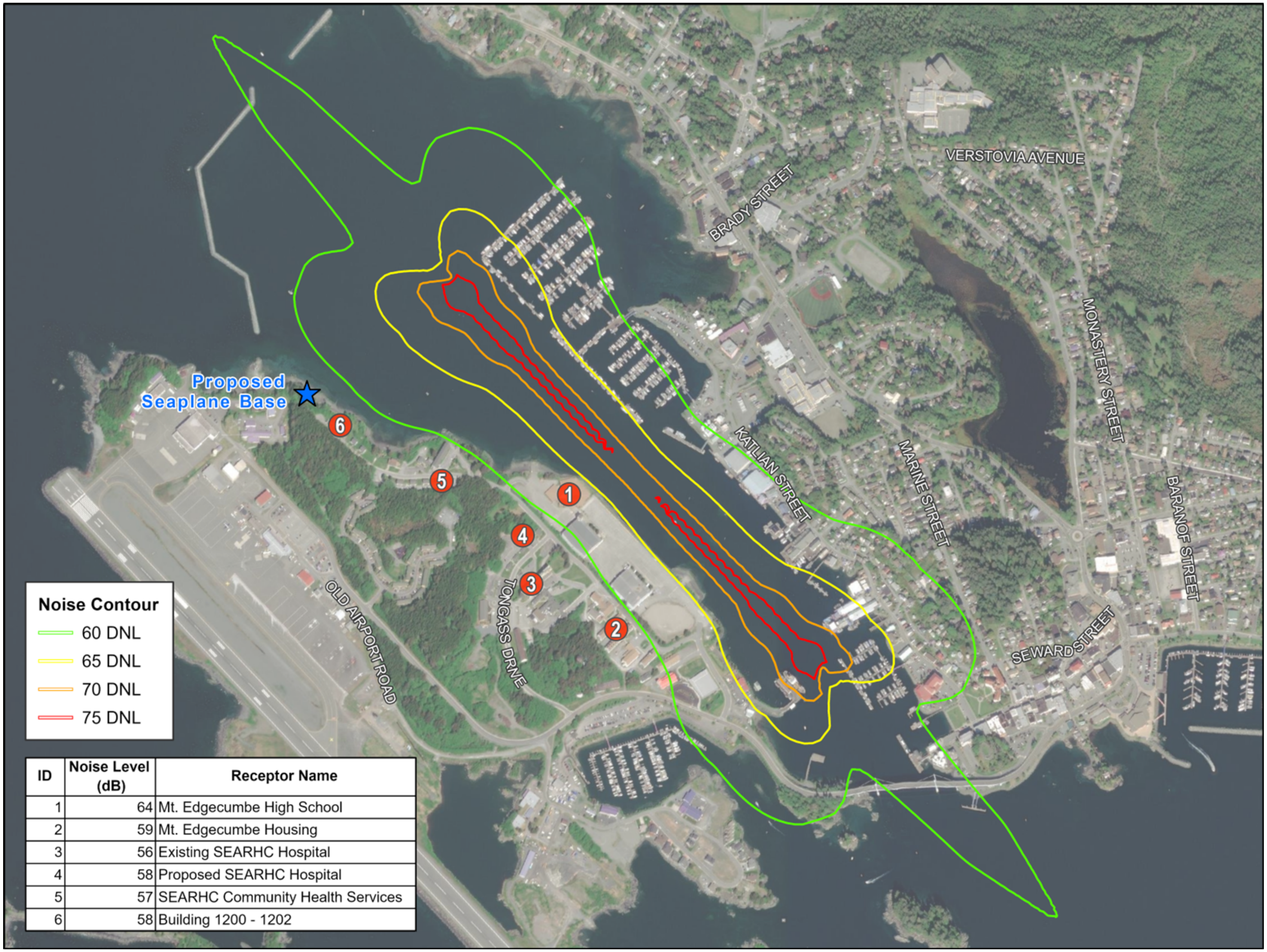
This memo presents the revised analysis using higher commercial operations on the peak operations day. Peak aircraft traffic would be estimated to occur during summer, as some planes would be used only seasonally and even year-round operators would be expected to have more operations during the summer. The model was run with 92 peak day operations. (A takeoff is an operation and a landing is another operation, so 92 operations equates to 46 flights per day.)

As shown in the attached figure, this increase in operations did result in a change in the noise contours and DNL levels at the facilities on the west shore of Sitka Channel, but noise levels at each facility were still below the 65 dB DNL level, and still within the compatible land use guidelines.

These peak day levels are a conservative estimate, and it is unlikely that every aircraft (and transient aircraft) would operate on the peak day. Therefore, actual peak noise levels are likely to be lower than those calculated in the model. This does not mean that there would be no noise impacts, as individual operations may result in short-term noise impacts depending on the operation, the weather, and other conditions. However, overall noise levels associated with the seaplane base are not anticipated to result in significant noise impacts, particularly when considered in the context of existing aviation operations on Japonski Island.

Table 1. Estimated Aircraft Operations

Aircraft Tie-Down	Service Type	Aircraft	Annual Ops	Peak Season Ops	Peak Season Peak Day Ops
Tie-Down 1	Commercial	1	180	90	4
Tie-Down 2	Commercial	2	1000	500	16
Tie-Down 3	Commercial	3	2400	1200	40
Tie-Down 4	Private	1	60	30	2
Tie-Down 5	Private	1	63	32	2
Tie-Down 6	Private	1	40	20	2
Tie-Down 7	Private	1	80	40	2
Tie-Down 8	Private	1	40	20	2
Tie-Down 9	Private	1	40	20	2
Tie-Down 10	Private	1	40	20	2
Tie-Down 11	Private	1	60	30	2
Tie-Down 12	Private	1	200	100	4
Tie-Down 13	Private	1	39	20	2
Tie-Down 14	Private	1	40	20	2
Transient Slips (4)	Either		600	300	8
				Total	92

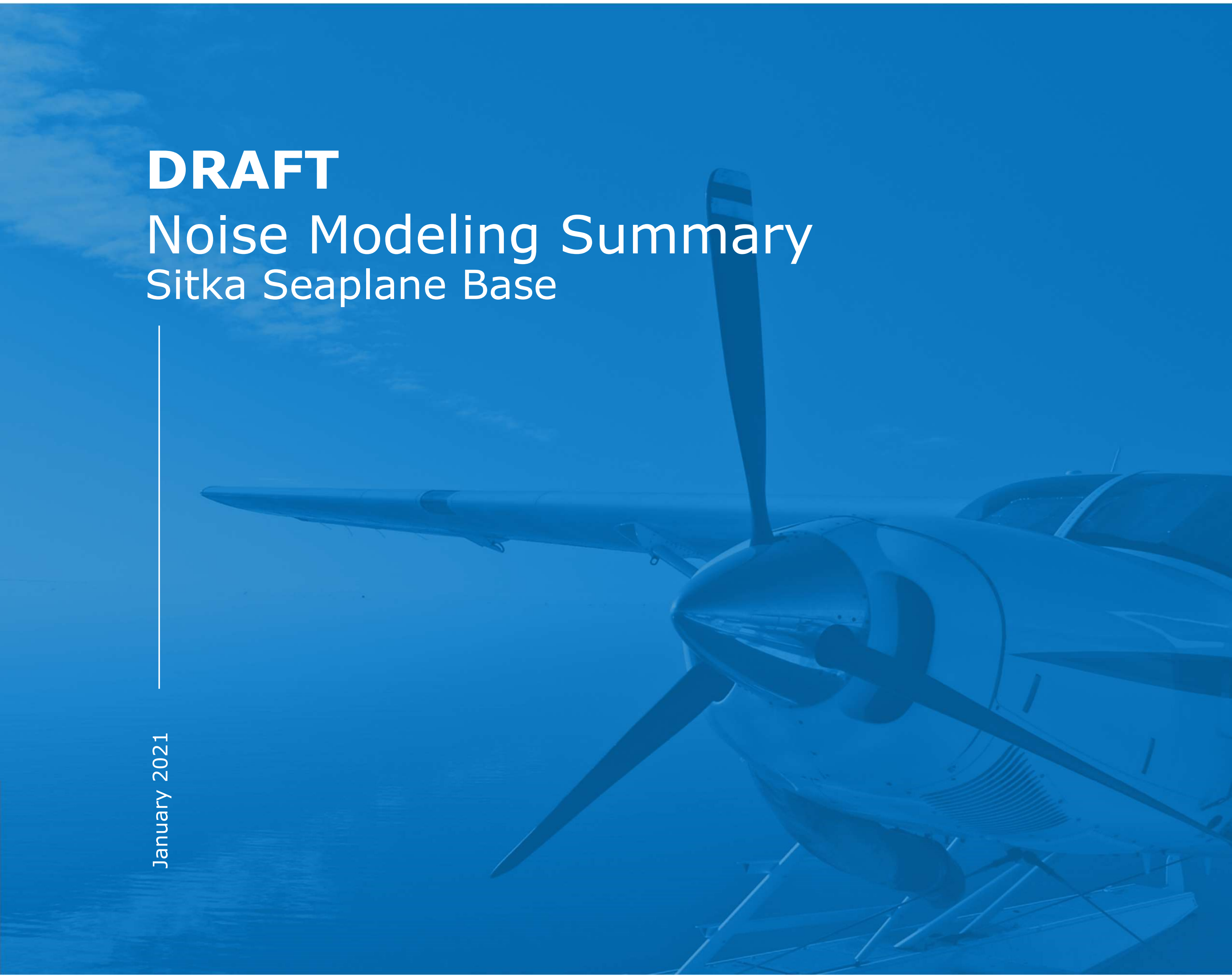


ID	Noise Level (dB)	Receptor Name
1	64	Mt. Edgecumbe High School
2	59	Mt. Edgecumbe Housing
3	56	Existing SEARHC Hospital
4	58	Proposed SEARHC Hospital
5	57	SEARHC Community Health Services
6	58	Building 1200 - 1202

Figure 1 Noise Impacts – Peak Season, Peak Day (Created with AEDT 3C)

Page intentionally left blank.

CITY & BOROUGH OF SITKA



DRAFT
Noise Modeling Summary
Sitka Seaplane Base

January 2021

PREPARED FOR:
U.S. Department of Transportation
Federal Aviation Administration
Alaskan Region, Airports Division
222 West 7th Avenue
Anchorage, AK 99513

PREPARED BY:
DOWL
4041 B Street
Anchorage AK 99508

Page intentionally left blank.

Table of Contents

Table of Contents i

1.0 Introduction 1

2.0 Facilities 3

2.1. Existing 3

2.2. Proposed 3

2.2.1. Sea Lane 4

2.2.2. Fleet Mix 4

3.0 Modeling Results 4

3.1. Area Equivalent Method (Version 2C SP2) 5

3.1.1. Assumptions 5

3.1.2. Results 5

3.2. Aviation Environmental Design Tool 3C (Build 140.0.11574.1) 5

3.2.1. Assumptions 5

3.3. Results 8

4.0 References 8

Figures

Figure 1. Location and Vicinity Map 2

Figure 2: Modeled Runways 6

Figure 3: Receptor Locations 7

Tables

Table 1: FAA Land Use Compatibility with Yearly Day-Night Average Sound Levels (DNL) 1

Table 2. Expected Changes in Fleetmix (CBS 2020) 4

Table 3. Noise Receptors Used in Noise Modeling 8

Table 4: Noise Levels 8

Appendices

Appendix 1: AEM Input/Output File

Appendix 2: AEDT Input/Output Files

Acronyms

AC	Advisory Circular
ADF&G	Alaska Department of Fish and Game
AEM	Area Equivalent Model
AEDT	Aviation Environmental Design Tool
AHRS	Alaska Heritage Resources Survey
CBS	City and Borough of Sitka
CFR	Code of Federal Regulations
dB	Decibel
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
FAA	Federal Aviation Administration
MSL	Mean sea level
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NPS	National Park Service
SEARHC	Southeast Alaska Regional Health Consortium
U.S.	United States

1.0 Introduction

The City and Borough of Sitka (CBS) owns and operates the Sitka Seaplane Base (Federal Aviation Administration [FAA] identifier A29). A29 is located on Sitka Channel between Thomsen and ANB harbors (Figure 1); it has been operating at its current site for 65 years and is at the end of its useful life. Despite the poor condition of the existing facilities and the lack of support infrastructure, seven of the seaplane base's eight slips are currently leased, and operations (takeoffs and landings) were estimated at 320 for 2018 (FAA 2020a). CBS, in cooperation with FAA, is proposing a new seaplane base on Japonski Island.

Sitka, Alaska is located on Baranof Island on Sitka Channel approximately 600 air miles from Anchorage at 57.0527 North Latitude; -135.3311 West Longitude (Sec. 36, T55S, R63E, Copper River Meridian, United States Geological Survey [USGS] Quadrangle Sitka A5). Sitka is accessible only by air or water. It is approximately 95 miles from Juneau and 150 miles from the nearest Alaska road system at Haines.

Sitka serves as a hub for health care, goods distribution, and transportation for neighboring communities. Most of the smaller communities using Sitka as a hub are accessible only by seaplane. The availability of seaplane transportation is critical to the Sitka economy and to medical, personal, and tourism transportation. Sitka's seaplanes are important to the social and economic fabric of this coastal region's remote communities, lodges, recreation areas, hatcheries, and fishing fleets. Government agencies including the U.S. Forest Service, U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, Alaska State Troopers, and the Civil Air Patrol require seaplanes to access remote communities and resources.

The proposed seaplane base is located on Japonski Island, adjacent to the U.S. Coast Guard base. Mt. Edgecumbe High School and Southeast Alaska Regional Health Consortium (SEARHC) health care facilities, and a residence for the Mt. Edgecumbe High School Principal are located on Seward Street south of the proposed sepalne base. These facilities are located on the west side of Sitka Channel, which would serve as the seaplane base operations area. Seaplane takeoff and landings would continue to occur in Sitka Channel, but the sea lane would shift north as shown in Figure 1. Concerns were raised during the project scoping process about the potential for incompatible levels of noise in the educational, residential, and health care facilities located along Seward Street. Although the level of operations at the proposed sea plane base would not typically require noise analysis by FAA environmental review guidelines, a noise analysis was conducted to address the compatability of these land uses with seaplane base noise levels.

The FAA analyses land use compatibility using compatible land use guidelines published in 14 CFR part 150, *Land Use Compatibility with Yearly Day-Night Average Sound Levels*. Compatibility has been shown to be tied to Yearly Average Day-Night Noise Levels (DNL) which account for all of the aircraft events over a 24 hour period, adjusting for events that occur between 10 p.m. and 7 a.m. which are perceived as more annoying. Most land uses (including residential, schools, and health care facilities) are compatible with DNL levels of 65 decibels (dB) and below, as shown in Table 1.

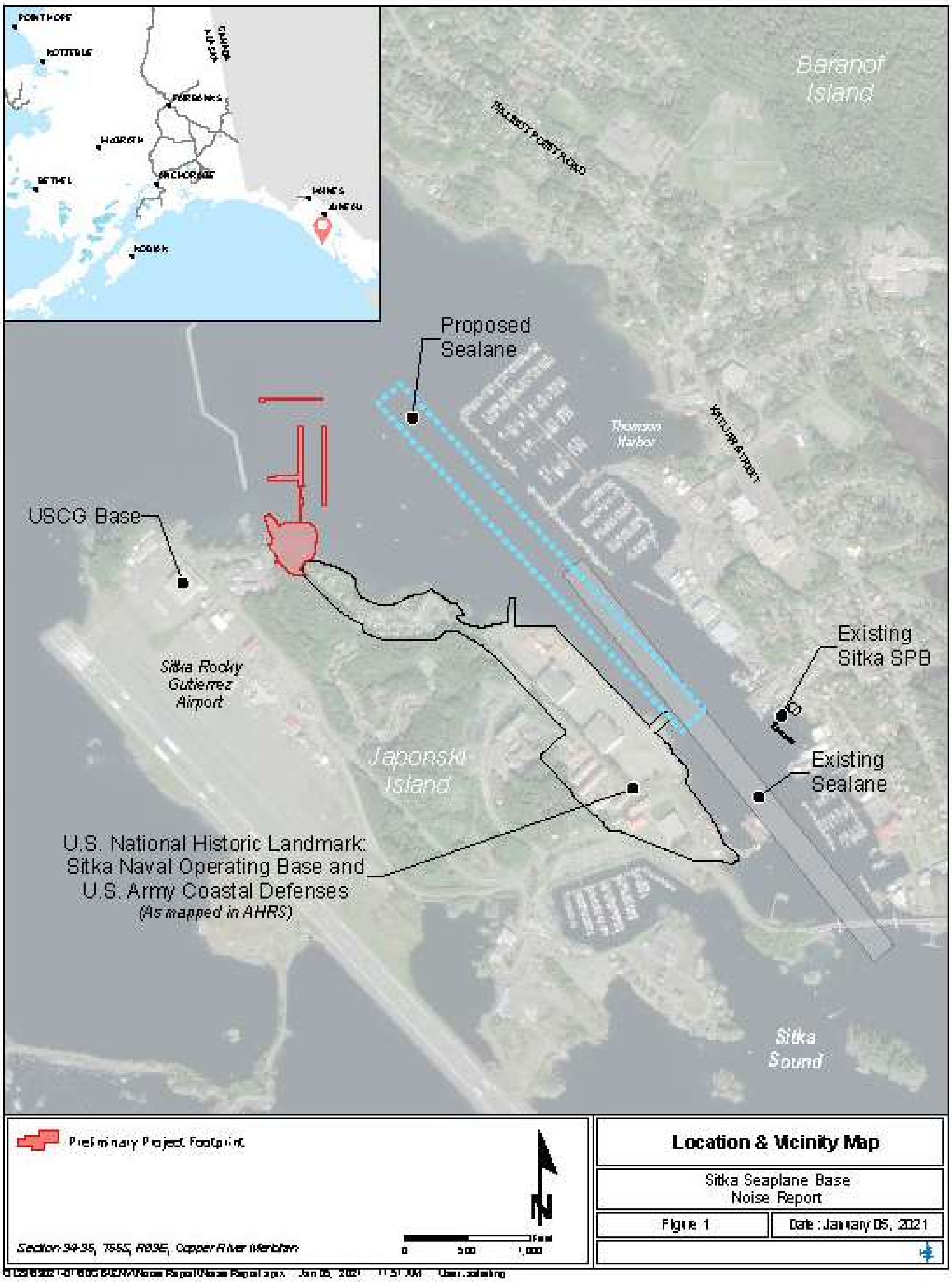
Table 1: FAA Land Use Compatibility with Yearly Day-Night Average Sound Levels (DNL)

Land Use	**Yearly DNL Sound Level (decibles)**					
	<65	65-70	70-75	75-80	80-85	>80
Residential	Y	N(1)	N(1)	N	N	N
Schools	Y	N(1)	N(1)	N	N	N
Hosptials	Y	25	30	N	N	N

Source: 14 CFR part 150, Appendix A, Table 1

Notes: Y means land use is compatible without restrictions. N means land use is not compatible.
N(1) suggests that residential or school uses should aim to reduce inside noise levels by 25-30 dB.
25 or 30 means use is generally compatible, but should aim to reduce inside noise levels by 25-30 dB. facilities.

Figure 1. Location and Vicinity Map



2.0 Facilities

This section identifies the change in facilities that will lead to changes in operations and associated noise levels with the proposed project.

2.1. Existing

Japonski Island contains Sitka's commercial airport and the USCG's Air Station Sitka, which conducts search and rescue operations in Southeast Alaska. The existing seaplane base is located south and east of the proposed site. Seaplanes currently take off and land on Sitka Channel from the existing seaplane base south of the proposed site.

Noise-sensitive receptors, such as Mount Edgecumbe High School, SEARHC facilities, and a residence are located on Japonski Island in the vicinity of the site. It has been noted that existing seaplane operations in the channel sometimes interfere with class activities at Mt. Edgecumbe High School.

2.2. Proposed

The marine area for the seaplane base would be acquired from the Alaska Department of Natural Resources (DNR). The CBS has submitted to DNR an application for conveyance of submerged tidelands and received a preliminary approval for conveyance of tidelands adjacent to the upland parcel to accommodate seaplane floats and operations areas . The marine component of the facility would include a pile-supported trestle, a gangway, a loading and maneuvering float, a transient float, a based seaplane float, and, if needed, a floating wave attenuator north of the floats to attenuate waves from the main harbor entrance gap in the existing breakwater or southeast of the floats to attenuate waves from the channel to the south.

The 2016 Siting Analysis identified a potential demand for up to 19 based aircraft and 15 transient aircraft if all of the desired support facilities were available at a new seaplane base. Given that CBS may need to construct the new seaplane base in phases and may not be able to accommodate all facilities requested initially, it was determined that the proposed site would accommodate 14 based aircraft and four transient aircraft.

The proposed facility would include:

- Seaplane float (350 feet by 46 feet) with ramps for 14 based seaplanes (4 DE Havilland Beavers and 10 Cessna 206s)
- Transient seaplane float (220 feet by 30 feet) with capacity for four transient seaplanes (sized for DE Havilland Beavers)
- Drive-down gangway (120 feet by 16 feet) and landing float (120 feet by 46 feet) for access to seaplane floats
- Pile-supported trestle (240 feet by 16 feet) with 50-foot turn-out lane at gangway
- Wave attenuators on the north and southeast (if required)
- Gravel vehicle parking area (15 parking spaces)
- Electricity, water, and lighting for the seaplane floats
- Covered waiting area and eventual terminal area
- Safe access between the parking positions and the water operating area
- Fuel storage and access facilities
- Upland seaplane parking areas and maneuvering room
- Seaplane haul out ramp
- Security fencing
- Landscape buffer along southern boundary
- Accommodations for future expansion

2.2.1. Sea Lane

The new seaplane base concept was developed using safety and planning criteria in FAA's Advisory Circular (AC) 150/5395-1B Seaplane Bases. The facility design is based on expected use by aircraft similar to the more common aircraft used in Southeast Alaska (DE Havilland Beavers, Cessna Caravans, and several smaller aircraft frame types) to accommodate the operational needs of current and future seaplane base users.

FAA planning criteria for seaplane bases recommends a water lane for takeoffs and landings of at least 3,500 feet by 200 feet with a 20:1 approach surface, and a depth of at least 4 feet. The water lane area should avoid established shipping and boating lanes, areas that attract birds, and populated areas along the shore. The proposed water lane area would be further north of the existing water lane. While the takeoff and landing area would still be in an area with substantial boat activity, it would be away from the O'Connell Bridge connecting Baranof Island to Japonski Island, farther from the seafood processing facilities that attract gulls and other birds, and farther away from the more commercial and institutional area of the islands' shorelines.

The existing seaplane base (A29), would not be demolished as part of the Project. The CBS would determine the appropriate reuse or removal of the facility in the future.

2.2.2. Fleet Mix

The current mix of aircraft that use A29 includes small floatplanes with a wingspan less than 49 ft. It is recognized that larger aircraft have difficulty navigating the piling configuration and shallow water conditions.

It is anticipated that several aircraft that will use the new facility are currently using the Sitka Rocky Gutierrez Airport on either fixed or amphibious gear. It is also anticipated that additional operators will base aircraft at the proposed facility.

Table 2 includes the existing and future operations with the proposed project.

Table 2. Expected Changes in Fleetmix (CBS 2020)

Aircraft Model	Existing Annual Operations	Future Annual Operations
Avid Flyer	150	200
Cessna 180	143	183
Cessna 185	540	1120
Cessna 206	0	600
Cessna 208 (Caravan)	0	600
DeHaviland Beaver	0	600
Husky A1	30	39
Piper Cub	180	180
Total	1,043	3,522

3.0 Modeling Results

FAA environmental review guidance does not require noise analysis for Projects involving Design Group I and II airplanes, such as Cessna and Beavers, when these operations do not exceed 90,000 annual (247 average daily) operations. However, due to the proximity of Mt. Edgecumbe High School at the water's edge and other noise sensitive uses in the project vicinity, noise analysis was conducted.

Seaplane takeoff and land takeoff and landing operations would still occur in the Sitka Channel, but may be shifted north of their current location. The new seaplane base would provide more float capacity and could increase the number of seaplane operations in the Sitka Channel from an estimated 1,043 per year to approximately 3,522 per year (CBS 2020) . Use is seasonal and so daily operations would be higher in summer and lower in the winter. Peak-day operations are expected to be around 20 operations per day with the Proposed Action.

Two methods of modeling noise were utilized. An initial screening method and a more detailed method as described below.

3.1. Area Equivalent Method (Version 2C SP2)

The Area Equivalent Method (AEM) is a mathematical procedure that provides an estimated noise contour area of a specific airport given the types of aircraft and the number of operations for each aircraft. The noise contour area is a measure of the size of the landmass enclosed within a level of noise as produced by a given set of aircraft operations.

3.1.1. Assumptions

The existing operations where compared to the proposed operations. Cessna 182 Floatplane and DeHaviland Beaver Floatplane are acceptable substitutions for all aircraft in the fleetmix.

3.1.2. Results

Screening level analyisis was conducted using FAA's AEM Version 2C SP2. The model provides a quick comparison of existing to future by calculating the increase in the footprint of the 65 DNL. Based on the expected increase in the number of flights as well as an increase in the number of louder aircraft, the screening analysis indicated that a more detailed method should be used for calculating impacts at noise sensitive receptors.

AEM was used to determine the change in area of the 65 DNL contour for the proposed change in operations and fleet mix. The area bounded by the 65 DNL increased from 0.01 Square Miles for the existing condition to 0.02 Square Miles for the proposed condition, which is greater than 100% change. Detailed analysis is recommended by FAA when the change is greater than 17%. Therefore more detailed analysis was performed. Appendix A includes printouts of the file for AEM Modeling.

3.2. Aviation Environmental Design Tool 3C (Build 140.0.11574.1)

Aviation Environmental Design Tool (AEDT) is a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality consequences. AEDT is a comprehensive tool that provides information to FAA and stakeholders on each of these specific environmental impacts. AEDT facilitates environmental review activities required under NEPA by consolidating the modeling of these environmental impacts in a single tool.

AEDT is designed to model individual studies ranging in scope from a single flight at an airport to scenarios at the regional, national, and global levels.

All FAA actions requiring noise, fuel burn or emissions modeling and for which the environmental analysis process has begun on or after March 6, 2020 are required to use AEDT 3c (Build 140.0.11574.1)

3.2.1. Assumptions

The existing operations where compared to the proposed future operations listed in Table 1. Cessna 182 Floatplane and DeHaviland Beaver Floatplane were used as acceptable substitutions for all aircraft in the fleetmix. Peak-day operations were estimated at 20 operations per day with the Proposed Action. Takeoffs and landings were split evenly between the sea lane ends, i.e. 50% taking off to the north and 50% taking off to the south for both existing and proposed operations.

Figure 2 shows the sea lane (runway) configuration used for modeling existing operations and the proposed future operations.

Noise receptors used in the noise modeling were selected to represent the types of noise-sensitive land uses occurring in the vicinity of the proposed sea lanes, including education, health care services, and residential uses. The receptors selected and the rationale for each is listed in Table 3 and the receptors are shown on Figure 3.

Figure 2: Modeled Runways

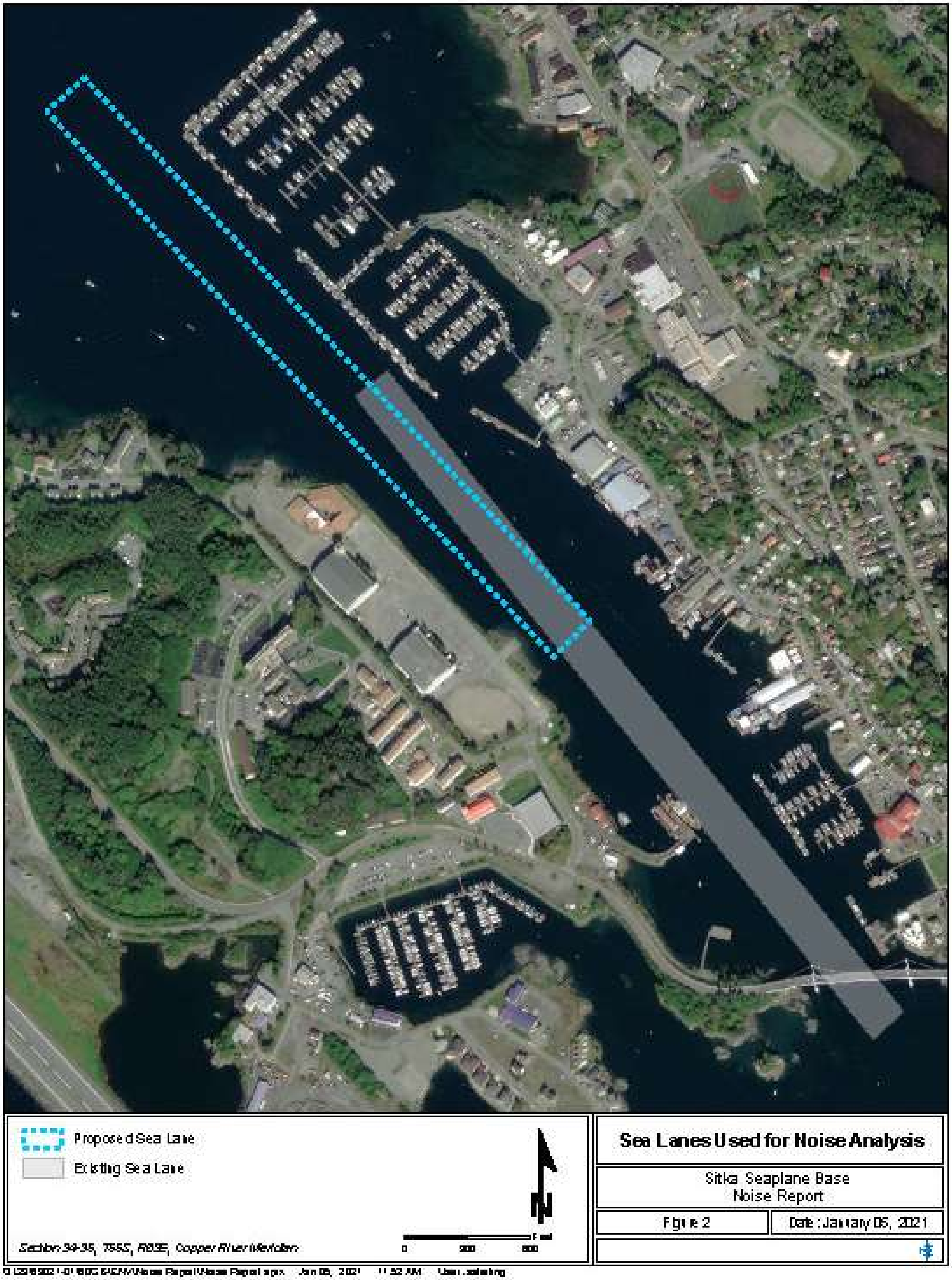


Figure 3: Receptor Locations

Table 3. Noise Receptors Used in Noise Modeling

Receptor ID	Receptor Name	Rationale for Selection
1	Mt. Edgecumbe High School	Educational use; nearest noise sensitive facility to sea lane
2	Mt. Edgecumbe Dormitory	Residential component of Mt. Edgecumbe High School
3	SEARHC Hospital – Existing	Existing health care facility
4	SEARHC Hospital – Proposed	Proposed health care facility
5	SEARHC Community Health Services	Existing outpatient health clinics
6	Building 1200-1202	Serves as a residence for Mt. Edgecubme High School Principal

3.2.2. Results

Noise impacts from the proposed Project were evaluated with consideration of 24-hr Average Day-Night Noise Levels (DNL) and land use noise compatibility guidelines. This noise metric averages aircraft sound levels over a 24-hour period based on the number of events and the time period in which they occur. Most land uses (including residential, schools, and health care facilities) are compatible with DNL levels of 65 decibels (dB) and below.

Appendix B contains a detailed summary of the noise analysis performed. Table 4 below shows the DNL calculated at selected receptors for a peak activity day.

Table 4: Noise Levels

Receptor ID	Receptor Name	Latitude (deg)	Longitude (deg)	Elevation (ft)	Noise Level (dB)	Metric
1	Mt. Edgecumbe High School	57.054134	-135.354005	15	64	DNL
2	Mt. Edgecumbe Dormitory	57.051257	-135.352418	21	57	DNL
3	SEARHC Hospital – Existing	57.051933	-135.35608	21	52	DNL
4	SEARHC Hospital – Proposed	57.051825	-135.358634	21	49	DNL
5	SEARHC Community Health Services	57.053966	-135.36001	20	54	DNL
6	Building 1200-1202	57.055235	-135.363033	11	55	DNL

As shown in the table, the highest impact is seen at Mt. Edgecumbe High School. Noise impacts on Mt. Edgecumbe High School will continue to occur occasionally during individual takeoff events depending on the aircraft type, takeoff location, and weather conditions. Although the takeoff activities would be further from the school, there may be more operations on the channel. Highest use levels would occur during summer, when school is not in session.

3.3. Conclusion

Although noise levels at Mt. Edgecumbe High School may increase to 65 dB DNL, this average noise level is considered compatible with educational and residential land uses. Operations are expected to be higher during summers, when school is not in session, and lower during the school year, reducing potential effects on the school.

4.0 References

City and Borough of Sitka. 2020. SPB Annual Operations Forecast. October 12, 2020.

DOWL HKM (DOWL). 2012. Siting Analysis; Sitka Seaplane Base. Prepared for City and Borough of Sitka. June 2012.

DOWL. 2016. Updated Siting Analysis; Sitka Seaplane Base. Prepared for City and Borough of Sitka. November 2016

Faegre, Aron. 2002. Seaplane Noise. December 15, 1995-Revised September 10, 2002.

Federal Aviation Administration (FAA). 2020a. Airport Master Record, FAA Form 5010-1, for A29. August 13, 2020.

FAA. 2020b. Order 1050.1F Desk Reference. Federal Aviation Administration Office of Environment and Energy. Version 2 (February 2020)

FAA. 1983. AC150/5020-1 Noise Control and Compatibility Planning for Airports. Federal Aviation Administration Office of Environment and Energy. (August 5, 1983)

HDR. 2002. Sitka Seaplane Base Master Plan. Prepared for City & Borough of Sitka. HDR Alaska, Inc. August 2002. https://www.faa.gov/about/office_org/headquarters_offices/apl/research/models/aem_model/

Page intentionally left blank.

Appendix 1:

AEM Input/Output File

Federal Aviation Administration

Office of Environment and Energy

http://www.faa.gov/about/office_org/headquarters_offices/apl/research/models/aem_model/

Area Equivalent Method (AEM) Version 2c SP2

Airport Name/Code:	0Q9 - New Sitka Seaplane Base

DNL (dBA)	Baseline Area (Sq. Mi.)	Alternative Area (Sq. Mi.)	Percent Change in Area
65	0.00987	0.02069	**109.6%**

	BASE Case		**ALTERNATIVE Case**	
Aircraft Type	Daytime LTO Cycles	Nighttime LTO Cycles	Daytime LTO Cycles	Nighttime LTO Cycles
CNA182FLT	2.86		4.72	
DHC-2FLT			4.93	

Only two floatplane aircraft are included in the model: Cessna 182 (abbreviated CNA182FLT)) and DeHaviland Beaver (abbreviated DHC-2FLT). In order to be conservative for screening purposes, DHC-2FLT was assumed to approximate operations by both Cessna 208 (Caravan) and DHC-2 (Beaver) aircraft. All other aircraft were assumed to be represented by Cessna 182.

Appendix 2:

AEDT Input/Output Files

Study Input Report

Study Information

Report Date: 11/20/2020 8:15:34 AM

Study Name: Sitka_SPB

Description:

Study Type: NoiseAndEmissions

Mass Units: Kilograms

Use Metric Units: No

Study Database Information

Study Database Version: 1.69.6

Airport Layouts

Layout Name: 2020-EA-Study

Airport Name: SITKA_SEAPLANEBASE

Airport Codes: 0Q9

Airport Description:

Country: US

State: ALASKA

City: SITKA

Latitude: 57.053269 degrees

Longitude: -135.350389 degrees

Elevation: 0.000000 feet

Runway: 12W-New/30W-New

Length: 3998 feet

Width: 200 feet

Runway End: 12W-New

Latitude: 57.058106 degrees

Longitude: -135.358894 degrees

Elevation: 0.000000 feet

Approach Displaced Threshold: 0 feet

Departure Displaced Threshold: 0 feet

Crossing Height: 50 feet

Glide Slope: 3.000000 deg

Change in Headwind: 0%

Effective Date: 11/1/2020

Expiration Date: 5/31/2021

Runway End: 30W-New

Latitude: 57.050388 degrees

Longitude: -135.344655 degrees

Elevation: 0.000000 feet

Approach Displaced Threshold: 0 feet

Departure Displaced Threshold: 0 feet

Crossing Height: 50 feet

Glide Slope: 3.000000 deg

Change in Headwind: 0%

Effective Date: 11/1/2020

Expiration Date: 5/31/2021

Runway: 12W-Exst/30W-Exst

Length: 3999 feet

Width: 200 feet

Runway End: 12W-Exst

Latitude: 57.056109 degrees

Longitude: -135.355316 degrees

Elevation: 0.000000 feet

Approach Displaced Threshold: 0 feet

Departure Displaced Threshold: 0 feet

Crossing Height: 50 feet

Glide Slope: 3.000000 deg

Change in Headwind: 0%

Effective Date: 11/1/2020

Expiration Date: 5/31/2021

Runway End: 30W-Exst

Latitude: 57.048189 degrees

Longitude: -135.341449 degrees

Elevation: 0.000000 feet

Approach Displaced Threshold: 0 feet

Departure Displaced Threshold: 0 feet

Crossing Height: 50 feet

Glide Slope: 3.000000 deg

Change in Headwind: 0%

Effective Date: 11/1/2020

Expiration Date: 5/31/2021

Receptor Sets

Receptor Set: Sitka-All

Description: All Receptors In Study

Number of receptors: 406

Receptor Set Type: Receptor

Annualizations (Scenarios)

Annualization (Scenario): Existing-A29

Description: Existing-A29

Start Time: Thursday, November 19, 2020

Duration: 01 days 00 hours

Air Performance Model: SAE_1845_APM

Noise Altitude Cutoff MSL (ft): n/a

Mixing Height AFE (ft): 3000

Fuel Sulfur Content: 0.0006

Sulfur Conversion Rate: 0.024

Use Bank Angle: True

Taxi Model: UserTaxiModel

Airport Layouts: 2020-EA-Study

Annualization: Existing-A29

Annualization (Scenario): New-0Q9

Description: New-0Q9

Start Time: Thursday, November 19, 2020

Duration: 01 days 00 hours

Air Performance Model: SAE_1845_APM

Noise Altitude Cutoff MSL (ft): n/a

Mixing Height AFE (ft): 3000

Fuel Sulfur Content: 0.0006

Sulfur Conversion Rate: 0.024

Use Bank Angle: True

Taxi Model: UserTaxiModel

Airport Layouts: 2020-EA-Study

Annualization: New-0Q9

Annualization (Scenario): Combined

Description: Combined

Start Time: Thursday, November 19, 2020

Duration: 01 days 00 hours

Air Performance Model: SAE_1845_APM

Noise Altitude Cutoff MSL (ft): n/a

Mixing Height AFE (ft): 3000

Fuel Sulfur Content: 0.0006

Sulfur Conversion Rate: 0.024

Use Bank Angle: True

Taxi Model: UserTaxiModel

Airport Layouts: 2020-EA-Study

Annualization: Combined

Annualization: Existing-A29

Operation group: Exst

Description: Exst

Start time: 11/19/2020 12:00:00 AM

Duration: 01 days 00 hours

Number of aircraft operations: 8

Annualization: New-0Q9

Operation group: New

Description: New

Start time: 11/19/2020 12:00:00 AM

Duration: 01 days 00 hours

Number of aircraft operations: 8

Annualization: Combined

Operation group: Combo

Description: Combo

Start time: 11/19/2020 12:00:00 AM

Duration: 01 days 00 hours

Number of aircraft operations: 16

User-Defined Aircraft Profiles

User-Specified Aircraft Substitutions

Metric Results

Metric Result ID: 1

Metric Result Name: DNL-All-Exst

Metric Result Description: DNL-AllReceptors-Existing

Metric: DNL

Receptor Set: Sitka-All

Annualization: Existing-A29

Run Start Time: 11/20/2020 8:12:55 AM

Run End Time: 11/20/2020 8:12:57 AM

Run Status: Complete

Run Options: RunOptions_DNL

Result Storage Options:

Dispersion Results: None

Emissions Results: Case

Noise Results: Case

Emissions/Performance Modeling Options:

Check Track Angle: False

Apply Delay & Sequencing Model: False

Calculate Aircraft Engine Startup Emissions: False

Calculate Speciated Organic Gases: False

Analysis Year (VALE):

Enhanced nvPM: False

BADA 4 Modeling Options:

Use BADA Family 4: False

Use ANP and BADA 3 Fallback: False

Enable reduced thrust taper: False

Reduced thrust taper upper limit:

Noise Modeling Options:

Atmospheric Absorption: SAE-ARP-5534

Lateral Attenuation: ApplyLateralAttenuationToPropsAndHelos

Type Of Ground: Hard

Use Terrain: False

Noise Line Of Sight Blockage: False

Fill Terrain: False

Terrain Fill In Value:

Do Number Above Noise Level: False

Metric Result ID: 2

Metric Result Name: DNL-All-New

Metric Result Description: DNL-All-Receptors-New

Metric: DNL

Receptor Set: Sitka-All

Annualization: New-0Q9

Run Start Time: 11/20/2020 8:12:57 AM

Run End Time: 11/20/2020 8:12:57 AM

Run Status: Complete

Run Options: RunOptions_DNL

Result Storage Options:

Dispersion Results: None

Emissions Results: Case

Noise Results: Case

Emissions/Performance Modeling Options:

Check Track Angle: False

Apply Delay & Sequencing Model: False

Calculate Aircraft Engine Startup Emissions: False

Calculate Speciated Organic Gases: False

Analysis Year (VALE):

Enhanced nvPM: False

BADA 4 Modeling Options:

Use BADA Family 4: False

Use ANP and BADA 3 Fallback: False

Enable reduced thrust taper: False

Reduced thrust taper upper limit:

Noise Modeling Options:

Atmospheric Absorption: SAE-ARP-5534

Lateral Attenuation: ApplyLateralAttenuationToPropsAndHelos

Type Of Ground: Hard

Use Terrain: False

Noise Line Of Sight Blockage: False

Fill Terrain: False

Terrain Fill In Value:

Do Number Above Noise Level: False

Metric Result ID: 3

Metric Result Name: DNL-All-Combined

Metric Result Description: DNL-AllReceptors-Combined

Metric: DNL

Receptor Set: Sitka-All

Annualization: Combined

Run Start Time: 11/20/2020 8:12:57 AM

Run End Time: 11/20/2020 8:12:59 AM

Run Status: Complete

Run Options: RunOptions_DNL

Result Storage Options:

Dispersion Results: None

Emissions Results: Case

Noise Results: Case

Emissions/Performance Modeling Options:

Check Track Angle: False

Apply Delay & Sequencing Model: False

Calculate Aircraft Engine Startup Emissions: False

Calculate Speciated Organic Gases: False

Analysis Year (VALE):

Enhanced nvPM: False

BADA 4 Modeling Options:

Use BADA Family 4: False

Use ANP and BADA 3 Fallback: False

Enable reduced thrust taper: False

Reduced thrust taper upper limit:

Noise Modeling Options:

Atmospheric Absorption: SAE-ARP-5534

Lateral Attenuation: ApplyLateralAttenuationToPropsAndHelos

Type Of Ground: Hard

Use Terrain: False

Noise Line Of Sight Blockage: False

Fill Terrain: False

Terrain Fill In Value:

Do Number Above Noise Level: False

Traffic Analyses Memo

MEMORANDUM

TO:	Kelli Cropper, CBS Project Manager
FROM:	Maryellen Tuttell, DOWL Environmental Lead
DATE:	March 25, 2021
SUBJECT:	Sitka SPB: Revised Traffic Generation Estimates

The proposed Sitka Seaplane Base is to be located at the north end of Seward Avenue on Japonski Island in Sitka. The seaplane base would be accessed by Airport Road, via Tongass Drive and Seward Avenue.

SEARHC's Mount Edgecumbe Medical Center (MEMC) is accessed from Airport Road via Tongass Drive. Its Emergency Services area is accessed from Seward Avenue south of the Tongass/Seward intersection. Other SEARHC facilities are located on Tongass Drive and Seward Avenue north of Tongass Drive, including clinics and administrative facilities.

Reliable traffic volume data on Tongass Drive and Seward Avenue are not available.

There are a number of parking areas along Tongass Drive and Seward Avenue, used primarily for SEARHC facilities (although Mount Edgecumbe High School also has a staff parking area off Seward Avenue along with the Superintendent's residence). City and Borough of Sitka (CBS) conducted a parking inventory at mid-day on Thursday, March 18, to document the number of parking spaces available and point in time usage. Figure 1 illustrates the results of the parking inventory. These parking areas total 442 parking spaces. If these 442 spaces were at capacity on a peak day with no parking turn over during the day, this would indicate a minimum traffic level of at least 884 vehicles per day on Tongass Drive (one trip in and one trip out by parking space). This conservatively low traffic estimate is based on employees commuting to work locations and does not account for patient in and out traffic throughout the day, or for staff that may need to leave and return at some point during the day. CBS counted 53 vehicle trips on Tongass Drive over a 36-minute period while doing the parking inventory, assumed to be mostly patient traffic (as opposed to employee traffic). Therefore, traffic levels on Tongass Drive are likely much higher than the 884 estimated trips.

Traffic levels on Seward Avenue would be expected to be less than on Tongass Drive. Parking areas requiring access via Seward Avenue north of Tongass Drive total 130 spaces. Conservatively assuming one trip in and one trip out for each space, and no turnover of parking during the day, there would be an estimated 260 vehicle trips on Seward Avenue per day. Again, this estimate is likely lower than actual traffic levels.

No trip generation rates are available for seaplane bases. The Institute for Traffic Engineering (ITE) has extremely limited data on general aviation airports and that is based on employee numbers, which would not be relevant here. Instead, CBS queried pilots that had signed interest slips on using the site regarding their type of use (commercial vs. non-commercial, their anticipated flight operations, and the estimated vehicle trips per day). Most pilots indicated that they would use the site only seasonally and would generate one vehicle round trip per flight, which counts as two one-way vehicle trips. A round trip flight counts as two aircraft operations, takeoff and landing so this results in one one-way trip generated per operation.

Vehicle trips per aircraft operation were estimated conservatively, assuming that smaller commercial operations would have 2 one-way vehicle trips per aircraft operation (one for each takeoff and each landing). This assumes that someone would drive a person out to the plane and drop them off and then leave, making another round trip to pick the person up later. Larger commercial aircraft with more frequent operations were estimated at 1.5 one-way vehicle trips per operation. The larger commercial operations would be supported by passenger vans which would likely drop off and pick up passengers from multiple trips in one visit. Private aircraft are more likely to have only one vehicle trip per flight (two operations – takeoff and landing). Based on the annual operations estimate from interested pilots, vehicle trips would total 7,562 annually, or a daily average of 21 one-way vehicle trips. (Table 1).

Peak day traffic would be estimated to occur during summer, as some planes would be used only seasonally and even year-round operators would be expected to have more operations during the summer. Peak day aircraft operations are estimated at 92 operations per day (46 trips). Vehicle trips associated with **peak-day** operations are estimated at 136 vehicle trips (Table 2).

Traffic analysis is typically not required for development that generates below **100 trips during the peak hour**. It is likely that many if not most of these trips would not occur during peak hours, as the use would be spread over the entire day. Much of this use would occur on weekends, when traffic to MEHS and the SEARHC administrative facilities would be lower. Given the average daily trip estimate is 21, peak hour generation would be less than 21 trips. Even with a **peak day** estimate of 136 trips, there would not be 100 trips during the peak hour.

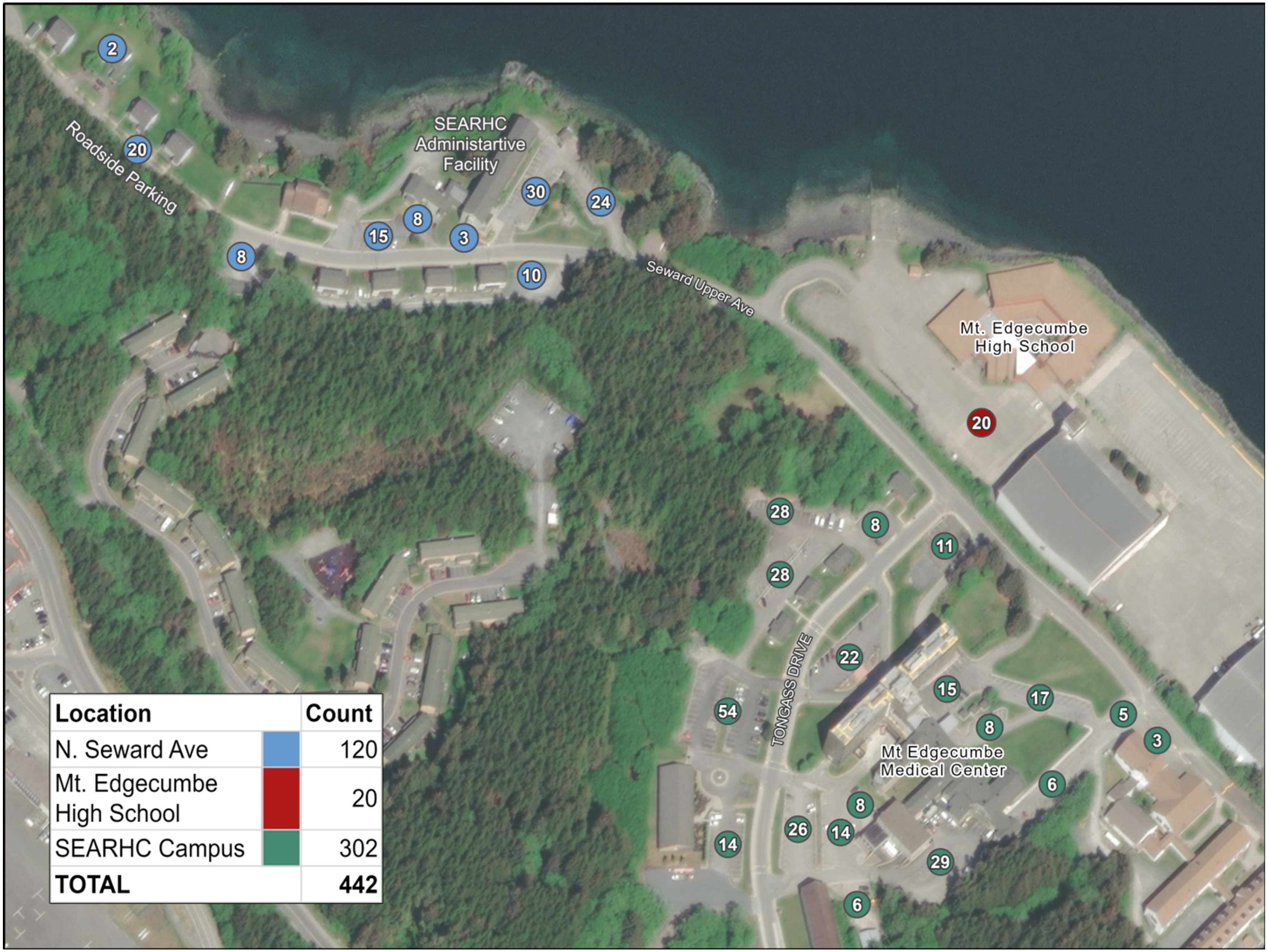
The level of estimated additional traffic would not be expected to have any substantive impact on traffic circulation or congestion on Tongass Drive or Seward Avenue, or on emergency access to the hospital facility.

Table 1. Estimated Vehicle Trips By Aircraft Operation and Average Daily Vehicle Trips

Aircraft Tie-Down	Service Type	# Aircraft	#Annual Ops	VT/Operation	Total Annual VT
Tie-Down 1	Commercial	1	180	2	360
Tie-Down 2	Commercial	2	1000	2	2000
Tie-Down 3	Commercial	3	2400	1.5	3600
Tie-Down 4	Private	1	60	1	60
Tie-Down 5	Private	1	63	1	63
Tie-Down 6	Private	1	40	1	40
Tie-Down 7	Private	1	80	1	80
Tie-Down 8	Private	1	40	1	40
Tie-Down 9	Private	1	40	1	40
Tie-Down 10	Private	1	40	1	40
Tie-Down 11	Private	1	60	1	60
Tie-Down 12	Private	1	200	1	200
Tie-Down 13	Private	1	39	1	39
Tie-Down 14	Private	1	40	1	40
Transient Slips (4)	Either		600	1.5	900
Total Estimated Annual Aircraft Operations & Annual Vehicle Trips			**4,882**		**7,562**
Total Estimated Average Daily Aircraft Operations & Vehicle Trips					**21**

Table 2. Estimated Vehicle Trips By Peak Day Aircraft Operations

Aircraft Tie-Down	Service Type	# Aircraft	Operations	VT/Operation	Total VT – Peak Day
Tie-Down 1	Commercial	1	4	2	8
Tie-Down 2	Commercial	2	16	2	32
Tie-Down 3	Commercial	3	40	1.5	60
Tie-Down 4	Private	1	2	1	2
Tie-Down 5	Private	1	2	1	2
Tie-Down 6	Private	1	2	1	2
Tie-Down 7	Private	1	2	1	2
Tie-Down 8	Private	1	2	1	2
Tie-Down 9	Private	1	2	1	2
Tie-Down 10	Private	1	2	1	2
Tie-Down 11	Private	1	2	1	2
Tie-Down 12	Private	1	4	1	4
Tie-Down 13	Private	1	2	1	2
Tie-Down 14	Private	1	2	1	2
Transient Slips (4)	Either		8	1.5	12
Estimated Peak Day Aircraft Operations & Vehicle Trips			**92**		**136**



Location		Count
N. Seward Ave		120
Mt. Edgecumbe High School		20
SEARHC Campus		302
TOTAL		**442**

Figure 1. Parking Inventory – Tongass Drive and Seward Avenue