Navy Draft EIS comments
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NAS Whidbey

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To: A-18G EIS Project Manager, Naval Facilities Engineering Command (NAVFAC) Atlantic – Attn: Code EV21/SS, 6506 Hampton Blvd., Norfolk, VA 23508

The following comments are addressed to the U.S. Navy Environmental Impact Statement (EIS) draft issued November, 2016 regarding a proposed action of adding additional EA-18G Growlers and increasing Airfields Operations at Naval Air Station (NAS) Whidbey Island and OLF Coupeville.

I have been a physician (MD) for 46 years. My training includes Internal Medicine, Aerospace Medicine, Acoustic Sciences and Medicine, Anesthesiology, and Critical Care Medicine. I served as a Flight Surgeon in the Navy for three years and was responsible for the health, safety, and hearing conservation of Navy and civilian personnel. All comments are based on my experience as well as scientific studies or references to scientific journal articles.

I have lived in Anacortes since 1985 and have experienced the Naval aviation presence for over 30 years. I have attended previous Scoping and DEIS comment periods involving Prowler and Growler flight activity at NAS Whidbey and OLF Coupeville.

I have included multiple areas of concern that I believe should be addressed in this EIS. I have discussed these issues extensively with many members of the community and have found strong support.

I have no issues with the mission of the US military. I have proudly served in the U.S. Navy myself during a previous war. My thoughts and comments are merely concerns for the safety and welfare of the total community relative to Naval flight operations at NAS Whidbey.

1. The Environmental Impact Continues to Increase

There are still residents of Whidbey, Fidalgo, Camano, and Lopez Islands who lived here prior to any naval aircraft operations at NAS Whidbey. These people can and have attested to the significant impacts that have occurred due to naval aviation operations over many years.

Prior EIS reports regarding flight operations at NAS Whidbey identified significant environmental impacts on civilian communities by flight operations emanating from Ault Field and OLF Coupeville. These impacts are discussed below.

In this EIS, additional Growler aircraft are proposed to be stationed at NAS Whidbey. Flight operations are projected to increase 46-47% (p. 10) and FCLP operations could increase 140-475% (p.72) depending on the scenario. These changes will impose further significant harm to the surrounding communities in terms of accident potential, noise, annoyance, sleep disturbances, communication interference, and potential health effects as discussed below.

Indeed, the authors of this EIS state:

"Overall, Alternative 1 would have significant noise impacts in the communities surrounding Ault Field and OLF Coupeville. Both the total number of acres and the total number of individuals within the DNL noise contours would increase for all scenarios analyzed. There would be a larger impact to the communities around Ault Field under Scenario C, while there would be a larger impact for the communities around OLF Coupeville under Scenario A. There would be a slight increase in the number of incidents of indoor and outdoor speech interference, and classroom interference. There would also be a higher probability of awakening under all scenarios, especially for POIs located closer to the airfields. In addition, depending on the scenario, the population potentially at risk for potential hearing loss would increase. The range of potential NIPTS could be up to 9.5 dB at Ault Field and 7.5 dB at OLF Coupeville for the population with average sensitivity to noise and up to 18.0 dB at Ault Field and 15.0 dB at OLF Coupeville for the population highly sensitive to noise." (p. 338)

"Overall, Alternative 2 would have significant noise impacts in the communities surrounding Ault Field and OLF Coupeville. Both the total number of acres and the total number of individuals within the DNL noise contours would increase for all scenarios analyzed. There would be a larger impact to the communities around Ault Field under Scenario C, while there would be a larger impact for the communities around OLF Coupeville under Scenario A. The number of incidents of indoor and outdoor speech interference and classroom interference would increase slightly. There would also be a higher probability of awakening under all scenarios, especially for POIs located closer to the airfields. In addition, depending on the scenario, the population potentially at risk for potential hearing loss would increase. The range of potential NIPTS could be up to 9.5 dB at Ault Field and 7.5 dB at OLF Coupeville for the population with average noise sensitivity and up to 18.0 dB at Ault Field and 15.0 dB at OLF Coupeville for the population highly sensitive to noise (the 10 percent of the population with the most sensitive hearing)." (p. 368)

"Overall, Alternative 3 would have significant noise impacts in the communities surrounding Ault Field and OLF Coupeville. Both the total number of acres and the total number of individuals within the DNL noise contours would increase for all scenarios analyzed at Ault Field, and the total number of individuals within the DNL noise contours would increase for all scenarios analyzed at OLF Coupeville. There would be a larger impact to the communities around Ault Field under Scenario C, while there would be a larger impact for the communities around OLF Coupeville under Scenario A. There would be a slight increase in the number of incidents of indoor and outdoor speech interference, and classroom interference. There would also be a higher probability of awakening under all scenarios, especially at POIs located closer to the airfields. In addition, depending on the scenario, the population potentially at risk for potential hearing loss would increase. The range of potential NIPTS could be up to 9.5 dB at Ault Field and 7.5 dB at OLF Coupeville for the population with average noise sensitivity and up to 18.0 dB at Ault Field and 15.0 dB at OLF Coupeville for the population highly sensitive to noise." (p. 396)

Thus, this EIS concludes that all the proposed alternatives will significantly increase the impact on surrounding communities.

2. Average Noise Measurement criterion Ldn=65 is Inadequate

The use of average noise measurements as exemplified by the Ldn is useful for comparative purposes in some situation. Their use for aviation noise is limited unless special assumptions and criteria are used. There are several reasons.
First, the "Shultz synthesis" must be considered. Shultz collected data from many environmental noise studies and claimed to show a consistent relationship between Ldn and community annoyance. Based on his findings, several federal agencies have adopted standards of permissible Ldn levels for various activities related to highways, waterways, and airports.

Since Shultz originally published his synthesis in 1979, many authors have contested his findings. Griffiths[1] severely criticizes the methodology and hence validity of Schultz in deriving his annoyance curve. Bullen[2] cites Shultz's use of a subjective verbal response, namely, "highly annoyed" in his synthesis. Using a linear, non-subjective scale, Bullen shows that Shultz underestimates community response to aircraft noise with his Ldn curve.

Hall[3] criticizes Shultz for collecting his data in different countries over many years. Hall studied community response in a single community (Toronto) to aircraft noise vs. highway noise and concluded:

> "There is a difference between the community response to aircraft noise and to road noise when each is measured by Ldn. For the same noise level, a greater percentage of people are highly annoyed by aircraft noise. This difference in annoyance at the two sources is not constant, but increases as Ldn increases. The difference is equivalent to roughly 8 dBA at an Ldn of 55 dBA, increasing to roughly 15 dBA at an Ldn of 65 dBA."

The Navy in various communications regarding aircraft operations at NAS Whidbey has stated that Ldn values of 65 dBA are of concern and values above 75 dBA are incompatible. The results of Hall and others show that these values should be adjusted downward by approximately 10 dBA for aircraft noise. If Ldn values are to be used, community annoyance will occur at 55 dBA from aircraft noise and severe community response are predicted above 65 dBA. This agrees with a previous community study performed by FISE (Fidalgo Islanders for a Sound Environment) as discussed below.

FISE completed 5,578 hours over 261 days of noise monitoring in 14 communities during 1988-1989 when Prowlers were deployed at NAS Whidbey. Two Quest Sound Level Meters were utilized (Models M-27 & M-28). These are "level 2" sound meters that are certified and calibrated to standards traceable to the Federal Bureau of Standards. A PhD in acoustics trained FISE members in the instrumentation and supervised the project. The instruments record sound continuously for 24 hours and give hard copies of average noise as well as statistical distributions of individual events. Logs were kept at each site to record Navy flight activity and its impact on the residents at the site. (3,000 pages of data are available for inspection.)

The results of the FISE noise measurements are shown in Table 1. The Ldn exceeded 55 dBA in most communities studied. In two communities, Guemes Island and Campbell Lake, Ldn was less than 55 dBA yet both were significantly annoyed by the aircraft noise. For example, some residents around Campbell Lake found that the aircraft noise occurred at night (during summer months) and interfered with sleep. Even though Ldn was 53, the noise that occurred came at bedtime. One physician called frequently to complain that sleep disturbances threatened his functioning in early morning surgery at Island Hospital. Measurements made at the physician's house showed loud noises at bedtime hours despite low noise averages (Figure 1).

In the current EIS, the authors show Ldn contours from 60-75 dBA. An example of one from page 318 is included in these comments (Figure 2.) Had the authors utilized the more realistic Ldn value of 55 dBA, wider contour bands would have occurred showing that even more of the surrounding communities are impacted.

3. Use Frequency of Maximum Noise Levels in Addition to Ldn

Some authors have disputed the utility of Ldn measurements compared to measurement of maximum noises. Both Borsky[4] and Stephens[5] show that maximum dBA readings are better indicators of community annoyance. Generally frequent maximum sounds of 70 dBA or greater correlate in a linear fashion with community annoyance. Results from the FISE noise studies show that three communities stand out with incompatible frequency of maximum noise occurrences: Coupeville, Shelter Bay, and Deception Pass (Table 2 & 3). At those locations, maximum noise frequently exceeds 90 dBA and often exceeds 100 dBA. Most other communities are seriously impacted with maximum noises often exceeding 70 dBA.

These finding are corroborated in the current EIS study as shown in multiple tables involving surrounding communities and Points of Interest (POIs) such as pages 323-324.

4. Use of Relative Loudness

Since Ldn adds a decibel penalty for noise between 2200 and 0700, it doesn't reflect the noise actually heard. The use of Leq and relative loudness obviates this deficiency. Leq is a measure of the noise actually heard and averaged over 24 hours. Acoustic physics have shown that for every increase in 10 dBA of sound measured the human hears a doubling in loudness. For example, 60 dBA is twice as loud as 50 dBA and 70 dBA is four times as loud as 50 dBA. For noise associated with intermittent events such as aircraft overflight, relative loudness changes that exceed a doubling are increasingly annoying to people. During the FISE noise study, Leq was measured during flying and no flying periods in all communities. These values are shown in Tables 4. Five communities experienced 2-3-fold increases in loudness during flying (Lopez, Shelter Bay, Oak Harbor, North Whidbey, and Oak Harbor). Three communities experienced intolerable increases in loudness with 3-8-fold changes (Rosario Bluff, Deception Pass, and Coupeville).

The authors of the current EIS would find greater annoyance among surrounding communities and POIs if they measured and plotted relative loudness values during flying and no flying periods.

5. Use of the Annoyance (AN) Metric

AN is a metric calculated by subtracting noise exposure that occurs 90% of the time at a location (L90) from the average day-night noise level for the same location (Ldn.) Hence AN = Ldn-L90. Research and usage has shown that AN predicts community response to aircraft noise as follows:

AN Value	Community Response
7	None
11	Sporadic Complaint
17	Widespread Complaint
26	Threats of Litigation
33+	Vigorous Action

Although this EIS did not make measurements enabling computing of this metric, FISE in its previous studies did (Table 3.) FISE's study showed that many surrounding communities had an AN value predicting widespread complaint, or litigation threat, or vigorous responses. In fact, Coupeville has responded with vigorous responses including legal injunctions, among others.

In this EIS, inferences can be made by looking at the Ldn contours shown in Figure 2 and assume that the L90 measurements previously made by FISE are still current (averaging 38 Dba, from Table 3.) Using these data, AN value will exceed 17-20 along western and southern Fidalgo Island, Northern Whidbey Island, Snee Oosh Road, Shelter Bay, La Conner, Fir Island, most of Oak Harbor, and a large area surrounding OLF Coupeville. Hence, all these communities may complain vehemently, threaten or file litigation, or resort to more extreme measures if any of the alternatives are implemented.

6. Health Effects of Aircraft Noise and overflights

The EIS authors state that non-auditory health effects secondary to aircraft noise and overflight are "inconclusive" (p. 338.) However, most medical professionals familiar with this issue disagree and feel that peer reviewed medical studies have confirmed many medical consequences. These include:

- Startle Reaction
- Loss of Control
- Pediatric behavior changes
- Adult psychiatric changes: anxiety, stress. "nervous breakdown"
- Hypertension and increased usage of antihypertensive medications
- Increased hospital admissions for cardiovascular disease
- Heart attack (myocardial infarction) and stroke
- Increased death rate from cardiovascular diseases
- Sleep disturbances which may cause or exacerbate many of the other medical consequences
- Speech and performance interference
- Noise induced hearing threshold shift and hearing loss

In a previous study reported by FISE, a community health survey from neighborhoods near OLF Coupeville revealed a high percentage of the 139 respondents reporting feelings of stress and illness requiring medical consultation, sleep disturbances, difficulties communicating with family members, and vibration of their houses and contents (Figure 3.)

It is time again to perform a similar survey to verify health impacts. It would be reasonable to compare results in a high impact area such as OLF Coupeville with a non-impacted area such as Bow/Edison, WA. It is probable that such a comparison would confirm health impacts from Naval aircraft operations.

See reference numbers 6-44 for a list of significant medical articles documenting these findings.

7. Safety and Aircraft Crash Potential

This section addresses a primary concern of many citizens regarding the safety of operation of Navy aircraft in the vicinity of NAS Whidbey. The immediate area of NAS Whidbey includes overflight of three of the fastest growing counties in Washington (Island, Skagit, and San Juan), six major communities (Oak Harbor, Coupeville, Deception Pass State Park, Shelter Bay, Guemes, and Anacortes), and two oil refineries. In a previous evaluation, Navy data revealed that during flight operations around NAS Whidbey, 29 aircraft crashed between1967-1990. Of those crashes, 11 occurred within 15 miles of Ault Field at NAS Whidbey. Within this 15-mile radius are located five civilian areas of concern.

(a) OLF Coupeville is a small naval auxiliary airfield surrounded by a residential community. Annually up to 35,000 FCLP operations are proposed, mostly at night. The civilian residents of the area are subjected to frequent noise, vibration, and anxiety about crashes because of these operations. Whidbey Islanders for a Sound Environment (WISE), a large community organization, has often complained about this situation. The Navy has continued operations under "waivers" at this site due to runway inadequacies and has persisted in operation despite repeated warning from residents and government officials.

(b) Shelter Bay is a community located at LA Conner, 6.9 miles east of Ault Field directly off the approach/departure corridor for runway 25/07. It experiences frequent overflights of low level jet traffic and is subject to considerable noise impact and risk of civilian casualty.

(c) March Point is a small peninsula on Fidalgo Island 11 miles northeast of Ault Field. The peninsula is the site of two major oil refineries as well as several smaller chemical industries. Several of the routine approaches to NAS Whidbey bring aircraft on a ground track over March Point. These include HI TACAN 7 & 13, GCA 7 & 13, as well as many vectored and visual approaches. The refineries contain billions of pounds of explosive and toxic substances. Among these are substances which have a potential for support of fires (4.4 billion pounds), explosive pressure release (160 million pounds), chemical reactivity (400,000 pounds), acute health effects (4.7 billion pounds), and chronic health effects (4.4 billion pounds).

In communicating with both refineries, it is apparent that their disaster plans are poorly conceived and don't include the possibility of a Naval aircraft losing control and crashing into multiple containment facilities for these toxic substances. In fact, during February of 1991, a small-scale disaster occurred at Texaco wherein a pump casing exploded and a large quantity of unrefined oil escaped onto land at the refinery. Some of this oil subsequently entered Fidalgo Bay. Texaco's response was characterized by slowness and chaos. Texaco seemed unsure how to proceed with water cleanup and animal rescue procedures. Community concerns were raised about the effectiveness of company responding to a large-scale disaster. Ultimately a lawsuit and fines were imposed.

(d) Guemes Island is located 13.9 miles north of NAS Whidbey and one mile north of Anacortes. Prior to 1988, this small island community was rarely overflown by A-6 traffic. In 1988 NAS Whidbey arbitrarily decided, without following the NEPA process, to place a radar turning point at Cap Sante and vector aircraft away from Anacortes and over Guemes. Since that time, Guemes was subjected to exponential increases in noise energy and accident potential. The Guemes Island Environmental Trust (GIET) was formed and filed suit against the Navy, claiming a violation of their rights under The National Environmental Policy Act. In early 1991, the commanding officer of NAS Whidbey announced to the GIET that the radar turning point would be removed from Cap Sante. Subsequently, A-6 traffic has flown over Anacortes, avoiding Guemes. As the noise and safety issues increase over Anacortes, similar thoughts of lawsuit are entertained by residents of Anacortes for yet another violation of the NEPA process.

(e) Oak Harbor is a small city located two miles south of Ault Field. It is located directly off the approach/departure corridor of runways 31/13. Because of its proximity to NAS Whidbey, Oak Harbor's business and residential communities are particularly at risk of damage from an accident. NAS Whidbey has the smallest land base associated with jet operations of all Naval facilities (<5,000 acres.) No new Navy land of significance has been purchased since the 1940's. The Navy's aviation operations have encroached significantly on the surround communities since 1985. Island County is one of the fastest growing populations in the state and is composed of many retirement and recreation oriented people.

Local citizen groups including FISE and WISE have repeatedly offered solutions to mitigate many of the factors contributing to safety dangers. The cost of them might be high in absolute terms but reasonable in relative terms compared to potential property damage and liability claims in legal actions arising out of a disaster at Coupeville, Oak Harbor, or the oil refineries on March Point.

These alternate solutions include:

(a) Building an alternate landing field at a remote site such as Quillayute on the Olympic peninsula some 84 miles from NAS Whidbey would allow FCLP and other operations to occur away from populated areas and continue all night if desired. Cost estimates of $25 million have been alleged for restoring the existing field to Navy standards. Additional costs would include the added time of flight of approximately $840/round trip (25.2 minutes @ 400 KTS $2,000/hr.)

(b) The cost of relocating operations to Lemoore, CA or Oceana, VA may be significantly less when all factors are considered. These sites have existing facilities and surrounding property that buffers them from noise and safety considerations.

In summary, significant Navy aircraft accident potential exists within 15 miles of NAS Whidbey. There have been numerous accidents at and around the base in prior years. Due to the small size of Navy land holdings and the growing civilian residential, business, and industrial communities surrounding NAS Whidbey, a Naval aircraft crash may eventually cause a community disaster. The EIS should address the issue of aircraft flight operation encroachment on the surrounding communities. The Navy should abandon its philosophy of designating accident zones in community property and replace it with one of eliminating the accident risk by purchasing the areas at risk or removing flight operations to areas where they own the land at risk. Flight operation over particularly sensitive area should be eliminated. One of these is the March Point refinery complex on Fidalgo Island. The EIS should include an alternative that removes flights from the populated areas in the EIS study area to a remote area where encroachment by the Navy on the community is reduced or removed. The cost analysis of implementing such an alternative, though discussed briefly in this EIS, does not realistically address the issue when factoring in legal, medical, and reconstruction costs that would result from an aircraft accident disaster.

8. Tucker Act

(a) https://www.law.cornell.edu/wex/tucker_act

"Under the Tucker Act of 1887, the United States waived its sovereign immunity as to certain kinds of claims. Although the government is immune to lawsuits as a general rule, the Tucker Act exposes the government to liability for certain claims. Specifically, the Act extended the original Court of Claims' jurisdiction to include claims for liquidated or unliquidated damages arising from the Constitution (including takings claims under the Fifth Amendment), a federal statute or regulation, and claims in cases not arising in tort. The relevant text of the Act is codified in 28 U.S.C. §§ 1346(a) and 1491.

Specifically, the Tucker Act permits three kinds of claims against the government: (1) contractual claims, (2) noncontractual claims where the plaintiff seeks the return of money paid to the government and (3) noncontractual claims where the plaintiff asserts that he is entitled to payment by the government.

Today, jurisdiction over Tucker Act claims is vested in the United States Court of Federal Claims. The United States Court of Federal Claims has exclusive jurisdiction over Tucker Act claims in excess of $10,000, while another statutory grant of jurisdiction—the so-called "Little Tucker Act"—allows the court to entertain similar suits against the United States for claims of less than $10,000 concurrently with the federal district courts. Prior to the passage of the Federal Courts Improvement Act of 1982, however, this jurisdiction was vested in the original U.S. Court of Claims."

(b) Some attorneys interpret this law to mean that property "taken" (i.e., when value is decreased due to the action taken by the government) or people are damaged (physical or medical harm) by federal actions such as aircraft overflights, that those harmed are due "just" compensation for the damages.

9. Conclusion

Current Naval aircraft operations at Ault Field and OLF Coupeville impose significant harm and risk to health and safety for the surrounding civilian communities. The proposed actions addressed in this EIS, i.e., increasing the number of Growler aircrafts and flight operations, significantly increases that risk from dangerous to an intolerable level. There is likely to be vigorous community response to implementation of any of the three alternatives. Citizens may choose to litigate singly or as a class against increasing health issues, compensation for accident damage, or a "taking of their property" (Tucker Act).

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Matrix 1: Studies Linking an Environmental Noise Stressor or Sleep Disorder to a Consequent Intermediate or Long-Term Health Outcome

	Night-time noise	Day-time noise/general noise	Sleep Disordered Breathing
Hypertension/Blood Pressure Alterations	Babisch 2006 Bach 1991 Carter 2002 Griefahn 2008 Haralabidis 2008 Jarup 2008	Andren 1980 Aydin 2007 Babisch 2006 Bjork 2006 Chang 2003 Chang 2007 Eggerteson 1984 (acute) Fogari 2001 Fouriaud 1984 Goto 2002(no significant finding) Kluizenaar 2007 Lusk 2004 Rosenlund 2001 Regecova 1995 Talbott 1999 van Kempen 2002 Zhao 1991	Bixler 2000 Morrell 2000 Newman 2001 Pankow 1997
Heart Attack (Myocardial Infarction)	Babisch 2006	Babisch 2000 Babisch 2004 (NaRoMI) Babisch 2006 Davies 2005 Grazuleviciene 2004 Hoffman 2006 Ising 1997 Selander 2009 Tonne 2007 Van Kempen 2002	D'Alessandro 1990 Hla 2001 (Ischemia) Newman 2001 Shahar 2001 Winkelman 2007
Nondipping			Portaluppi 1997 Loredo 2001
Miscellaneous Mortality/Health		Franssen 2004 Melamed 1997 Fujino 2007 Evans 1998 Andren 1981 Persson Waye 2001	

Matrix 2: Studies Showing Noise Leading to Acute Effects

	Aircraft	Other Traffic/Work	Synthetic Noises
Stage Arousals	Basner 2008 (against) Basner 2008b Flindell 2000 Griefahn 2006	Bach 1991 Eberhardt 1987 Griefahn 2006 Marks 2008	Campbell 2005
Autonomic Arousals and Transient Blood Pressure	Carter 2002 Carter 1994 Haralabidis 2008	Bach 1991 Carter 1994 Carter 2002 Di Nisi 1990 Griefahn 2008 Kuroiwa 2002	Aaron 1996 Di Nisi 1990 Johnson 1968 Townsend 1973
Awake Arousal and Transient Blood Pressure		Andren 1980 Chang 2003 Chang 2007 Di Nisi 1990 Eggertson 1984 Fogari and Zoppi 2001 Hansson 1984 Lusk 2004 Raggam 2006	
GenericSleep Disturbance	Basner 2006 Basner 2008 Fidell 1995 Flindell 2000 Griefahn 2006 Horne 1994 Michaud 2007	Griefahn 2006 Eberhardt 1987 Marks 2008 Ohrstrom 1995	Bonnet 1986 (background) Aaron 1996
Habituation	Kuroiwa 2002		Townsend 1973 Rabat 2005

Table 1

FISE Noise Study
Measurement Site Locations
Ldn All Measurements

Community	Ldn: All Dates	Address of Site	DEIS Equivalent Site
Coupeville	79.9	South Admiral Drive	6
Dugualla Bay	62.5	East Dugualla Road	11
Oak Harbor	63.4	Polnell Road	NA
North Whidbey	63.5	Park Lane off Troxel	NA
Deception Pass	70.3	State Park	NA
Dewey Beach	58.7	Yokeko Drive	NA
Rosario Bluff	59.6	Taylor Road	1
Fidalgo Ginnett Rd	54.0	Ginnett Road	NA
Campbell Lake	52.7	Campbell Lake Road	NA
Shelter Bay	62.4	Tillamuck & Klamath	10
Skyline	56.3	Skyline Way	2
Guemes	53.6	South Shore Road	9
Lopez	58.2	Whatmough Bay	NA
Orcas	49.2	Moss Hill Road	NA

Figure 1

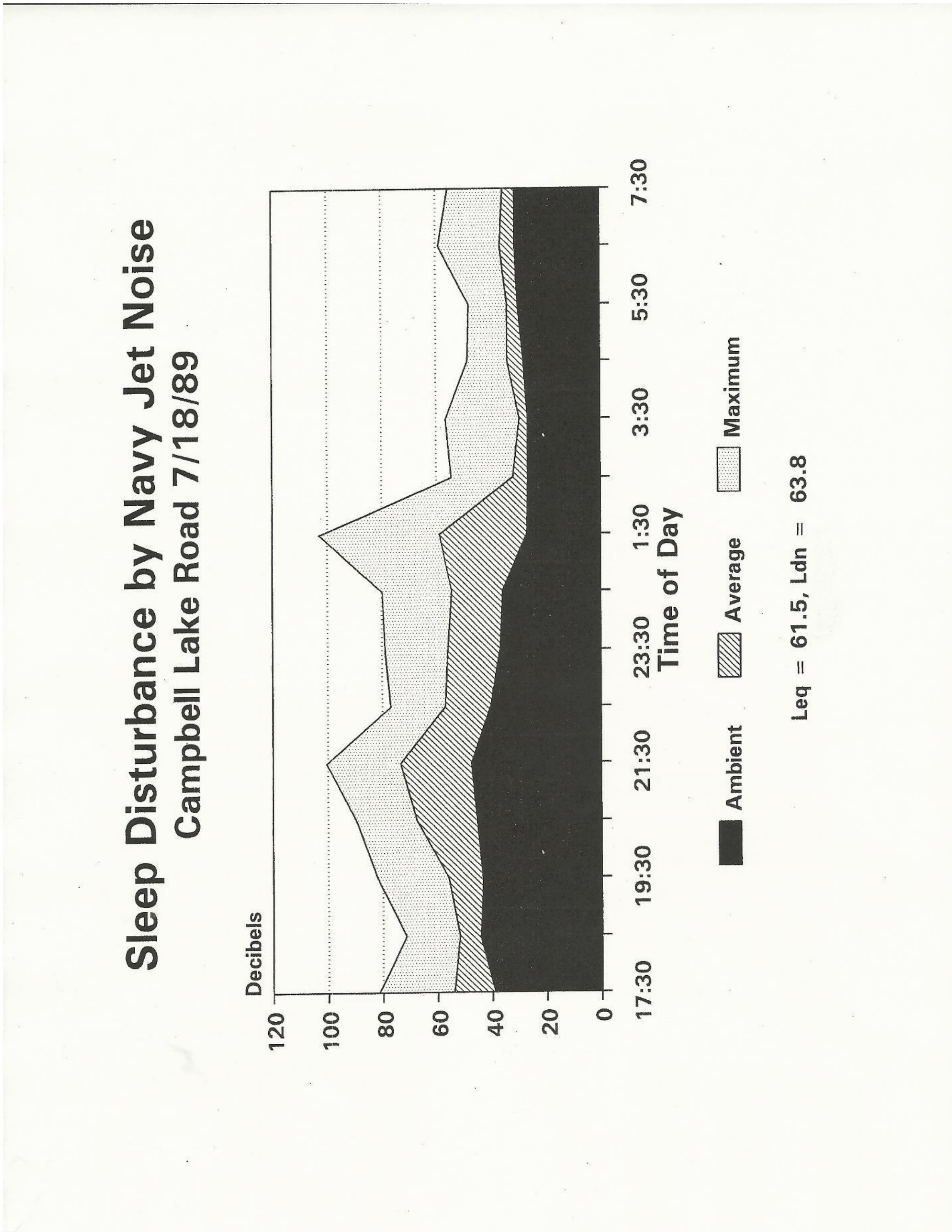
Sleep Disturbance by Navy Jet Noise
Campbell Lake Road 7/18/89
Decibels
120
100
80
60
40
20
0
17:30
19:30
21:30
23:30
1:30
3:30
5:30
7:30
Time of Day
Ambient
Average
Maximum
Leq = 61.5, Ldn = 63.8

Figure 2

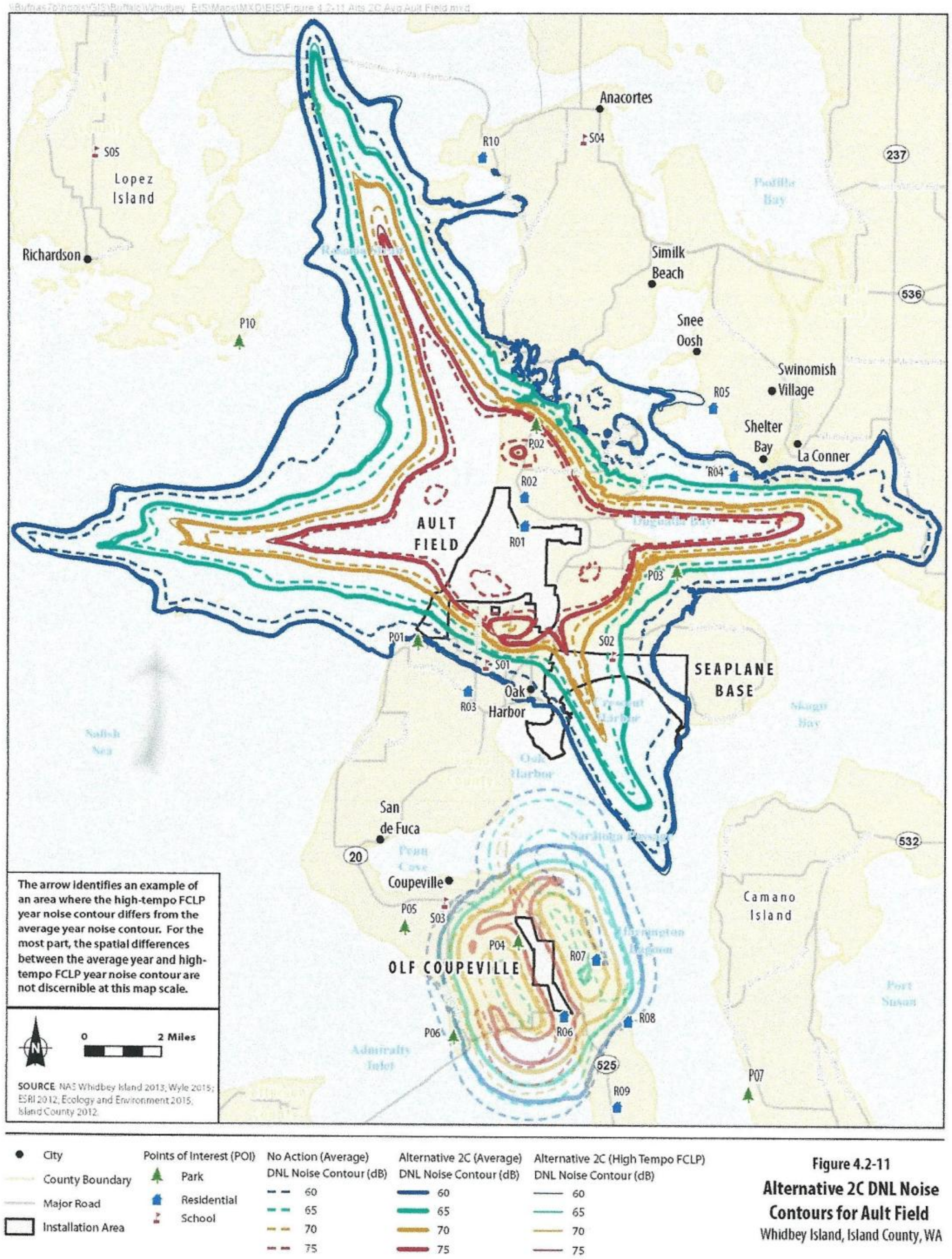
Anacortes
S04
R10
S05
Lopez Island
237
Richardson
Similk Beach
536
P10
Snee Oosh
Swinomish Village
R05
Shelter Bay
La Conner
R04
P02
R02
AULT FIELD
R01
P03
P01
S02
S01
SEAPLANE BASE
Oak Harbor
R03
San de Fuca
532
20
Coupeville
P05
S03
Camano Island
P04
R07
OLF COUPEVILLE
R08
P06
R06
525
P07
R09
The arrow identifies an example of an area where the high-tempo FCLP year noise contour differs from the average year noise contour. For the most part, the spatial differences between the average year and high-tempo FCLP year noise contour are not discernible at this map scale.
0 2 Miles
SOURCE: NAS Whidbey Island 2013; Wyle 2015; ESRI 2012; Ecology and Environment 2015; Island County 2012.
City
County Boundary
Major Road
Installation Area
Points of Interest (POI)
Park
Residential
School
No Action (Average) DNL Noise Contour (dB)
60
65
70
75
Alternative 2C (Average) DNL Noise Contour (dB)
60
65
70
75
Alternative 2C (High Tempo FCLP) DNL Noise Contour (dB)
60
65
70
75
Figure 4.2-11
Alternative 2C DNL Noise Contours for Ault Field
Whidbey Island, Island County, WA

Table 2

FISE Community Noise Study 1989-1990: Maximum Noise During Navy Jet Flying
5,578 hous (261 days) utilizing Quest M27 & M28 Sound Level Meters

Community	Flying									
	M70	M75	M80	M85	M90	M95	M100	M105	M110	Lmax
Coupeville	3 ± 4	3 ± 4	7 ± 7	6 ± 3	12 ± 9	14 ± 7	14 ± 8	14 ± 7	5 ± 7	111 ± 4
Dugualla Bay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oak Harbor	28 ± 8	24 ± 12	27 ± 15	17 ± 13	4 ± 2	1 ± 0	0	0	0	96 ± 5
North Whidbey	68 ± 52	34 ± 20	8 ± 3	1 ± 0	1 ± 1	1 ± 1	0	0	0	94 ± 8
Deception Pass	86 ± 47	49 ± 14	38 ± 23	12 ± 3	11 ± 9	10 ± 14	5 ± 6	2 ± 2	0	105 ± 6
Dewey Beach	57 ± 29	22 ± 4	9 ± 4	1 ± 1	1 ± 2	0	0	0	0	88 ± 3
Rosario Bluff	80 ± 55	57 ± 44	16 ± 11	3 ± 2	1 ± 1	0	0	0	0	92 ± 3
Fidalgo Ginnett Rd	26 ± 6	16 ± 1	11 ± 1	2 ± 0	1 ± 1	0	0	0	0	89 ± 4
Shelter Bay	63 ± 50	38 ± 23	23 ± 20	6 ± 4	3 ± 3	2 ± 4	1 ± 1	0	0	99 ± 9
Skyline	70 ± 19	16 ± 11	4 ± 2	1 ± 1	0	0	0	0	0	85 ± 3
Guemes	21 ± 9	11 ± 2	6 ± 3	2 ± 1	1 ± 1	0	0	0	0	89 ± 3
Lopez	16 ± 8	6 ± 2	1 ± 1	1 ± 0	0	0	0	0	0	88 ± 4

All measurements are mean ± standard deviation
NA = Not Available
M70 = Number minutes when maximum sound was in the 70-74 dBA range
M75 = Number minutes when maximum sound was in the 75-79 dBA range
M80 = Number minutes when maximum sound was in the 80-84 dBA range
M110 = Number minutes when maximum sound exceeded 110 dBA
Lmax = Maximum dBA recorded during entire day

Table 3

FISE Community Noise Study 1989-1990: Average Noise During Navy Jets Flying
5,578 hous (261 days) utilizing Quest M27 & M28 Sound Level Meters

Community	Not Flying		Flying											
	Leq	Ldn	Leq	Ldn	A65	A70	A75	A80	A85	A90	T65	N65	L90	AN
Coupeville	45.2	50.8	76.1	80.3	14±8	28±15	35±13	26±24	20±27	12±24	136±65	53±35	38±0.5	38±7
Dugualla Bay	45.3	49.5	59.9	64.3	22±7	20±11	7±5	2±2	0	0	50±21	11±10	39±0	25±2
Oak Harbor	48.3	49.1	62.4	64.9	NA	NA	NA	NA	NA	NA	NA	NA	38±1	26±3
North Whidbey	45.7	47.9	60.6	63.5	NA	NA	NA	NA	NA	NA	NA	NA	37±1	26±3
Deception Pass	45.6	48.0	70.7	72.0	NA	NA	NA	NA	NA	NA	NA	NA	40±1	31±4
Dewey Beach	52.4	54.4	58.5	60.1	40±30	20±18	1±1	0	0	0	61±46	9±18	39±1.3	21±3
Rosario Bluff	42.2	46.6	59.9	60.5	NA	NA	NA	NA	NA	NA	NA	NA	40±1	21±1
Fidalgo Ginnett Rd	48.9	50.7	51.2	54.8	8±4	2±1	1±1	0	0	0	10±5	1±0	38±0.5	16±2
Campbell Lake	48.5	52.6	50.3	53.1	4±2	2±1	0	0	0	0	6±3	0	39±1.0	13±2
Shelter Bay	44.7	53.6	56.9	63.5	20±19	7±6	2±3	1±1	1±1	0	30±26	5±11	39±1.6	19±4
Skyline	50.3	55.7	52.4	57.2	7±1	4±3	1±1	0	0	0	12±5	1±1	39±0	16±2
Guemes	44.7	51.0	52.9	56.1	10±9	2±2	1±1	0	0	0	13±11	1±3	39±0.4	15±3
Lopez	48.6	53.5	60.1	64.1	7±5	2±1	1±1	0	0	0	11±6	1±1	39±0.5	19±4
Orcas	46.2	49.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

All measurements are mean ± standard deviation except Leq & Ldn which are calculated from all measurements during the specified period
NA = Not Available
Leq = Equivalent sound level, i.e., all sound energy averaged over the time period
Ldn = Equivalent sound level day-night (10 dBA penalty for sound between 2200-0700)
A65 = Number of 1 minute Leq's that were in the 65-69 dBA range
A70 = Number of 1 minute Leq's that were in the 70-74 dBA range
A75, etc as above
A90 = Number of 1 minute Leq's that exceeded 90dBA
T65 = Sum of all A65-A90 minutes, i.e., all one minute events exceeding 65 dBA (almost all of these represent military jet activity)
N65 = Same as T65 except only those events between 2200-0700 hours
L90 = Leq exceeded during 90% of all recordings (Represents ambient sound, i.e. the average quiet background noise)
AN = Ldn-L90, a measure of human annoyance with noise pollution. Where community response is: AN 7 = no response; AN 11 = sporadic complaint: AN 17 = widespread complaint: AN 26 = threats of litigation; AN 33+ = vigorous action

Table 4

FISE Community Noise Study 1989-1990: Relative Loudness
5,578 hours (261 days) utilizing Quest M27 & M28 Sound Level Meters

Community	Not Flying	Flying	Relative Loudness*
	Leq	Leq	
Coupeville	45.2	76.1	8.1
Dugualla Bay	45.3	59.9	2.8
Oak Harbor	48.3	62.4	2.7
North Whidbey	45.7	60.6	2.8
Deception Pass	45.6	70.7	5.7
Dewey Beach	52.4	58.5	1.5
Rosario Bluff	42.2	59.9	3.4
Fidalgo Ginnett Rd	48.9	51.2	1.2
Campbell Lake	48.5	50.3	1.1
Shelter Bay	44.7	56.9	2.3
Skyline	50.3	52.4	1.2
Guemes	44.7	52.9	1.8
Lopez	48.6	60.1	2.3
Orcas	46.2	NA	NA

Leq=Equivalent sound level, i.e., all sound energy averaged over the # of hours
* Perceived loudness changes 2 fold for each 10 dBA increase in noise

Figure 3

Community Health Survey
OLF Coupeville Area
139 Respondents

☐ 93% said that their overall feeling of wellness had been impacted adversely by Navy aviation operations at OLF

☐ 76% said they were under physical and mental stress

☐ Of those reporting stress, 29% said that they had seen a doctor at least once for stress induced illness

☐ One person reported being hospitalized twice

☐ 92% of residents surveyed reported that their normal sleep patterns vere interrupted by Navy operations

☐ 53% said they believed they were losing their hearing over and above the normal aging loss

☐ 87% reported that their houses vibrated as a result of low level flights