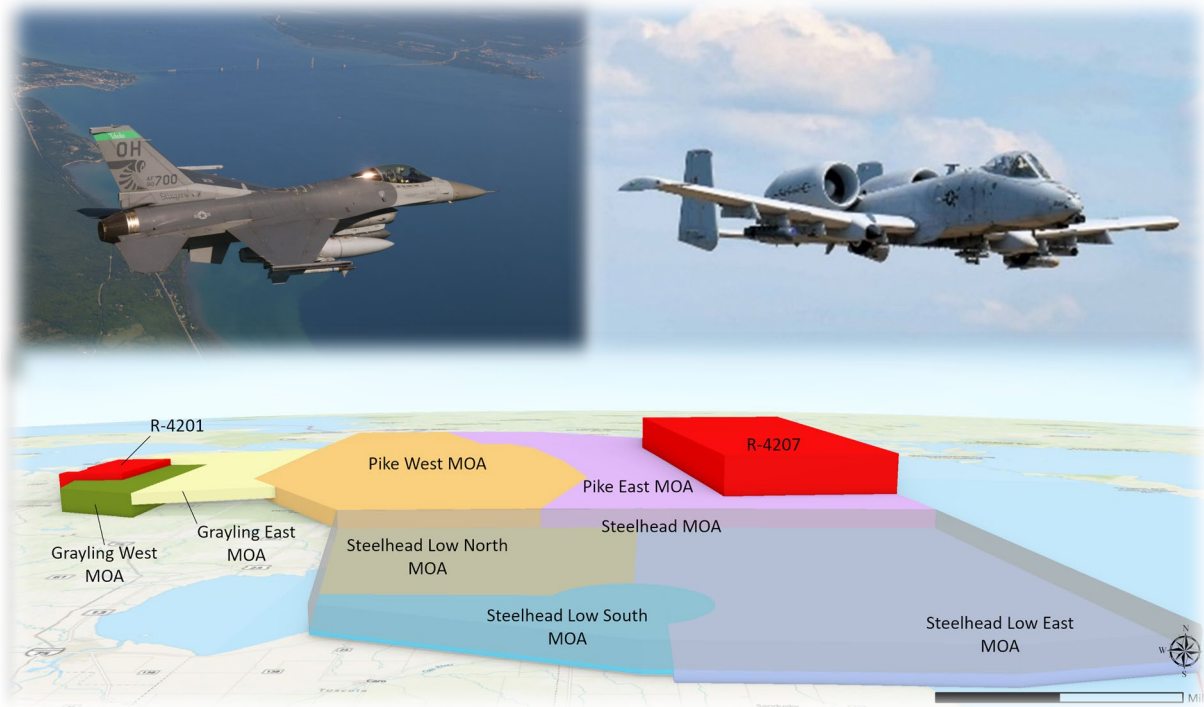


Final  
Environmental Assessment for  
Modification and Addition of Airspace at the  
Alpena Special Use Airspace Complex



Michigan Air National Guard  
Alpena Combat Readiness Training Center  
Alpena, Michigan



January 2024

*Cover graphics: (Left) F-16 Fighting Falcon over Mackinaw Bridge, Michigan (180 FW, 2015); (Right) A-10 Thunderbolt at the Grayling Range (Public Affairs, 2019); (Bottom) Three-Dimensional Representation of Proposed Airspace.*

This document has been certified that it does not exceed 75 pages, not including appendices as defined in 40 CFR 1501.5(f). As defined in 40 CFR 1508.1(v), a “page” means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitative or geospatial information. The full reference list and list of preparers are included in this EA as the final appendices.

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## Acronyms and Abbreviations

<b>122 FW</b>	122d Fighter Wing	<b>LASDT</b>	Low Altitude Step Down Training
<b>127 WG</b>	127th Wing	<b>Ldnmr</b>	Onset-Adjusted Monthly Day-Night Average Sound Level
<b>180 FW</b>	180th Fighter Wing	<b>LFE</b>	Large Force Exercise
<b>ACAM</b>	Air Conformity Applicability Model	<b>Lmax</b>	Maximum Sound Level
<b>AGL</b>	above ground level	<b>LOA</b>	Letter of Agreement
<b>ALTRV</b>	Altitude Reservation	<b>LOWAT</b>	Low Altitude Air-to-Air Training
<b>ANG</b>	Air National Guard	<b>MDNR</b>	Michigan Department of Natural Resources
<b>ANGB</b>	Air National Guard Base	<b>MIANG</b>	Michigan Air National Guard
<b>APE</b>	Area of Potential Effects	<b>MOA</b>	Military Operations Area
<b>ARTCC</b>	Air Route Traffic Control Center	<b>MSL</b>	above mean sea level
<b>ATC</b>	Air Traffic Control	<b>MTR</b>	Military Training Route
<b>ATCAA</b>	air traffic control assigned airspace	<b>NAAQS</b>	National Ambient Air Quality Standards
<b>BASH</b>	Bird-/Wildlife-Aircraft Strike Hazard	<b>NAS</b>	National Airspace System
<b>BMP</b>	best management practice	<b>NEPA</b>	National Environmental Policy Act
<b>CEQ</b>	Council on Environmental Quality	<b>NGB</b>	National Guard Bureau
<b>CFR</b>	Code of Federal Regulations	<b>NHPA</b>	National Historic Preservation Act
<b>CORA</b>	Chippewa Ottawa Resource Authority	<b>NOTAM</b>	Notice to Air Missions
<b>CRTC</b>	Combat Readiness Training Center	<b>NREPA</b>	Natural Resources and Environmental Protection Act
<b>CT</b>	census tract	<b>NRHP</b>	National Register of Historic Places
<b>DAF</b>	Department of the Air Force	<b>PFAS</b>	per- and polyfluoroalkyl substances
<b>dba</b>	A-weighted decibels	<b>PREIAP</b>	Pre-Environmental Impact Analysis Process
<b>Dkey</b>	Michigan Determination Key	<b>R-/RA</b>	Restricted Area
<b>DNL</b>	Day-Night Average Sound Level	<b>SHPO</b>	State Historic Preservation Officer
<b>DOD</b>	Department of Defense	<b>SPL</b>	Sound Pressure Level
<b>DOPAA</b>	Description of Proposed Action and Alternatives	<b>SUA</b>	Special Use Airspace
<b>EA</b>	Environmental Assessment	<b>USC</b>	United States Code
<b>EGLE</b>	Michigan Department of Environment, Great Lakes, and Energy	<b>USEPA</b>	United States Environmental Protection Agency
<b>EIAP</b>	Environmental Impact Analysis Process	<b>USFWS</b>	United States Fish and Wildlife Service
<b>FAA</b>	Federal Aviation Administration	<b>USGS</b>	United States Geological Survey
<b>FL</b>	Flight Level	<b>VFR</b>	Visual Flight Rules
<b>GDP</b>	Gross Domestic Product	<b>VR</b>	Visual Flight Rules Military Training Route
<b>IFR</b>	Instrument Flight Rules		
<b>IPaC</b>	Information for Planning and Consultation		
<b>JO</b>	Joint Order		
<b>JTE</b>	Joint Threat Emitter		

## Chapter 1. Purpose of and Need for Action

The National Guard Bureau (NGB) and the Michigan Air National Guard (MIANG) have prepared an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Proposed Action would meet current and emerging training needs and optimize effective use of available airspace structure.

The NGB is the proponent of this proposal and the lead agency for the EA. The Federal Aviation Administration (FAA) has been charged by Congress with administering all navigable airspace in the public interest, as necessary, to ensure the safety of aircraft and the efficient use of airspace. As a result, the FAA served as a cooperating agency for this EA. The NGB prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969, as implemented by the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1500–1508, as revised), the Department of the Air Force’s (DAF) Environmental Impact Analysis Process (EIAP; 32 CFR 989), the FAA’s Environmental Impacts: Policies and Procedures (FAA Order 1050.1F), and the FAA’s Procedures for Handling Airspace Matters (FAA Joint Order [JO] 7400.2P). The EA will inform decision makers of the potential consequences resulting from implementation of the Proposed Action, alternatives, and the No Action Alternative.

Per amendments to 10 United States Code 10501, described in Department of Defense (DOD) Directive 5105.77, the NGB is a joint activity of the DOD. The NGB serves as a channel of communication and funding between the DAF and State Air National Guard (ANG) organizations in the 54 U.S states, territories, and the District of Columbia. The National Guard Bureau Air Directorate (NGB-CF) oversees the NEPA process for ANG facilities, as required under NEPA, CEQ Regulations, and 32 CFR 989.

### 1.1 Location and Background

The Alpena Combat Readiness Training Center (CRTC) is located at the Alpena County Regional Airport in Alpena, Michigan (see Figure 1-1). The CRTC schedules and hosts local, regional, and deployed unit training exercises within the existing Alpena SUA Complex (see Mission & Vision statements, right). The Alpena SUA Complex is over part of Lake Huron and all or parts of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola. Alpena SUA is shown in Figure 1-1 through Figure 1-3.

#### Alpena CRTC Mission

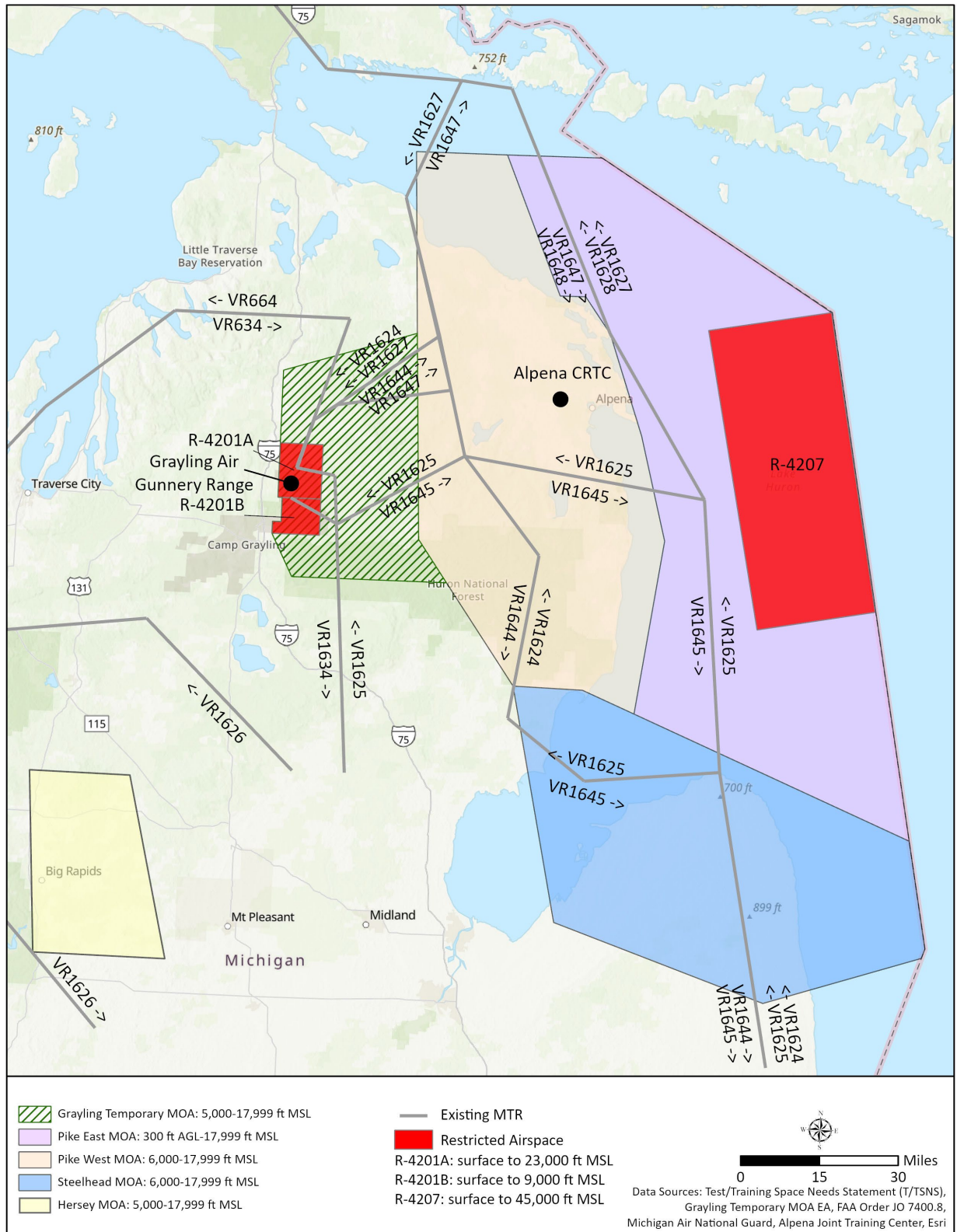
The Alpena CRTC provides premier support, facilities, instruction, and airspace to Department of Defense, Department of Homeland Security, Coalition, and emergency responders to meet mission requirements of Combatant Commanders and Civil Authorities.

#### Alpena CRTC Vision

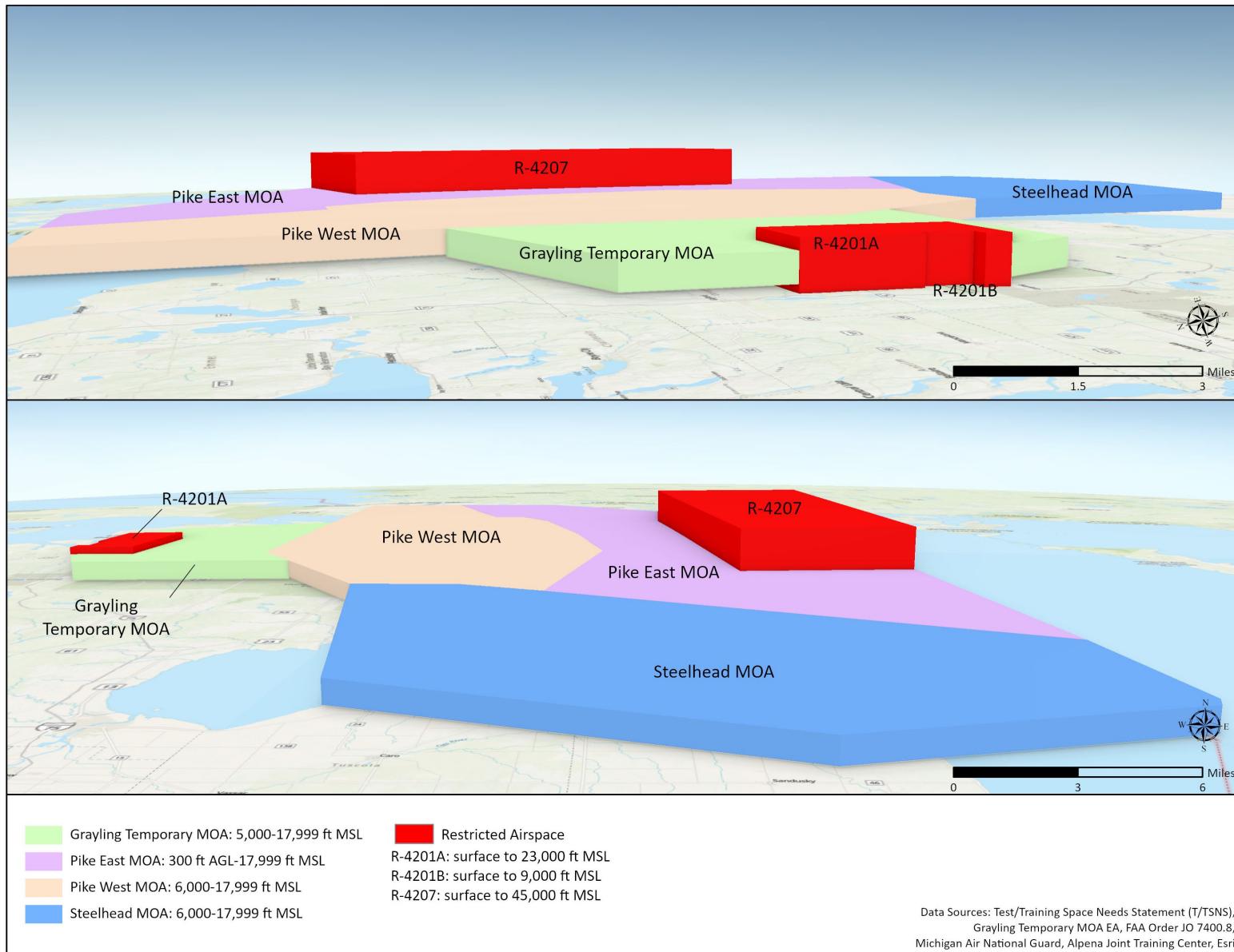
The Alpena CRTC aspires to be the premier Air National Guard training environment providing unparalleled mission support, facilities, and equipment to all who pass through our gates or airspace.

(Alpena CRTC, 2021)

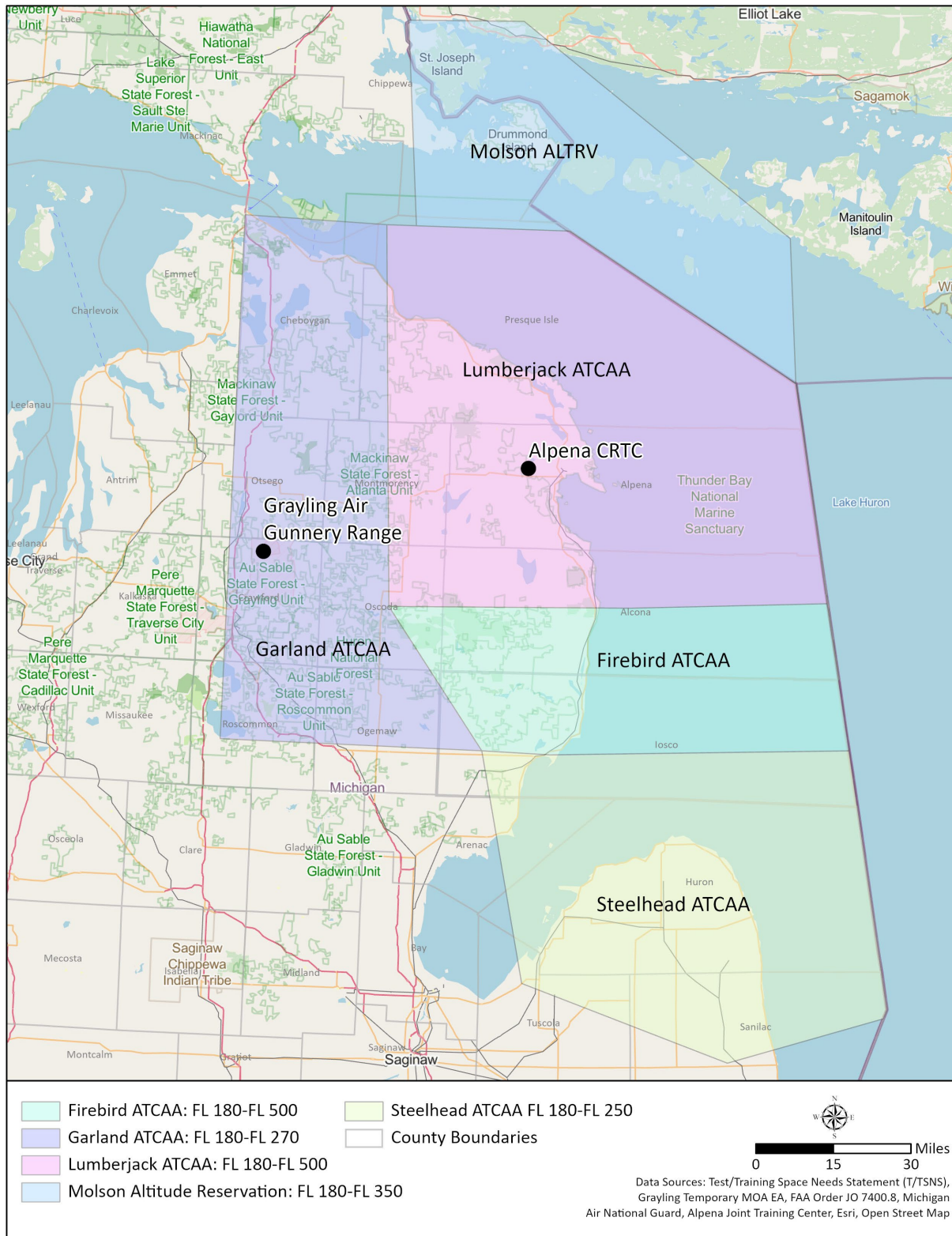
**Figure 1-1 Location of Alpena Combat Readiness Training Center and Extent of Existing Alpena SUA Complex**



**Figure 1-2 Three-Dimensional Renderings of Existing Alpena SUA Complex**



**Figure 1-3 Extent of Existing Air Traffic Control Assigned Airspace and Altitude Reservation Segments**



Note: A Letter of Agreement is under coordination that raises the ceilings for the Lumberjack and Firebird ATCAAs to Flight Level 500. This change is independent of the Proposed Action and considered part of the existing condition in this EA.

### Airspace Definitions Used in this Environmental Assessment

**Special Use Airspace—SUA**—consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. The types of SUA are **military operations areas (MOAs)**, **restricted areas (RAs)**, warning areas, prohibited areas, alert areas, controlled firing areas, and national security areas. This project involves MOAs and RAs.

**Military operations areas—MOAs**—are defined airspace areas established below 17,999 feet above mean sea level to segregate high-performance military aircraft conducting training activities from nonparticipating civil and military air traffic operating under **Instrument Flight Rules (IFR)**. Nonparticipating military and civilian aircraft flying under **Visual Flight Rules (VFR)** can operate in MOAs without approval from the military scheduling or controlling agency; however, extreme caution is advised when such aircraft transit active MOAs to ensure flight safety.

**Restricted areas—RAs**—typically overlie gunnery ranges. Nonparticipating aircraft are restricted from entering these areas because the activities taking place within them are considered hazardous to flight (for example, ordnance delivery or use of non-eye-safe lasers).

**Military training routes—MTRs**—are defined airspace established for low-altitude military flight training in excess of 250 knots. This project involves **VFR MTRs (VRs)** that are not flown under air traffic control.

**Air traffic control assigned areas—ATCAAs**—are defined airspace areas assigned by air traffic control to provide segregation between training activities conducted within the assigned airspace and nonparticipating IFR traffic. ATCAA altitudes are described in terms of Flight Level starting at 18,000 feet mean sea level, which is termed FL 180. No changes in ATCAAs are proposed with this project.

Figure 1-1 and Figure 1-2 show the existing Military Operations Areas (MOAs) within the Alpena SUA Complex and Restricted Areas (RAs) associated with the Grayling Air Gunnery Range (“Grayling Range”). The existing SUA charted below Class A airspace, which begins at 18,000 feet above mean sea level (MSL), includes Pike East MOA, Pike West MOA, and Steelhead MOA, as well as Hersey MOA to the south that can be used as a weather alternate. Existing SUA with an operational floor below 500 feet above ground level (AGL) includes R-4201A/B surrounding Grayling Range, and R-4207 and Pike East MOA over part of Lake Huron. Other than R-4201A/B, there is no overland SUA with an operational floor below 500 feet AGL in the Alpena SUA Complex; therefore, all current overland low-altitude training in the region is concentrated at this location.

Grayling Temporary MOA<sup>1</sup> is requested for annual activation during large force exercises (LFEs); as a temporary MOA, it is uncharted. In addition, the Alpena SUA Complex includes four air traffic control assigned airspace (ATCAA) segments (Lumberjack, Firebird, Steelhead, and Garland) and one altitude reservation (ALTRV) segment (Molson), as shown in Figure 1-3. These begin at 18,000 feet MSL, which is more commonly referred to as Flight Level (FL) 180, and rise to different altitudes, depending on the designated use. R-4201A/Grayling Range is the primary training range for the local units and visiting units that regularly access Alpena CRTC. Current military training routes (MTRs) within and adjacent to the Alpena SUA Complex are shown in Figure 1-1.

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<sup>1</sup> The EA for the establishment of the Grayling Temporary MOA (MIANG, 2019a) assessed the airspace floor at 5,000 feet MSL for the temporary MOA, and so this is the floor used in this EA. However, the floor of the Grayling Temporary MOA may vary year to year as required by the Air Route Traffic Control Center, which has restricted floors to higher than 5,000 feet MSL in recent years. Use of the Grayling Temporary MOA must be requested annually.

The 180th Fighter Wing (180 FW), flying F-16 aircraft out of Toledo Air National Guard Base (ANGB), and the 127th Wing (127 WG), flying A-10C and KC-135 tankers out of Selfridge ANGB, use the Alpena SUA Complex and Grayling Range on a regular basis. In addition, Alpena CRTC hosts multiple air-to-air and air-to-ground LFEs each year, with aircraft and ground support elements participating from multiple Services across the United States and allied nations. Scheduled aircraft include fighters, bombers, tankers, tactical airlift, strategic airlift, command and control platforms, helicopters, and unmanned aircraft systems. The primary users would conduct exercises with A-10 and F-16 aircraft. The NGB seeks to modify airspace and training infrastructure to meet the current and evolving training needs of the hosting, visiting, or deployed units that use the Alpena SUA Complex and Grayling Range.

The Alpena SUA was originally created over 50 years ago to accomplish warfighter training during the Korean and Vietnam War eras. The current airspace is too small for twenty-first century tactics. In late 2018, the NGB initiated preparation of an EA for modifying airspace. As of December 2019, that EA was put on hold due to coordination and planning associated with changes in the sizes and shapes of proposed airspaces. This EA carries forward a similar but updated purpose, need, and Proposed Action (see Section 2.1).

## 1.2 Purpose

The purpose of the Proposed Action is to amend and establish Alpena CRTC's SUA supporting military readiness requirements that would contribute to the overall provision of an integrated, year-round, realistic training environment. The proposed modifications and additions to the Alpena SUA Complex are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure.

## 1.3 Need

The Director of the ANG has approved a plan to transform Alpena CRTC into the ANG's Close Air Support Center of Excellence. To meet this emerging restructuring, the airspace must be of sufficient, contiguous size and altitude to accommodate Low Altitude Step Down Training (LASDT) and Low Altitude Air-to-Air Training (LOWAT) tactics and standoff weapons employment, and to support ANG Instruction 10-110. The Alpena CRTC airspace must also be capable of satisfying the training requirements of fifth-generation fighters, such as the F-22 and F-35, as these assets are programmed for employment by the DAF.

Specific readiness requirements associated with modifications and additions to the Alpena SUA Complex are discussed in the following paragraphs. Refer to Section 2.1 for information detailing the Proposed Action, including airspace figures showing locations.

### Reference Guidance

Mission Design Series guidance is aircraft specific. Relevant references include the following:

- Air Force Manual 11-2F-16, Volume 1
- Air Force Manual 11-2A-10C, Volume 3
- Air Force Instruction 3-1.A10
- Air Force Technical Training Publication 3-1 (addressing F-16 training requirements)

Overarching regulatory guidance is also applicable, including the following:

- Air Operations Rules and Procedures (Air Force Instruction 11-214)
- Flight Operations (Air Force Manual 11-202, Volume 3)



**Proposed Grayling East/West MOAs.** R-4201A is 64 square nautical miles, and R-4201B is 42 square nautical miles. Even combined, they are too small for modern combat tactics. There is currently a 15 nautical mile gap between R-4201 and the closest permanent SUA, Pike West MOA. The Grayling MOAs would allow aircraft to initiate training maneuvers from within a SUA at tactically sound altitudes, and transition into R-4201A/B safely, to fully accomplish their training maneuvers without a false interruption. The Grayling MOAs would be used in conjunction with R-4201, Pike West MOA, Pike East MOA, Steelhead MOA, and overtopping ATCAAs to approximate the SUA volume requirements for complex missions.

The Grayling Temporary MOA has been an integral part of Alpena CRTC's annual exercises such as Northern Strike, Agile Rage, and Mobility Guardian. The Grayling Temporary MOA has been in use for the past ten years with no significant impact on nonparticipating users of the National Airspace System (NAS) or on local communities underneath the charted airspace. Alpena CRTC actively maintains a noise complaint hotline for community members. Recommendations from a Joint Land Use Study were also implemented two years ago that have helped to mitigate noise complaints. The need for the Grayling Temporary MOA would continue on a regular and continuing basis into the future, so it is appropriate to consider permanently charting it, per FAA JO 7400.2P, paragraph 25-1-7.b.

**R-4201B Modifications.** R-4201B has a ceiling of 9,000 feet MSL, while R-4201A has a ceiling of 23,000 feet MSL that is contiguous with the overtopping Garland ATCAA. This leaves a gap of airspace above 9,000 feet MSL over the top of R-4201B that is unavailable for military training, affecting approximately half of all sorties to Grayling Range. The "shelf" effect of the current configuration greatly detracts from realistic training by diverting aircrew focus to remaining within an artificially small volume of airspace. Closing this gap of airspace by raising the ceiling of R-4201B to 23,000 feet MSL would accommodate longer standoff distances while using the combat laser of advanced targeting pods. It would also accommodate longer release ranges of actual training ordnance, in keeping with current Precision Guided Munitions tactics, which generally occur high above 9,000 feet MSL. Laser and weapons employment, which are inherently hazardous activities, require restricted airspace and cannot be accommodated within MOA airspace.

#### Special Use Airspace Volume Requirements

Minimum airspace requirements for the F-16 to conduct Defensive Counter Air missions are laterally 50 nautical miles by 100 nautical miles at altitudes from 500 feet above ground level to Flight Level 500.

Fifth generation fighters that use the Alpena Complex have similar airspace volume requirements.

#### Standoff Tactics Requirements

Most combat aircraft that use Grayling Range carry Advanced Targeting Pod systems for Air-to-Ground Precision Guided Munition deliveries. The large standoff ranges of Precision Guided Munitions fielded in the 1980s–1990s and more recently, and technological capabilities of targeting pods require employment starting from distances that exceed the restricted area boundaries of Grayling Range. This requires a MOA surrounding Grayling Range to contain the non-hazardous portion of the target acquisition and weapons delivery.

Grayling Range has the only Precision Guided Munitions impact area with the ability to drop both Laser Guided Bombs and Joint-Direct Attack Munitions within 250 nautical miles of Alpena CRTC.

**Proposed Steelhead Low North/South/East MOAs.** The Steelhead Low North, South, and East MOAs are needed to create low-altitude training airspace closer to Selfridge ANGB and Toledo ANGB. The Steelhead Low MOAs would be 100 nautical miles closer to both bases than the Grayling Range. The Steelhead Low MOAs would be used both in conjunction with other proposed airspace and individually during less complex missions. In addition, low MOAs are essential for effective training when escorting rescue vehicles to conduct search operations.

**Steelhead, Pike West, and Pike East MOAs Modifications.** A 2012 redesign of the Alpena SUA Complex ATCAAs resulted in the Steelhead ATCAA northern border moving north, breaking integrity with the Steelhead MOA northern border. It was moved to accommodate new high-altitude routes over the top of the ATCAA and to preserve the higher altitude Firebird ATCAA to the north of the Steelhead ATCAA. High-low border disconnects have caused aircrew confusion and distraction from primary training objectives. Adjusting lateral MOA boundaries internal to the Alpena SUA Complex to better align with ATCAA boundaries above would fix this disconnect.

#### Low-Altitude Training Requirements

Both the 180 FW and 127 WG, as well as most flying units deploying to the Alpena CRTC, have a Ready Aircrew Program requirement for Low Altitude Step Down Training and Low Altitude Air-to-Air Training. Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL.

The only current “low” airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions prohibit overwater flights.

**Proposed VR-1601/VR-1602 (reciprocal).** Both the 180 FW and 127 WG, as well as most flying units deploying to the Alpena CRTC, have a Ready Aircrew Program requirement for LOWAT and LASDT. Both types of training must occur below 5,000 feet AGL. R-4201A is the primary training range for the units listed above, and for visiting units at Alpena CRTC. There are currently eight MTRs that access R-4201A/Grayling Range from the Alpena CRTC. Four of these routes are reciprocal (i.e., it is the same route flown in the opposite direction); therefore, there are only four options to fly into R-4201A/Grayling Range. During Exercise Northern Strike and the National Guard summer training cycle, there is an increase in the amount of military helicopter traffic between Alpena CRTC and Camp Grayling on approved Army routes to both the north and south of R-4201A. This, in effect, turns off the MTR option for fixed-wing aircraft to ingress and egress the range at low altitudes during the prime training months of July and August. The proposed MTRs—both Visual Flight Rules (VFR) MTRs, or VRs, designated as VR-1601 (to Grayling Range from Alpena CRTC) and VR-1602 (reciprocal, to Alpena CRTC from Grayling Range)—would allow for military deconfliction between fixed-wing and rotary-wing aircraft during LFEs.

## 1.4 Project Objectives

To optimize airspace and meet the current ANG training requirements, the Proposed Action must achieve the following objectives for SUAs:

- provide a variety of low-altitude, overland SUA to accommodate restrictive weather variations and cloud cover interference

- provide connecting airspace from the existing SUA complex to the Grayling Range Restricted Airspace for safe training continuity
- provide useful, appropriately sized low-altitude airspace closer than the Grayling Range, which would decrease in-flight time and fuel usage

## 1.5 Laws, Regulations, and Executive Orders

NEPA (42 United States Code [USC] 4321 et seq.) is a federal statute requiring the identification and analysis of potential environmental impacts associated with proposed federal actions before action is taken. The CEQ, which was established under NEPA, is charged with developing and implementing regulations and ensuring federal agency compliance with NEPA. The process for implementing NEPA is codified in Title 40 CFR Parts 1500–1508, as revised in July 2020 and April 2022.

The EIAP is the DAF implementing regulations for conducting environmental analyses, as promulgated at 32 CFR 989. To comply with NEPA, CEQ regulations and the EIAP are used together. The NGB is the decision maker in this EA, but the FAA has final authority for approving or denying any proposal to modify, expand, or establish SUA and MTRs. Therefore, the EA must also be consistent with FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA JO 7400.2P, Procedures for Handling Airspace Matters.

The full suite of applicable environmental laws, regulations, and executive orders is included in Appendix A (refer to Table A-1 and Table A-2).

## 1.6 Lead and Cooperating Agencies

The NGB is the lead agency for this EA pursuant to 40 CFR 1501.7. Since the Proposed Action includes activities associated with SUA, the FAA is a cooperating agency in accordance with the guidelines described in the Memorandum of Understanding between the FAA and the DOD concerning SUA Environmental Actions, dated October 17, 2019 (FAA JO 7400.2P, Appendix 7, FAA/DOD Memorandum of Understanding).

## 1.7 Intergovernmental Coordination, Public and Agency Participation

The environmental analysis process, in compliance with NEPA, includes public and agency review of information pertinent to the Proposed Action and alternatives. Scoping is an early and open process for developing the breadth of potential issues to be addressed in an EA and for identifying significant concerns related to an action. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs* (as amended by Executive Order 12416), federal, state, and local agencies with jurisdiction that could potentially be affected by the Proposed Action and alternatives will be notified during the development of this EA. The intergovernmental scoping points of contact and responses are included in Appendix B. Implementation of the Proposed Action, or an alternative, would involve coordination with several federal and state agencies. During early coordination, the NGB notified relevant federal, state, and local agencies on June 17, 2021, and provided at least 30 days to identify any potential environmental concerns regarding the specific Proposed Action. Responses were received from the Nottawaseppi Huron Band of the Potawatomi (June 24, 2021), Michigan Department of Natural Resources (MDNR; July 15, 2021), the

Aircraft Owners and Pilots Association (July 22, 2021), and U.S. Representative Jack Bergman (July 30, 2021).

Early coordination correspondences from the Michigan State Historic Preservation Officer (SHPO; August 27, 2021) and U.S. Fish and Wildlife Service (USFWS; September 27, 2021) are also in Appendix B. Appendix C contains Coastal Zone Management Act coordination with Michigan Department of Environment, Great Lakes, and Energy (EGLE); Appendix D contains USFWS coordination; and Appendix E contains Section 106 consultation with the SHPO, pursuant to the National Historic Preservation Act (NHPA).

The NGB sent early coordination letters via certified mail to the Chairperson and applicable Tribal Historic Preservation Officer or Cultural Preservation Specialist for federally recognized Tribes in the project area on June 17, 2021 (see list and letters in Appendix B). The NGB also sent Section 106 consultation letters to federally recognized Tribes on November 15, 2022. The Miami Tribe of Oklahoma and the Chippewa Ottawa Resource Authority (CORA), which is a Treaty Organization that represents the Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians, and the Sault Ste. Marie Tribe of Chippewa Indians, requested to consult. The NGB held four Tribal consultation meetings in June 2023 to engage all federally recognized Tribes that have interest or concern regarding this Proposed Action. Sixteen federally recognized Tribes and one Treaty Organization (CORA) were invited to participate, and representatives from nine Tribes and the Treaty Organization attended at least one of the meetings. All correspondence letters with Tribes and CORA and a Memorandum for Record of the Tribal consultation meetings are included in Appendix F.

Pursuant to 40 CFR 1501.6(a)(2) and 32 CFR 989.15(e)(2)(v), the Draft EA and unsigned FONSI were made available on November 15, 2022 for public review initially for 30 days. The review period was extended by an additional 30 days. Notices of Availability for the public review of the Draft EA were published in the following newspapers:

- *The Alpena News*
- *Huron Daily Tribune*
- *Crawford County Avalanche*
- *Gaylord Herald Times*

The Draft EA and unsigned FONSI were made available and distributed upon request to federal, state, and local agencies; federally recognized Tribes; and other interested parties to invite public participation. The Draft EA and unsigned FONSI were available electronically at <https://www.alpenacrtc.ang.af.mil/>, and in hardcopy at the following libraries:

- Alpena County George N. Fletcher Public Library
- Devereaux Memorial Library (Main Branch, Crawford County Library)
- Rogers City Library (Presque Isle District Library)
- Atlanta Branch – Headquarters (Montmorency County Public Libraries)
- Hillman-Wright Branch (Montmorency County Public Libraries)
- Robert J. Parks Library (Oscoda Township Public Library)
- Bad Axe Area District Library

- Port Austin Township Library
- Harbor Beach Public Library
- Sebewaing Township Library
- Harrisville Branch (Alcona County Library Headquarters)
- Tawas City Library
- Otsego County Main Library

Draft EA materials, including newspaper affidavits, mailing lists, and letters are included in Appendix G.

The NGB received approximately 400 comments over the extended review period (November 15, 2022–January 14, 2023). Agencies, organizations, and interest groups that commented include the MDNR (December 5, 2022), Lovells Township (December 13, 2022), Sanilac County Board of Commissioners (December 13, 2022), Aircraft Owners and Pilots Association (January 13, 2023), U.S. Environmental Protection Agency (USEPA; January 13, 2023), Sierra Club Michigan Chapter (January 13, 2023), Anglers of the Au Sable (January 13 & 14, 2023), and Thumb Land Conservancy (January 14, 2023). All public and agency comments received are included in full in Appendix G. Appendix H contains responses to substantive comments.

### **1.8 Resources Carried Forward for Detailed Analysis**

After preliminary analyses of potential resource issues, as prescribed by FAA Order 1050.1F and other NGB pre-EIAP (often called “PREIAP”) requirements, the following resource areas will be carried forward for further analysis in the EA due to the potential for reasonably foreseeable effects: airspace management, safety, air quality, noise, land use, water resources including coastal resources, biological resources, cultural resources, and socioeconomics and environmental justice.

As this is a streamlined EA consistent with CEQ’s regulations to limit overall pages (40 CFR 1501.5(f) and 40 CFR 1508(v)), information about how resources were initially considered and supporting documentation for why resources were eliminated from detailed evaluation are in Appendix A (i.e., Section 4(f) of the Department of Transportation Act, geological resources, infrastructure and transportation, visual resources, and hazardous materials and wastes).

## Chapter 2. Description of the Proposed Action and Alternatives

### 2.1 Proposed Action (Alternative A): Alpena Airspace Modification and Addition

To optimize airspace and address training limitations presented by the existing configuration of the Alpena SUA Complex, the NGB proposes to modify and expand the existing airspace complex (see also the discussion on the range of reasonable alternatives considered in Section 2.5). The Proposed Action would include the following:

- establish five new MOAs (Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East)
- discontinue the annual request for the Grayling Temporary MOA
- modify the internal lateral boundaries of three existing MOAs (Pike East, Pike West, and Steelhead)
- return the Hersey MOA to the NAS
- raise the vertical ceiling of R-4201B
- establish two new MTRs (VR-1601 and VR-1602)

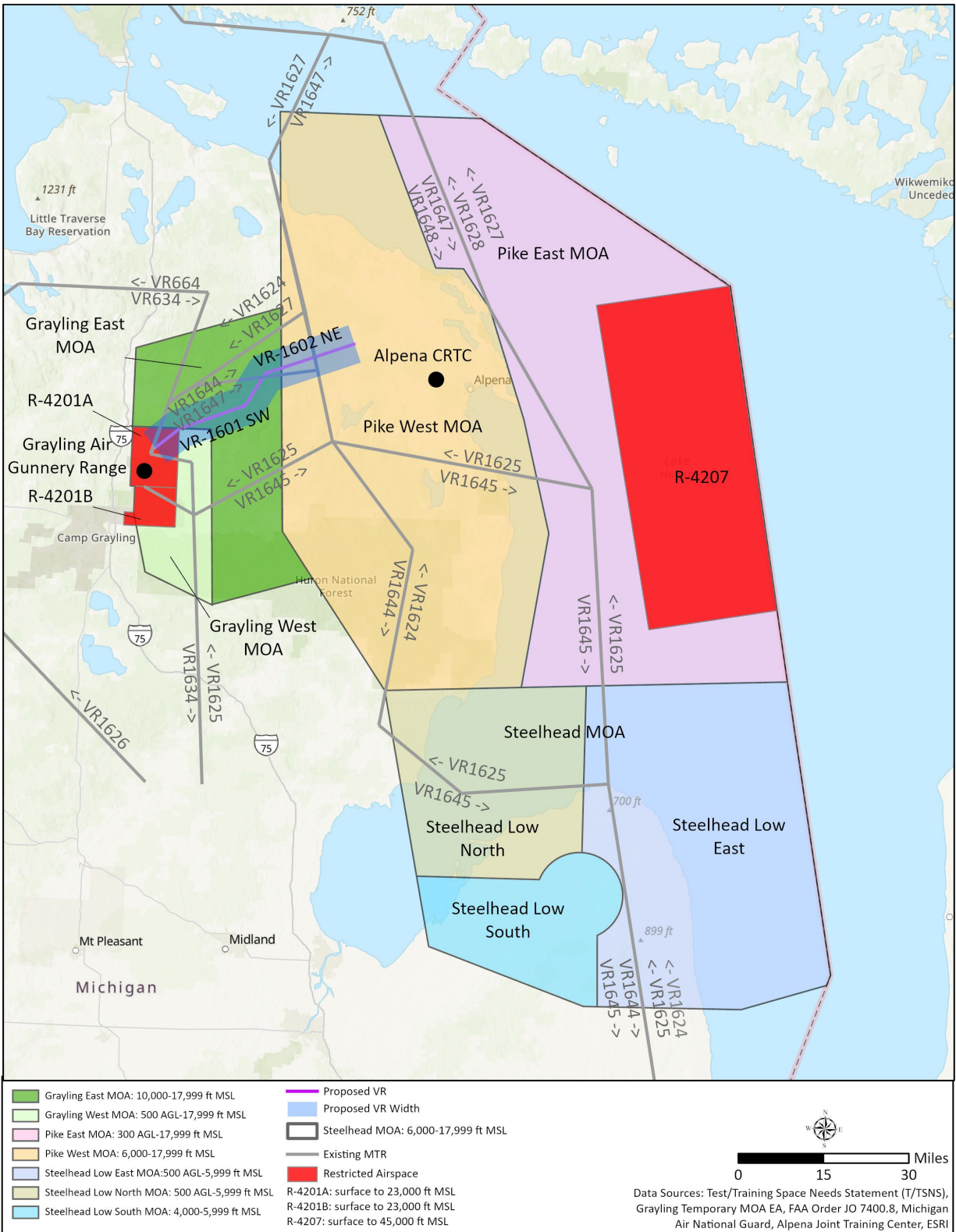
Numerous DOD Services would use the proposed airspace improvements; however, the 180 FW out of Toledo ANGB and 127 WG out of Selfridge ANGB would continue to routinely use the airspace complex. The Proposed Action would not include any near-term changes to the existing fleet mix of aircraft or scheduling of Alpena CRTC; any such changes in aircraft or scheduling would be addressed in separate environmental documentation. No construction or ground-disturbing activities are proposed as part of this action.

The following measures would be incorporated into the Proposed Action upon implementation. These measures were developed through previous environmental scoping and review efforts to reduce potential impacts:

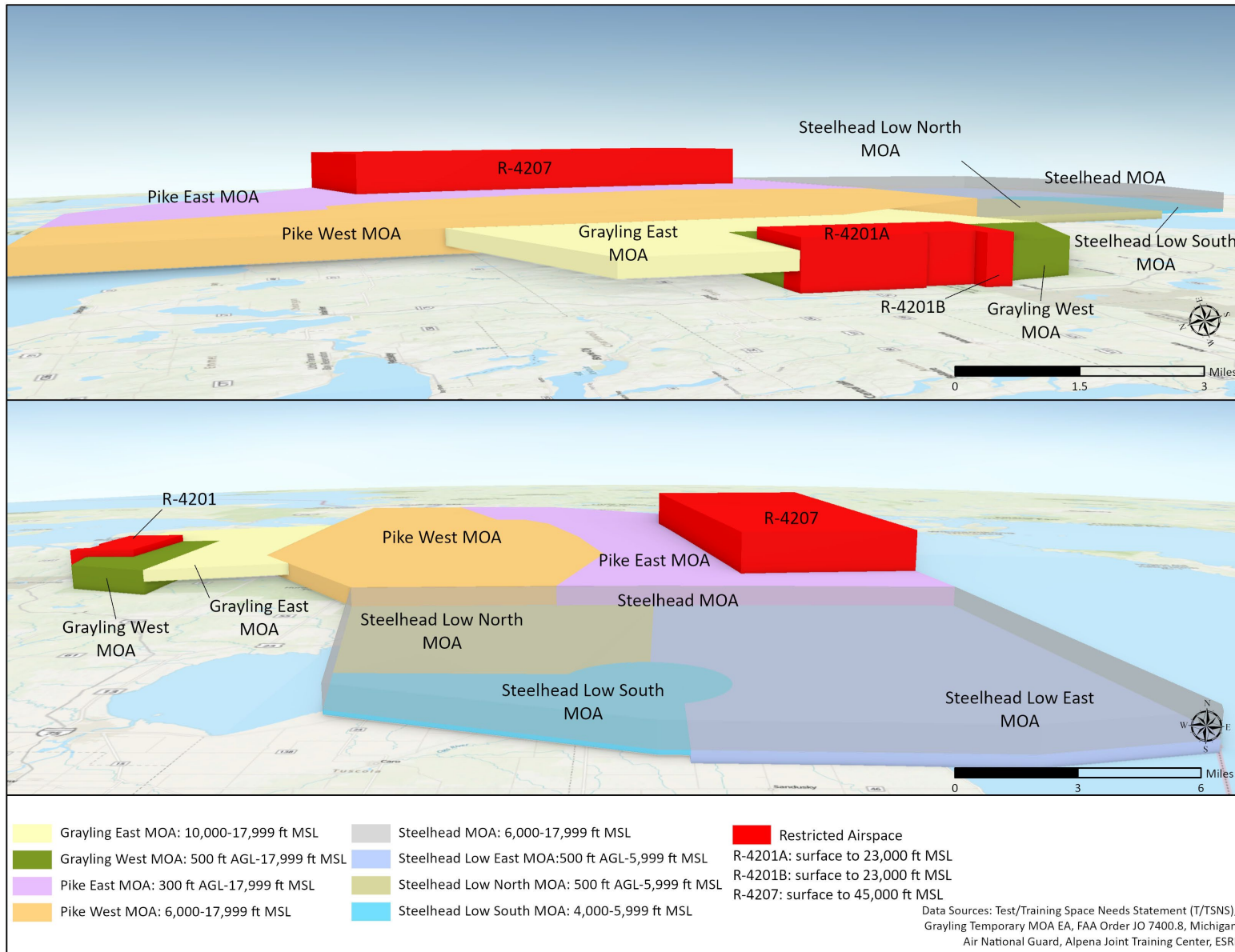
- In the Steelhead Low MOAs, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15.
- No F-35 aircraft would be allowed in the Steelhead Low North, South, and East MOAs. This measure was added in response to early public scoping efforts.
- The shape and altitude of the Steelhead Low South MOA has been designed to enable civil flight operations around Huron County Memorial Airport without entering military airspace.
- The airspace legal description requirement would include that the airspace must be activated by Notice to Air Missions (NOTAM) at least four hours in advance.
- The MIANG would enter into a Letter of Agreement (LOA) with Minneapolis Center and Cleveland Center to establish procedures for real-time separation and use of the airspace to allow civilian Instrument Flight Rules (IFR) aircraft access through the MOAs.

The affected airspace areas associated with this Proposed Action are shown in Figure 2-1, with three-dimensional renderings shown in Figure 2-2. The individual descriptions for each of this project's parts are discussed in more detail in the following subsections. Further specific details of proposed charted airspace descriptions are included in Appendix I.

**Figure 2-1 Proposed Modifications to Alpena SUA Complex**



**Figure 2-2 Three-Dimensional Renderings of Proposed Modifications to Alpena SUA Complex**





### 2.1.1 Military Operations Areas

Operational activities would consist of typical MOA flight operations, to include tactical combat maneuvering by fixed-wing and rotary-wing aircraft involving abrupt, unpredictable changes in altitude, and direction of flight. Other operational activities may include non-standard formation flights, close air support, electronic attack, and chaff and flare deployment (see Section 2.1.4 and Appendix J). There would be no supersonic flight activities, no weapons firing, and no ordnance deployment within the MOAs. The primary users would conduct exercises with A-10 and F-16 aircraft. Transient users would conduct exercises with a wide variety of military and fixed-wing aircraft and rotorcraft.

#### **Discontinue Annual Request for Grayling Temporary MOA**

The Grayling Temporary MOA has designated altitudes of 5,000 feet MSL to 17,999 feet MSL and a total area of 868 square nautical miles. As a temporary MOA, training normally occurs for only two weeks per year. With the implementation of the Grayling West MOA and Grayling East MOA, the request for the Grayling Temporary MOA would discontinue. The training objectives for exercises that are currently being met in the Grayling Temporary MOA would be fulfilled using the Grayling West and East MOAs.

#### **Establishment of Grayling West MOA**

The Grayling West MOA (282 square nautical miles; 374 square miles) would be established around the eastern and southern boundaries of R-4201A/B, sharing the western Grayling Range boundary to accommodate IFR traffic transiting west of the airspace. Details of the proposed Grayling West MOA are shown in Table 2-1.

#### **Establishment of Grayling East MOA**

The Grayling East MOA (635 square nautical miles; 841 square miles) would be established north and east of the proposed Grayling West MOA boundaries and adjoining the western boundary of the Pike West MOA. Details of the proposed Grayling East MOA are shown in Table 2-1.

**Table 2-1 Proposed Details of the Grayling West and East MOAs**

Component	Grayling West MOA	Grayling East MOA
Designated Altitudes	500 feet AGL to 17,999 feet MSL	10,000 feet MSL to 17,999 feet MSL
Times of Use	By NOTAM 4 hours in advance	By NOTAM 4 hours in advance
Area	282 square nautical miles	635 square nautical miles

Key: AGL = above ground level; MOA = Military Operations Area; MSL = mean sea level; NOTAM = Notice to Air Missions.

#### **Modification of Steelhead MOA**

The Steelhead MOA would be modified so that the northern border would align to the Firebird/Steelhead ATCAA and the realigned Pike East and Pike West MOA southern boundaries. In addition, the southern tip of the Steelhead MOA would be truncated to align with the Steelhead ATCAA. No new SUA would be created laterally or vertically in this airspace region; only internal lateral boundaries would change (see Appendix I).

### **Establishment of Steelhead Low North MOA**

The Steelhead Low North MOA would be created from the area removed from the southern end of Pike East MOA below 6,000 feet MSL, with its northern border aligned to the Firebird/Steelhead ATCAA and the new Pike East MOA southern boundary. Additional Steelhead Low North SUA airspace would be created under the existing Steelhead MOA. Proposed details are shown in Table 2-2. The proposed Steelhead Low North MOA would include the following exclusions, which are incorporated to reduce potential impacts:

- No F-35 aircraft would be allowed in this MOA.
- Participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline seasonally only between May 15 and September 15 (see Figure 2-3).

### **Establishment of Steelhead Low East MOA**

The Steelhead Low East MOA would be created from the area removed from the southern end of Pike East MOA below 6,000 feet MSL, with its northern border aligned to the Firebird/Steelhead ATCAA and the realigned Pike East MOA southern boundary. Additional Steelhead Low East SUA airspace would be created under the existing Steelhead MOA. Proposed details are shown in Table 2-2. The proposed Steelhead Low East MOA would include the following exclusions, which are incorporated to reduce potential impacts:

- No F-35 aircraft would be allowed in this MOA.
- Participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline seasonally only between May 15 and September 15 (see Figure 2-3).

### **Establishment of Steelhead Low South MOA**

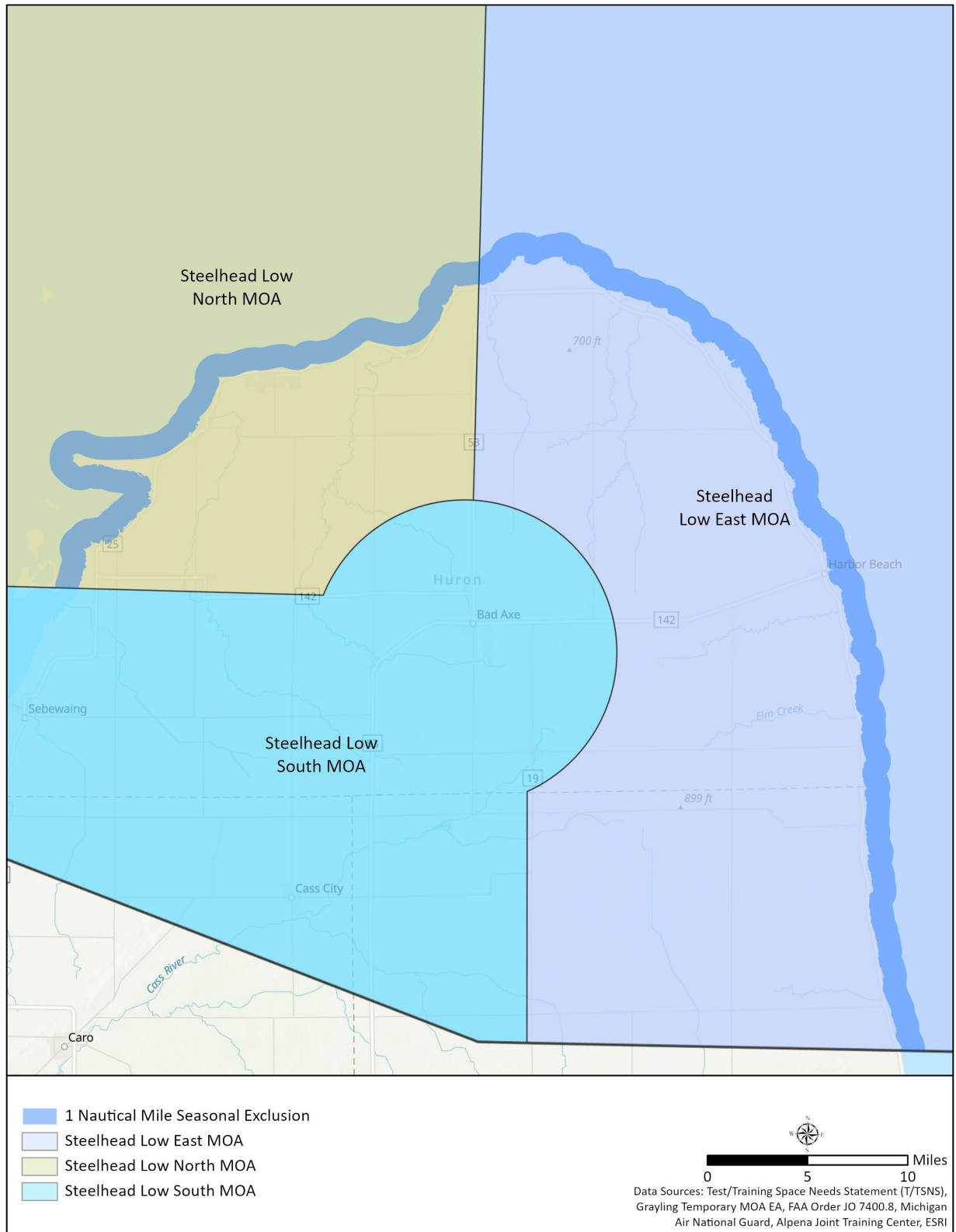
The Steelhead Low South MOA would be created under the existing Steelhead MOA. Proposed details are shown in Table 2-2. The shape and altitude of Steelhead Low South MOA were designed to enable civil flight operations around Huron County Memorial Airport without entering military airspace. The proposed Steelhead Low South MOA would also exclude F-35 aircraft.

**Table 2-2 Proposed Details of the Steelhead Low North, South, and East MOAs**

Component	Steelhead Low North MOA	Steelhead Low South MOA	Steelhead Low East MOA
Designated Altitudes	500 feet AGL to 5,999 feet MSL	4,000 feet MSL to 5,999 feet MSL	500 feet AGL to 5,999 feet MSL
Times of Use	By NOTAM 4 hours in advance\	By NOTAM 4 hours in advance	By NOTAM 4 hours in advance
Area	794 square nautical miles	458 square nautical miles	1,623 square nautical miles

Key: AGL = above ground level; MOA = Military Operations Area; MSL = mean sea level; NOTAM = Notice to Air Missions.

**Figure 2-3 Steelhead Low North and East MOAs Seasonal Exclusions**



### **Modification of Pike West MOA**

The southern border would be straightened, aligned with ATCAA boundaries above, and shifted slightly north in accordance with the Steelhead MOA. No new SUA would be created laterally or vertically in this airspace; only internal lateral boundaries would change (see Appendix I).

### **Modification of Pike East MOA**

The southern border would be straightened, aligned with ATCAA boundaries above, and shifted north in accordance with the Steelhead Low North and Steelhead Low East MOAs. No new SUA would be created laterally or vertically in this airspace; only internal lateral boundaries would change (see Appendix I).

### **Return Hersey MOA to NAS**

The Hersey MOA has designated altitudes of 5,000 feet MSL to 17,999 feet MSL and a total area of 578 square nautical miles. The Hersey MOA, located west of the Steelhead MOA, would be returned to the NAS under the Proposed Action. The Hersey MOA is farther away from the other MOAs in the Alpena SUA Complex and is only used as an alternative when the weather to the north and east of the Hersey MOA is unfavorable. The Hersey MOA is not well suited for current tactics, techniques, or procedures and does not function well as a weather alternate.

#### **2.1.2 Restricted Areas**

The R-4201B airspace ceiling would be raised from 9,000 feet MSL to 23,000 feet MSL, matching that of R-4201A. No lateral changes are proposed.

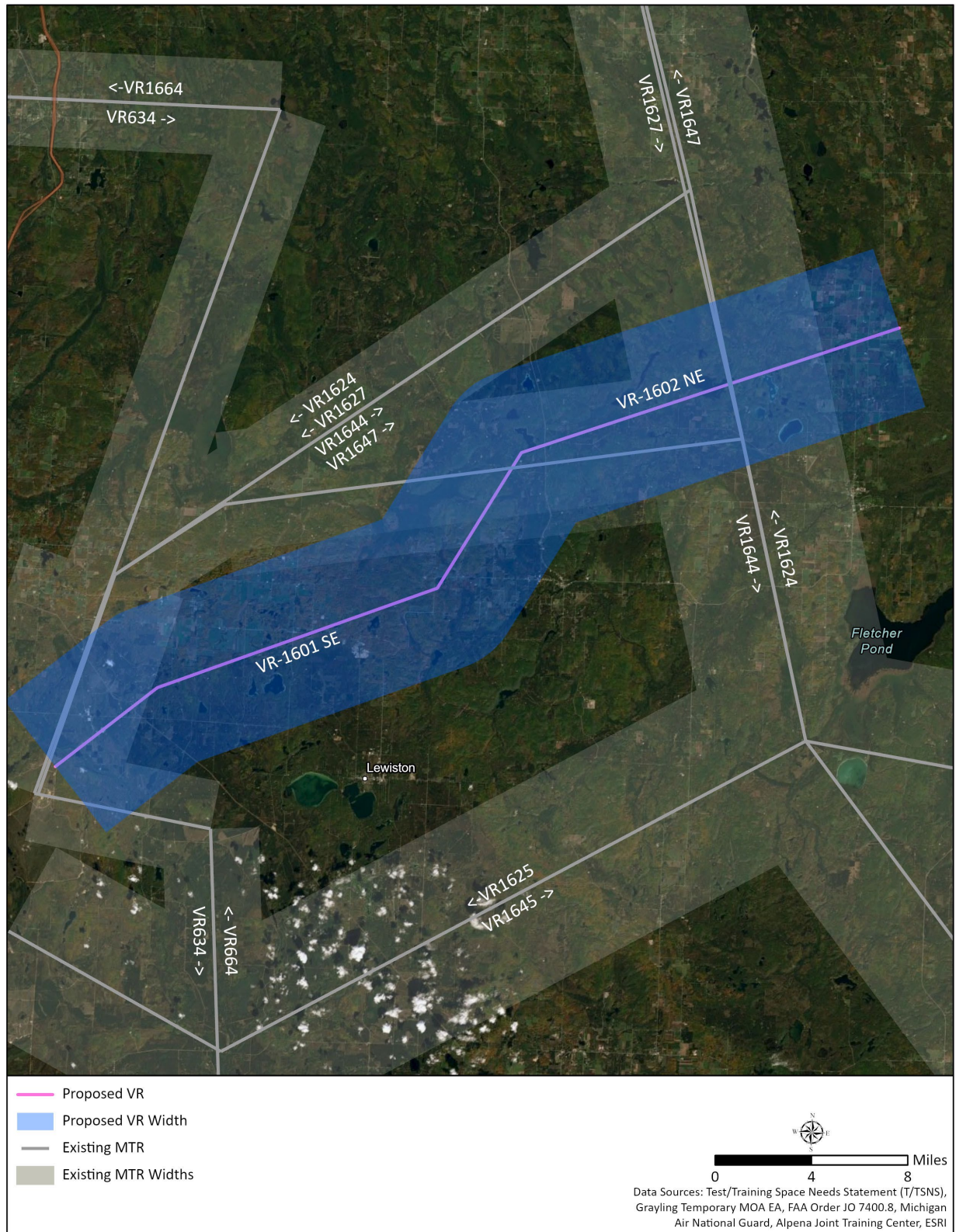
#### **2.1.3 Military Training Routes**

As shown in Figure 1-1, numerous VRs are within and adjacent to the Alpena SUA, including VRs 634, 664, 1624, 1625, 1626, 1627, 1628, 1644, 1645, 1647, and 1648. The existing MTRs are located throughout the Alpena SUA Complex, with a higher concentration below the Grayling Temporary MOA adjacent to R-4201A/B. Eight of these existing MTRs are used to fly between R-4201A/Grayling Range and Alpena CRTC. However, four of these routes are reciprocal, which leaves four options between these two locations. Under the Proposed Action, two MTRs, one from Alpena CRTC towards Grayling Range, and a reciprocal route, would be established. These MTRs would be VRs—VR-1601 and VR-1602 (reciprocal)—on a fairly direct route from ten nautical miles west of Alpena CRTC southwest towards Grayling Range (shown on Figure 2-4). Each VR would be approximately four equal legs covering 36 nautical miles, charted at 300 feet to 1,500 feet AGL, three nautical miles on either side of the centerline. Under the Proposed Action, the existing MTRs would be located throughout the Alpena SUA Complex but would be concentrated within or below the proposed Grayling East and West MOAs. Hours of operation would be 0800–1630, Monday–Friday. Black Talon (i.e., the Alpena CRTC Operations) schedules and deconflicts all MTRs located within Michigan.

#### **2.1.4 Sorties, Weapons, and Chaff and Flare Use**

A summary of the existing and proposed sorties and annual hours within the MOAs, R-4201, and VRs are shown in Table 2-3. The sortie numbers and hours were obtained from Alpena CRTC, Selfridge ANGB, and Toledo ANGB and represent an average over a year (MIANG & OHANG, 2021).

**Figure 2-4 Proposed Military Training Routes**



**Table 2-3 Summary of Existing and Proposed Annual Sorties within the Alpena SUA Complex**

Airspace	Baseline Sorties	Baseline Hours	Proposed Sorties	Proposed Hours
Grayling West MOA	0	0	1,603	432
Grayling East MOA	0	0	1,528	265
Steelhead MOA	1,413	1,227	1,640	890
Steelhead Low North MOA	0	0	1,020	138
Steelhead Low South MOA	0	0	1,020	187
Steelhead Low East MOA	0	0	1,020	388
Pike West MOA	690	702	914	859
Pike East MOA	308	788	478	882
Hersey MOA	2	2	0	0
R-4201A	1,790	849	1,750	650
R-4201B	316	20	1,640	141
Grayling Temporary MOA	309	68	0	0
VR-1601 and VR-1602	0	0	234	52

(MIANG & OHANG, 2021)

Note: The sorties are not additive across airspace because the same aircraft sortie may affect more than one altitude block.

Key: MOA = Military Operations Area; R = Restricted Area; VR = Visual Flight Rules Military Training Route.

Some of the sorties would be conducted using multiple SUA together, such as Grayling West MOA and R-4201. The number of flying days in the SUA varies between 13 to 24 days per month, with a higher number of flying days at R-4201 and Steelhead MOA (22 to 24 days) and fewer flying days at the Pike MOAs. Detailed baseline and proposed aircraft mix, sorties, time in airspace per sorties, and annual hours of usage are summarized by airspace in Table 2-4 through Table 2-16.

Overall, the existing Alpena SUA Complex has a total area of 11,049 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 13,344 square nautical miles (which includes all the MOAs and RAs but not the ATCAAs or MTRs; see also Appendix I). This provides an additional 2,295 square nautical miles of SUA below 17,999 feet MSL for training under the Proposed Action.

Air-to-ground weapon expenditures occur only in RAs; in the Alpena SUA Complex these expenditures regularly occur in R-4201. There are numerous targets and inert weapons that are used for training on an annual basis. The increase in sorties at R-4201B would not result in a corresponding increase in air-to-ground weapons expenditures as no additional expenditures would occur in R-4201B under the Proposed Action.

Chaff and flare are currently being used in all the MOAs and RAs within the Alpena SUA Complex. Under the Proposed Action, the number of expenditures would increase by approximately 1,000 chaff expenditures and 1,500 flare expenditures per year across the Alpena SUA Complex, as shown in Table 2-17 and Appendix J. Although the usage would occur across all the MOAs and RAs, there is generally higher usage in R-4201A/B and Pike West MOA. The altitudes that aircraft release the chaff and flare vary. Within MOAs, the minimum altitude of chaff/flare release would be no less than 2,000 feet AGL. Camp Grayling's Range Control Office manages the airspace for R-4201A/B. Therefore, within the RAs, the deployment of defense countermeasure would comply with all applicable policies and procedures over government land. If fire hazard conditions are present, deployments would occur no lower than 2,000 feet AGL within R-4201A/B.

**Table 2-4 Proposed Annual Sorties and Time in New Grayling West MOA**

Aircraft	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	55	20	75	30	37.5
A-10	1,190	0	1,190	10	198.3
F-16	50	30	80	30	40.0
F-16	13	5	18	5	1.5
B-2	5	0	5	30	2.5
B-52H	30	10	40	60	40.0
AV-8B	35	10	45	25	18.8
C-17	5	0	5	15	1.3
C-130	50	0	50	15	12.5
EA-18G	5	0	5	25	2.1
MC-12	0	5	5	60	5.0
MH-60	50	0	50	45	37.5
CH-47	25	0	25	60	25.0
AC-130	5	5	10	60	10.0
<b>Total</b>	<b>1,518</b>	<b>85</b>	<b>1,603</b>	<b>—</b>	<b>432</b>

(MIANG &amp; OHANG, 2021)

Note: A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.  
Key: MOA = Military Operations Area.

**Table 2-5 Proposed Annual Sorties and Time in New Grayling East MOA**

Aircraft	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	55	20	75	30	37.5
A-10	1,190	0	1,190	5	99.2
F-16	50	30	80	30	40.0
F-16	13	5	18	5	1.5
B-2	5	0	5	30	2.5
B-52H	30	10	40	60	40.0
AV-8B	35	10	45	25	18.8
C-17	5	0	5	15	1.3
C-130	50	0	50	15	12.5
EA-18G	5	0	5	25	2.1
MC-12	0	5	5	60	5.0
AC-130	5	5	10	30	5.0
<b>Total</b>	<b>1,443</b>	<b>85</b>	<b>1,528</b>	<b>—</b>	<b>265</b>

(MIANG &amp; OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.

**Table 2-6 Proposed Annual Sorties and Time in New Steelhead Low North MOA**

Aircraft	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	140	40	180	15	45.0
A-10	690	0	690	5	57.5
AH-1	10	0	10	15	2.5
F-16	45	15	60	15	15.0
F-16	22	8	30	10	5.0
FA-18A	10	0	10	15	2.5
MH-60	40	0	40	15	10.0
<b>Total</b>	<b>957</b>	<b>63</b>	<b>1,020</b>	<b>—</b>	<b>138</b>

(MIANG &amp; OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.

**Table 2-7 Proposed Annual Sorties and Time in New Steelhead Low East MOA**

Aircraft	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	140	40	180	45	135.0
A-10	690	0	690	15	172.5
AH-1	10	0	10	60	10.0
F-16	45	15	60	30	30.0
F-16	22	8	30	10	5.0
FA-18A	10	0	10	30	5.0
MH-60	40	0	40	45	30.0
<b>Total</b>	<b>957</b>	<b>63</b>	<b>1,020</b>	<b>—</b>	<b>388</b>

(MIANG &amp; OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.

**Table 2-8 Proposed Annual Sorties and Time in New Steelhead Low South MOA**

Aircraft	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	140	40	180	15	45.0
A-10	690	0	690	10	115.0
AH-1	10	0	10	5	0.8
F-16	45	15	60	15	15.0
F-16	22	8	30	10	5.0
FA-18A	10	0	10	15	2.5
MH-60	40	0	40	5	3.3
<b>Total</b>	<b>957</b>	<b>63</b>	<b>1,020</b>	<b>—</b>	<b>187</b>

(MIANG &amp; OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.



**Table 2-9 Existing and Proposed Annual Sorties and Time in Steelhead MOA**

Aircraft	Baseline Day Sorties (0700-2200)	Baseline Night Sorties (2200-0700)	Total Baseline Sorties	Baseline Time in Airspace per Sortie (Minutes)	Baseline Annual Time in Airspace (Hours)	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	130	46	176	44	127.6	140	40	180	30	90
A-10	560	0	560	60	560	690	0	690	30	345
B-2	8	0	8	30	4	10	10	20	15	5
B-52	5	0	5	90	7.5	15	5	20	15	5
F-16	44	0	44	90	66	45	15	60	30	30
F-16	395	132	527	25	219.5	383	127	510	10	85
FA-18A	8	0	8	60	8	10	0	10	30	5
KC-135	60	23	83	169	233.8	70	30	100	180	300
F-35	2	0	2	30	1	40	10	50	30	25
<b>Total</b>	<b>1,212</b>	<b>201</b>	<b>1,413</b>	—	<b>1,227</b>	<b>1,403</b>	<b>237</b>	<b>1,640</b>	—	<b>890</b>

(MIANG & OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.

**Table 2-10 Existing and Proposed Annual Sorties and Time in Pike West MOA**

Aircraft	Baseline Day Sorties (0700-2200)	Baseline Night Sorties (2200-0700)	Total Baseline Sorties	Baseline Time in Airspace per Sortie (Minutes)	Baseline Annual Time in Airspace (Hours)	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	80	10	90	85	127.5	80	30	110	90	165.0
B-52	30	10	40	100	66.7	40	20	60	100	100.0
B-2	1	0	1	105	1.8	5	0	5	100	8.3
EA-18G	13	0	13	120	26	15	5	20	120	40.0
F-16	66	0	66	90	99	80	20	100	60	100.0
F-16	311	104	415	30	207.5	318	106	424	15	106.0
FA-18A	7	0	7	35	4.1	15	5	20	45	15.0
KC-135	40	12	52	180	156	60	20	80	180	240.0
C-130	4	0	4	180	12	10	5	15	180	45.0
F-35	2	0	2	30	1	50	30	80	30	40.0
<b>Total</b>	<b>554</b>	<b>136</b>	<b>690</b>	<b>—</b>	<b>702</b>	<b>673</b>	<b>241</b>	<b>914</b>	<b>—</b>	<b>859</b>

(MIANG &amp; OHANG, 2021)

Note: The F-16 is listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.

**Table 2-11 Existing and Proposed Annual Sorties and Time in Pike East MOA**

Aircraft	Baseline Day Sorties (0700-2200)	Baseline Night Sorties (2200-0700)	Total Baseline Sorties	Baseline Time in Airspace per Sortie (Minutes)	Baseline Annual Time in Airspace (Hours)	Proposed Day Sorties (0700-2200)	Proposed Night Sorties (2200-0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	40	0	40	95	63.3	40	0	40	90	60
AH-1	10	0	10	240	40	10	0	10	240	40
B-52	48	0	48	165	132	50	20	70	120	140
EA-18G	13	0	13	120	26	15	5	20	120	40
F-16	66	0	66	95	104.5	70	30	100	40	66.7
F-16	2	1	3	5	0.3	2	1	3	5	0.25
FA-18A	7	0	7	35	4.1	10	5	15	35	8.75
KC-135	20	7	27	270	121.5	30	10	40	270	180
MH-60	70	0	70	190	221.7	70	0	70	190	221.6
C-130	8	0	8	180	24	10	0	10	180	30
CV-22	13	0	13	220	47.7	10	5	15	180	45
F-35A	2	0	2	30	1	50	30	80	30	40
MC-12	0	1	1	120	2	0	5	5	120	10
<b>Total</b>	<b>299</b>	<b>9</b>	<b>308</b>	<b>—</b>	<b>788</b>	<b>367</b>	<b>111</b>	<b>478</b>	<b>—</b>	<b>882</b>

(MIANG &amp; OHANG, 2021)

Note: The F-16 is listed twice to account for different training scenarios; the time in airspace varies.

Key: MOA = Military Operations Area.

**Table 2-12 Existing and Proposed Annual Sorties and Time in R-4201A**

Aircraft	Baseline Day Sorties (0700–2200)	Baseline Night Sorties (2200–0700)	Total Baseline Sorties	Baseline Time in Airspace per Sortie (Minutes)	Baseline Annual Time in Airspace (Hours)	Proposed Day Sorties (0700–2200)	Proposed Night Sorties (2200–0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	50	16	66	23	25.3	55	20	75	20	25.0
A-10	1,320	0	1,320	27	594.0	1,190	0	1,190	20	396.7
F-16	50	0	50	23	19.2	50	30	80	20	26.7
F-16	174	57	231	27	104.0	124	41	165	20	55.0
B-2	1	0	1	18	0.3	5	0	5	20	1.7
B-52H	14	6	20	95	31.7	30	10	40	80	53.3
AV-8B	28	0	28	14	6.5	35	10	45	17	12.8
C-17	2	0	2	9	0.3	5	0	5	10	0.8
C-130	7	0	7	14	1.6	50	0	50	10	8.3
EA-18G	0	0	0	0	0.0	5	0	5	17	1.4
MC-12	0	3	3	104	5.2	0	5	5	80	6.7
MH-60	35	0	35	36	21.0	50	0	50	30	25.0
CH-47	19	0	19	59	18.7	25	0	25	40	16.7
AC-130	4	4	8	162	21.6	5	5	10	121	20.2
<b>Total</b>	<b>1,704</b>	<b>86</b>	<b>1,790</b>	<b>—</b>	<b>849</b>	<b>1,629</b>	<b>121</b>	<b>1,750</b>	<b>—</b>	<b>650</b>

(MIANG &amp; OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: R = Restricted Area.

**Table 2-13 Existing and Proposed Annual Sorties and Time in R-4201B**

Aircraft	Baseline Day Sorties (0700–2200)	Baseline Night Sorties (2200–0700)	Total Baseline Sorties	Baseline Time in Airspace per Sortie (Minutes)	Baseline Annual Time in Airspace (Hours)	Proposed Day Sorties (0700–2200)	Proposed Night Sorties (2200–0700)	Total Proposed Sorties	Proposed Time in Airspace per Sortie (Minutes)	Proposed Annual Time in Airspace (Hours)
A-10	50	16	66	3	3.3	55	20	75	10	12.5
A-10	0	0	0	1	0.0	1,190	0	1,190	2	39.7
F-16	50	0	50	3	2.5	50	30	80	10	13.3
F-16	58	19	77	1	1.3	41	14	55	3	2.8
B-2	1	0	1	2	0.0	5	0	5	10	0.8
B-52H	14	6	20	11	3.7	30	10	40	40	26.7
AV-8B	28	0	28	2	0.9	35	10	45	8	6.0
C-17	2	0	2	1	0.0	5	0	5	5	0.4
C-130	7	0	7	2	0.2	50	0	50	5	4.2
EA-18G	0	0	0	0	0.0	5	0	5	8	0.7
MC-12	0	3	3	12	0.6	0	5	5	40	3.3
MH-60	35	0	35	4	2.3	50	0	50	15	12.5
CH-47	19	0	19	7	2.2	25	0	25	20	8.3
AC-130	4	4	8	18	2.4	5	5	10	59	9.8
<b>Total</b>	<b>268</b>	<b>48</b>	<b>316</b>	—	<b>20</b>	<b>1,546</b>	<b>94</b>	<b>1,640</b>	—	<b>141</b>

(MIANG &amp; OHANG, 2021)

Note: The A-10 and F-16 are listed twice to account for different training scenarios; the time in airspace varies.

Key: R = Restricted Area.

**Table 2-14 Existing Annual Sorties and Time in Hersey MOA**

Aircraft	Baseline Day Sorties (0700-2200)	Baseline Night Sorties (2200-0700)	Total Baseline Sorties	Baseline Annual Time in Airspace per Sortie (Minutes)	Total Annual Time in Airspace (Hours)
A-10	1.5	0.5	2	45	1.5
<b>Total</b>	<b>1.5</b>	<b>0.5</b>	<b>2</b>	<b>—</b>	<b>2</b>

(MIANG &amp; OHANG, 2021)

Key: MOA = Military Operations Area.

**Table 2-15 Existing Annual Sorties and Time in Grayling Temporary MOA**

Aircraft	Baseline Day Sorties (0700-2200)	Baseline Night Sorties (2200-0700)	Total Baseline Sorties	Baseline Time in Airspace per Sortie (Minutes)	Total Annual Time in Airspace (Hours)
A-10	69	8	77	17	21.8
F-16	112	0	112	9	16.8
B-52	13	5	18	15	4.5
C-130	3	0	4	4	0.3
EA-18G	13	0	13	13	2.8
KC-135	12	3	15	36	9
MH-60	70	0	70	11	12.8
<b>Total</b>	<b>292</b>	<b>16</b>	<b>309</b>	<b>—</b>	<b>68</b>

(MIANG &amp; OHANG, 2021)

Key: MOA = Military Operations Area.

**Table 2-16 Proposed Annual Sorties and Time in VR-1601 and VR-1602**

Aircraft	Proposed Sorties VR-1601: APN to R-4201 Day (0700-2200)	Proposed Sorties VR-1602: R-4201 to APN Day (0700-2200)	Total Proposed Sorties	Total Annual Time in Airspace (Hours)
A-10	20	15	35	3.6
F-16	20	15	35	3.2
B-52	4	0	4	0.3
C-130	20	10	30	2.2
EA-18G	32	32	64	5.1
KC-135	20	10	30	4.3
MH-60	4	2	6	0.6
T-1	20	10	30	5.4
<b>Total</b>	<b>140</b>	<b>94</b>	<b>234</b>	<b>25</b>

(MIANG &amp; OHANG, 2021)

Note: Annual time in airspace is based on average airspeed of each aircraft to travel the full 36 nautical mile VR.

Key: APN = Alpena County Regional Airport; R = Restricted Area; VR = Visual Flight Rules Military Training Route.

**Table 2-17 Existing and Proposed Chaff and Flare Use within the Alpena SUA Complex**

Component	Chaff	Flare
Types	RR-188	M206
Existing Number	5,103	7,900
Proposed Number	6,103	9,400
Locations	All; higher usage in R-4201 and Pike West MOA for both chaff and flare	
Altitude Expended	Varies, minimum within MOAs would be 2,000 feet AGL or higher for both chaff and flare. Deployment within R-4201A/B would comply with the Army National Guard's policies and managed by Camp Grayling's Range Control Office. *	

(MIANG & OHANG, 2021)

Note: \* If there are seasonal fire restrictions, flares would be released at a low of 2,000 feet AGL in the restricted areas during those periods.

Key: AGL = above ground level; MOA = Military Operations Area; R- = Restricted Area.

While the Proposed Action would increase chaff and flare use above existing levels, proposed levels of chaff and flare use would remain well below the levels analyzed in the NGB's *Environmental Assessment for Deployment of Chaff and Flares in Military Operations Area* (2002). In 2002, the NGB thoroughly assessed the environmental impacts of using chaff and flare countermeasures (including RR-188 chaff and M-206 flares) within the Pike and Steelhead MOAs. The 2002 EA included detailed analysis on the following resource areas: noise, air quality, fire risk, safety, human health, biological resources including water bodies and wetlands, hazardous and solid waste, land use and visual resources, cultural resources, socioeconomic, and environmental justice. The 2002 EA concluded these impacts would not be significant. Proposed chaff usage under the Proposed Action would be approximately 61 percent less than levels from 2002, and proposed flares would be approximately 40 percent less than 2002. The 2002 EA is incorporated by reference into the Alpena SUA Complex EA, and is available online for at <https://www.alpenacrtc.af.mil/Resources/Air-Space-Proposal/>.

## 2.2 Alternative B: No Steelhead Low MOAs

Alternative B would include all aspects of the detailed Proposed Action (see Section 2.1) for creation, modification, and utilization parameters, except that the three Steelhead Low MOAs would not be established (i.e., Steelhead Low North, South, and East MOAs). Therefore, no sorties would occur within any of the proposed Steelhead Low MOA boundaries but would be redistributed in existing SUA. For example, sorties proposed to use the Steelhead Low MOAs under the Proposed Action would likely continue to use the Steelhead MOA. The ability for airmen to conduct low-altitude, overland training events such as LOWAT, LASDT, and Electronic Warfare threat reactions would be greatly reduced under Alternative B. Alternative B would not lower fuel usage by the 127 WG A-10s because they would still have to fly to R-4201A/B for LASDT and LOWAT training requirements.

Under Alternative B, chaff use would increase over existing levels by approximately 510 expenditures per year, and flare use would increase by approximately 790 expenditures per year (increases of approximately 10 percent). Expenditures would be distributed across the Alpena SUA Complex, including within the Steelhead MOA. Altitudes would be the same as those described in Section 2.1.4. Expenditures would be less than those analyzed in the 2002 EA (NGB, 2002).

### **2.3 Alternative C: No Grayling East or West MOA**

Alternative C would include all other aspects of the detailed Proposed Action (see Section 2.1) for creation, modification, and utilization parameters, except there would be no establishment of the Grayling East and Grayling West MOAs. Therefore, no sorties would occur within the proposed Grayling MOA boundaries but would be redistributed in existing SUA. The Alpena CRTC would continue to request activation of the Grayling Temporary MOA each year to support annual exercises, and the Grayling Temporary MOA would remain uncharted. In addition, the Hersey MOA would remain with the MIANG. This would result in a reduction of quality training at Grayling Range and R-4201 because aircraft would be limited in their maneuver capability.

Under Alternative C, chaff use would increase over existing levels by approximately 510 expenditures per year, and flare use would increase by approximately 790 expenditures per year (increases of approximately 10 percent). Expenditures would be distributed across the Alpena SUA Complex; however, without the proposed Grayling West or East MOAs, and given that Grayling Temporary MOA is normally active for only two weeks per year, expenditures would normally occur over a smaller geographic area than either the Proposed Action or Alternative B. Altitudes would be the same as those described in Section 2.1.4. Expenditures would be less than those analyzed in the 2002 EA (NGB, 2002).

### **2.4 Alternative D: No Action Alternative**

The No Action Alternative would result in no change to the Alpena SUA Complex as currently charted (refer to Figure 1-1). No new MOAs, RAs, or MTRs would be established or modified. Alpena CRTC would continue to request activation of the Grayling Temporary MOA each year, and the Grayling Temporary MOA would remain uncharted. The Hersey MOA would remain with the MIANG. The airspace would remain less than sufficient for current-generation aircraft, ordnance, and tactics and would restrict support for future-generation aircraft, tactics, and techniques. Although the No Action Alternative does not meet the project objectives or fulfill the purpose and need, it is carried forward for detailed analysis to provide a baseline against which the Proposed Action and alternatives can be evaluated, as required in 32 CFR 989.8.

### **2.5 Range of Reasonable Alternatives**

The range of reasonable alternatives for meeting the project's purpose (Section 1.2) and need (Section 1.3) and satisfying the MIANG and the NGB's project objectives examined suitable SUA and MTR siting.

#### **Airspace**

All SUA proposals are prepared and coordinated according to the procedures outlined in FAA JO 7400.2. The NGB and MIANG developed the proposed airspace modifications and additions and coordinated early with the Minneapolis Air Route Traffic Control Center (ARTCC) and other interested parties to put forth an optimum proposal. This early planning and coordination process inherently focuses the range of reasonable airspace alternatives considered to a very small subset, and minimization measures are incorporated by design into the proposal to lessen aeronautical and environmental impacts. The following paragraphs discuss the project objectives, including the purpose of the Proposed Action, that were used as evaluation measures during the process of developing airspace alternatives.

Per FAA JO 7400.2P, other airspace alternatives must be considered. Suitable airspace for a unit is evaluated for value by its volume, proximity to the airfield where a sortie begins, the amount of time the aircraft can spend in the airspace, and the attributes of the airspace (i.e., what kind of training, tactics, techniques, and procedures are supported). The purpose of the Proposed Action—to amend and establish Alpena CRTC’s SUA supporting military readiness requirements—is inherently tied to the airspace surrounding Alpena CRTC. Other airspace alternatives must meet the project objectives described in Section 1.4. In addition, the ideal distance from Alpena CRTC to the SUA should be no further than 150 nautical miles to ensure there is enough time to complete their training missions. The only other MOA within this range is the Minnow MOA in Wisconsin. Minnow MOA is approximately 50 nautical miles west of Hersey MOA. As previously discussed, Hersey MOA is farther away from the other MOAs in the Alpena SUA Complex and is the least utilized of the MOAs. It does not provide suitable training space for current tactics, techniques, and procedures and is currently only used as an alternative when the weather to the north and east of Hersey MOA is unfavorable.

Two of the objectives described in Section 1.4 include providing connecting airspace from the existing SUA complex to the Grayling Range for continuity and providing low-altitude airspace closer than the Grayling Range, which would decrease in-flight time and fuel usage. Minnow MOA is approximately 100 nautical miles southwest of Grayling Range; there are no other MOAs between these SUAs. Therefore, it would not meet the objective of providing connecting airspace to Grayling Range. Minnow MOA has a floor of 10,000 feet MSL and is an overwater MOA; therefore, it would not meet the objective of providing overland low-altitude airspace closer than the Grayling Range. Given these factors, Minnow MOA was eliminated from detailed analysis. No other SUAs meet the project objectives and the ideal distance to Alpena CRTC.

### **MTRs**

Selection criteria for the proposed VR-1601 and VR-1602 route include the following:

- fairly direct route between Alpena CRTC and Grayling Range
- avoids large towns
- incorporates check turns<sup>2</sup> for training on a low-level route
- avoids infrastructure such as tall towers that would interfere with a low-level route

The MIANG and Alpena CRTC personnel examined the area between Alpena CRTC and Grayling Range to determine the most suitable route based on these screening criteria. No additional MTR locations were identified.

## **2.6 Comparison of Alternatives Analyzed in Detail**

Table 2-18 summarizes the components of each of the alternatives (Alternative A/Proposed Action, Alternative B, Alternative C, and Alternative D/No Action Alternative). Table 2-19 summarizes how each of these alternatives meets the project objectives, identified in Section 1.4. As noted in Table 2-19, not all action alternatives carried forward for detailed analysis fully meet all the project objectives; however, they are deemed reasonable for inclusion in the EA because they would be viable in meeting the project’s general purpose and need for action.

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<sup>2</sup> A check turn is a tactical maneuver directed by a formation flight lead. It changes the ground track and possibly the position of the aircraft in the formation. Depending on the airspace and operational circumstances, it achieves multiple objectives including increasing tactical situational awareness and repositioning formation aircraft in preparation for the next required or anticipated air combat maneuver.



**Table 2-18 Comparison of Alternatives Analyzed in Detail in Environmental Assessment**

Project Component	Existing Altitude Designation	Alternative A (Proposed Action)	Alternative B	Alternative C	Alternative D (No Action)
Grayling Temporary MOA	5,000 ft – 17,999 ft MSL	Discontinue use	Discontinue use	Request annually; remain uncharted	Request annually; remain uncharted
Grayling East MOA	Not established	10,000 ft – 17,999 ft MSL	10,000 ft – 17,999 ft MSL	Not established	Not established
Grayling West MOA	Not established	500 ft AGL – 17,999 ft MSL	500 ft AGL – 17,999 ft MSL	Not established	Not established
Steelhead MOA	6,000 ft – 17,999 ft MSL	Realign internal lateral boundaries; vertical limits remain	Realign internal lateral boundaries; vertical limits remain	Realign internal lateral boundaries; vertical limits remain	Existing designation
Steelhead Low North MOA	Not established	500 ft AGL – 5,999 ft MSL	Not established	500 ft AGL – 5,999 ft MSL	Not established
Steelhead Low South MOA	Not established	4,000 ft – 5,999 ft MSL	Not established	4,000 ft – 5,999 ft MSL	Not established
Steelhead Low East MOA	Not established	500 ft AGL – 5,999 ft MSL	Not established	500 ft AGL – 5,999 ft MSL	Not established
Pike East MOA	300 ft AGL – 17,999 ft MSL	Realign internal lateral boundaries; vertical limits remain	Realign internal lateral boundaries; vertical limits remain	Realign internal lateral boundaries; vertical limits remain	Existing designation
Pike West MOA	6,000 ft – 17,999 ft MSL	Realign internal lateral boundaries; vertical limits remain	Realign internal lateral boundaries; vertical limits remain	Realign internal lateral boundaries; vertical limits remain	Existing designation
Hersey MOA	5,000 ft – 17,999 ft MSL	Return to NAS	Return to NAS	Existing designation	Existing designation
VR-1601/VR-1602	Not established	300 ft – 1,500 ft AGL	300 ft – 1,500 ft AGL	300 ft – 1,500 ft AGL	Not established
R-4201A	Surface – 23,000 ft MSL	Existing designation	Existing designation	Existing designation	Existing designation
R-4201B	Surface – 9,000 ft MSL	Raise ceiling to 23,000 ft MSL	Raise ceiling to 23,000 ft MSL	Raise ceiling to 23,000 ft MSL	Existing designation

Key: AGL = above ground level; ft = feet; MOA = Military Operations Area; MSL = mean sea level; NAS = National Airspace System; R = Restricted Area; VR = Visual Flight Rules Military Training Route.

**Table 2-19 Comparison of Alternatives Analyzed in Detail Against Project Objectives**

Objective (Section 1.3)	Alternative A (Proposed Action)	Alternative B	Alternative C	Alternative D (No Action)
Provide a variety of low-altitude, overland SUA to accommodate restrictive weather variations and cloud cover interference	Yes, would meet this objective.	Partially. The creation of the Grayling West MOA would provide increased low-altitude, overland SUA compared with the existing conditions, but it alone would not offer substantial accommodations for weather variations and cloud interference.	Partially. The creation of the Steelhead Low MOAs would provide increased low-altitude, overland SUA compared with the existing conditions, but these alone would not offer substantial accommodations for weather variations and cloud interference.	No, would not meet this objective.
Provide connecting airspace from the existing SUA complex than the Grayling Range Restricted Airspace for safe training continuity	Yes, would meet this objective.	Yes, would meet this objective.	Partially. Only the MTRs would provide connectivity between the Alpena SUA Complex and Grayling Range, but the SUA would not be contiguous without establishment of the proposed Grayling MOAs.	No, would not meet this objective.
Provide useful, appropriately sized low-altitude airspace closer to the Grayling Range, which would decrease in-flight time and fuel usage	Yes, would meet this objective.	Yes, would meet this objective.	Yes, would meet this objective.	No, would not meet this objective.

Key: MOA = Military Operating Area; MTR = Military Training Route; SUA = Special Use Airspace.

## Chapter 3. Affected Environment

This chapter describes the baseline conditions of the existing environment for those resources that could be reasonably affected by the Proposed Action or alternatives. The study area for the affected environment generally includes the existing and proposed SUA and the area beneath this airspace (as shown in Figure 2-1); however, the specific study area may vary from resource to resource depending on the extent to which that resource may be affected. Appendix A includes more detailed background and regulatory information, as well as a discussion of resources initially considered but eliminated from detailed evaluation in this EA, including Section 4(f) of the Department of Transportation Act (A.6), geological resources (A.7), infrastructure and transportation (A.10), visual resources (A.11), and hazardous materials and wastes (A.14).

### 3.1 Airspace Management

DAF defines airspace management as the coordination, integration, and regulation of airspace use within defined dimensions. The objective is to meet military training requirements through the safe and efficient use of available navigable airspace in a peacetime environment while minimizing the impact on other aviation users and the public. There are two categories of airspace or airspace areas: regulatory and nonregulatory. Within these two categories, further classifications include controlled, uncontrolled, special use, and other airspace. The categories and types of airspace are dictated by: (1) the complexity or density of aircraft movements; (2) the nature of the operations conducted within the airspace; (3) the level of safety required; and (4) national and public interest in the airspace. Appendix A, Section A.1 contains background and definitions concerning airspace.

The controlling agency for all the SUA in the Alpena SUA Complex is the FAA, Minneapolis ARTCC. Minneapolis ARTCC is responsible for coordinating airspace activities with Toronto and Cleveland centers and issuing approval for aircraft to operate as scheduled by the Alpena CRTC. Black Talon (i.e., the Alpena CRTC Operations) provides real-time airspace management for the Alpena Complex once Minneapolis ARTCC approval for access to the scheduled areas has been received. The Alpena SUA Complex falls within the jurisdiction of Toronto, Minneapolis, and Cleveland centers. Each center retains authority over the Special Activity Airspace within their designated airspace. Minneapolis Center must receive Cleveland Center approval before releasing Steelhead MOA to Alpena CRTC. The scheduling and using agency for the Alpena SUA Complex is the Alpena CRTC. Black Talon serves as the coordinating agency for receiving and disseminating all information concerning the Alpena SUA Complex for the current day. This includes, but is not limited to, airspace approvals, denials, recalls, and changes (ARTCC, 2017). Grayling Range's impact area is owned by the Michigan Army National Guard. As a result, Camp Grayling's Range Control Office manages the airspace for R-4201A/B. Grayling Air Gunnery Range manages the scheduling process for R-4201A/B.

MOAs are considered active during the approved times as posted in the NOTAM within the approved altitude blocks, and released by the ARTCC to the designated users, unless otherwise modified and coordinated with the proper agencies. When airspace can be returned due to changes in mission needs or requirements, changing weather conditions, FAA airspace requirements for civilian aircraft, altitude blocks, or early termination, Black Talon must advise Minneapolis ARTCC as soon as possible of any portion of the Alpena SUA Complex that can be returned for Air Traffic

Control (ATC) use. Restricted Areas (e.g., R-4207, within the Alpena SUA Complex), are also released to the controlling agency when not in use. These procedures minimize impacts on nonparticipating aircraft.

As shown in Figure 1-1, numerous VRs are within and adjacent to the Alpena SUA, including VRs 634, 664, 1624, 1625, 1626, 1627, 1628, 1644, 1645, 1647, and 1648. There are eight VRs that access R-4201 and Grayling Range from Alpena CRTC, and four of these routes are reciprocal. Some of the VRs are completely outside of the Alpena SUA Complex. Operations on VRs are conducted in accordance with VFR as long as flight visibility is at least three nautical miles and the cloud ceiling is 1,500 feet AGL, in accordance with DAF training rules for low flight VFR. Black Talon schedules and deconflicts all MTRs located within Michigan.

Numerous general aviation airports are located underneath and adjacent to the existing Alpena SUA Complex (refer to Table A-3, which lists all airports, and Figure A-2 and Figure A-3, which show airports and airspace on FAA sectional aeronautical charts, in Appendix A, Section A.1). Most of these airports are small, general aviation airports that may be open to the public and do not have an ATC tower. Some of these airports are surrounded by Class D airspace (Appendix A, Section A.1). Class D airspace encompasses a five-statute-mile radius around an operating ATC airport, extending from the ground to 2,500 feet AGL or higher. Class D airports within and adjacent to the existing Alpena SUA Complex include Alpena County Regional Airport and Grayling Army Airfield; Grayling Army Airfield is adjacent to R-4201. Alpena County Regional Airport, where Alpena CRTC is located, has two runways and is open to the public. Most operations are general aviation, with smaller percentages of commercial and military operations. Class C airspace is designed to provide additional ATC into and out of primary airports where aircraft operations are periodically at high-density levels. All aircraft operating within Class C airspace are required to maintain two-way radio communication with local ATC entities. Several Class C airports are in Michigan (Bishop International in Flint, Gerald R. Ford International in Grand Rapids, and Capital Region International in Lansing), but none are within the airspace affected in this EA. Class B airspace is typically associated with major metropolitan airports. Detroit Metropolitan Wayne County Airport is the only Class B airport in Michigan, and it is not within the airspace affected in this EA.

## **3.2 Safety**

### **Aircraft Safety**

Aircraft mishaps may be caused by midair collisions with other aircraft or objects, weather difficulties, bird-/wildlife-aircraft strikes, mechanical malfunctions, or other reasons. Safety of aircraft operations is often described in terms of the aircraft's "mishap rate," represented by the number of mishaps per 100,000 flying hours for each aircraft type. Most aircraft accidents involve a takeoff or landing incident; high-performance maneuvering, such as operations typically occurring in a MOA, also have a relatively high mishap rate. Mishap rates for military aircraft operating within Alpena SUA are shown in Table A-4 in Appendix A. Flight safety is a critical component of all training missions conducted within Alpena SUA. Further information about safety planning and awareness training are in Appendix A, Section A.2.

### 3.3 Air Quality

Air quality in a region or area is measured by the concentration of criteria pollutants in the atmosphere. Under the authority of the Clean Air Act, the USEPA established the National Ambient Air Quality Standards (NAAQS) for criteria pollutants, including ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter equal to or less than ten micrometers in diameter and 2.5 micrometers in diameter, and lead. NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. Air quality is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

A region or area that fails to meet NAAQS for any pollutant is classified as being in “nonattainment” for that pollutant. A nonattainment area that subsequently meets the NAAQS can be reclassified as a “maintenance” area. Both nonattainment and maintenance areas have more rigorous air regulations and monitoring requirements designed to bring regional air quality into attainment with all NAAQS. Federal actions within nonattainment and maintenance areas must demonstrate either that total direct and indirect emissions are below established *de minimis* levels for each applicable criteria pollutant, or prepare a formal General Conformity Determination, in accordance with the General Conformity Rule (40 CFR Part 93). More detailed regulatory and background information on air quality is included in Appendix A, Section A.3.

The airspace study area includes the volume of air extending up to the mixing height—the altitude at which the lower atmosphere will undergo mechanical or turbulent mixing—and including the extent of each underlying county. Pollutants that are released above the mixing height typically will not disperse downward and thus will have little or no effect on ground-level concentrations of pollutants. Per 40 CFR 93.153(c)(2), the default mixing height of 3,000 feet AGL is used in this EA.

The study area includes the areas under the proposed Grayling West MOA, R-4201A/B, proposed VRs, Pike East MOA, proposed Steelhead Low North MOA, and proposed Steelhead Low East MOA, which includes all or part of the following counties: Alcona, Alpena, Arenac, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, and Sanilac, Michigan. The attainment statuses of the counties with the study area are summarized in Table 3-1.

The floors of the Grayling Temporary, proposed Grayling East, Pike West, Steelhead, and proposed Steelhead Low South MOAs all begin at altitudes greater than 3,000 feet AGL, so changes within these SUA would not affect criteria pollutant emissions.

#### **Climate**

The Köppen-Geiger climate classification system is the most used climate classification system. It designates climate regions globally and is broadly used in climate change research and modeling. The system derives its classification data primarily from vegetation, which is dependent on the temperature and precipitation of a region. The system divides Earth into five climate zones based on multiple criteria, primarily temperature, and 30 subtypes. The five zones include the following:

- Zone A: tropical or equatorial
- Zone B: arid or dry
- Zone C: warm/mild temperate
- Zone D: continental
- Zone E: polar

**Table 3-1 Air Quality Control Regions and Attainment Status in the Study Area**

County	Portion of Proposed Action <sup>1</sup>	Air Quality Control Region	Attainment Status
Alcona	Pike East MOA	Upper Michigan Intrastate	Attainment
Alpena	Pike East MOA VR-1601/1602	Upper Michigan Intrastate	Attainment
Arenac	Steelhead Low North MOA	Central Michigan Intrastate	Attainment
Crawford	Grayling West MOA R-4201A/B	Upper Michigan Intrastate	Attainment
Huron	Steelhead Low North MOA Steelhead Low East MOA	Central Michigan Intrastate	Ozone Maintenance <sup>2</sup>
Iosco	Pike East MOA Steelhead Low North MOA Steelhead Low East MOA	Central Michigan Intrastate	Attainment
Montmorency	Grayling West MOA VR-1601/1602	Upper Michigan Intrastate	Attainment
Ogemaw	Grayling West MOA	Central Michigan Intrastate	Attainment
Oscoda	Grayling West MOA	Upper Michigan Intrastate	Attainment
Otsego	Grayling West MOA R-4201A VR-1601/1602	Upper Michigan Intrastate	Attainment
Presque Isle	Pike East MOA	Upper Michigan Intrastate	Attainment
Roscommon	Grayling West MOA	Central Michigan Intrastate	Attainment
Sanilac	Steelhead Low East MOA	Central Michigan Intrastate	Attainment

40 CFR 81.195; 40 CFR 81.197; 40 CFR 93.153 (c)(2)(xxii); (USEPA, 2023)

Notes:

<sup>1</sup> Proposed activities at 3,000 feet AGL or higher are above the default mixing height prescribed in 40 CFR 93.153(c)(2)(xxii) and, therefore, contribute negligibly to ground-level criteria pollutant emissions. Areas above 3,000 feet are not included in this table.

<sup>2</sup> Huron County was designated as a nonattainment area (2004, 2005, 2006), then a maintenance area (2007) for the 8-hour ozone (1997) NAAQS. This standard was subsequently revoked on April 6, 2015, and Huron County is in attainment with the stricter 2008 ozone NAAQS. However, the DC Circuit Court termed these “orphan maintenance areas” in *South Coast Air Quality Management District v. EPA* (2018), ruling that these areas were still subject to NAAQS maintenance plan requirements. Therefore, these areas, though in full attainment for all current ozone standards, must still meet conformity requirements for the revoked 1997 ozone standard.

Key: MOA = Military Operations Area; NAAQS = National Ambient Air Quality Standard; R = Restricted Area; VR = Visual Flight Rules Military Training Route.

The study area falls within Köppen-Geiger ‘Dfb’ climate category, which classifies the general climate as boreal and fully humid, with snowy winters and warm summers (CC&IFD, 2019). The *Michigan Hazard Mitigation Plan* states that, in Michigan, climate change affects severity of thunderstorms, severe winds, extreme temperatures, flooding, drought, erosion, wildfires, and invasive species (EMHSD, 2019). Climate change issues also tie in with the problems of infrastructure failures and public health emergencies. Tangible indicators of climate change are already present. For example, in Michigan’s daily record temperatures at weather stations, new heat records outnumbered new cold records by three to one during the 1990s, and by six to one during the 2000s (EMHSD, 2019).

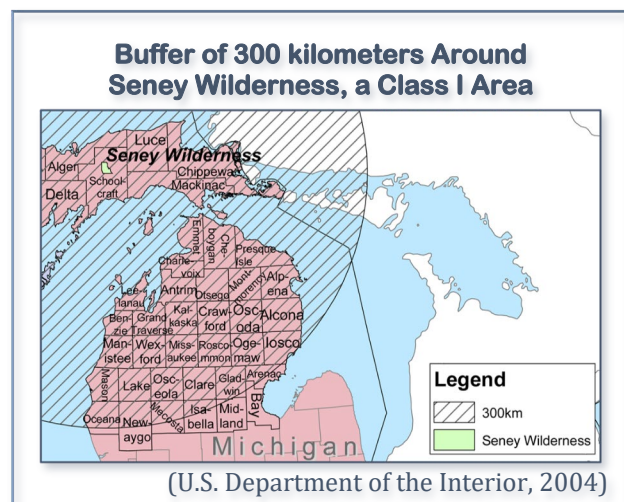
### **Regional Air Quality**

The Air Quality Division of the EGLE is the regulatory authority for sources of air pollution. Air quality in Michigan is generally in the good or moderate range with occasional days that may be unhealthy for sensitive groups. In 2019, only five days had air quality alerts; none of those alerts were within the study area. The weather plays a major role in air quality and can either help increase or decrease the amount of pollution in the air. High temperatures, sun, and longer days are conducive to ozone formation, whereas rain tends to wash pollutants out of the air (EGLE, 2020a).

The entire study area under the Alpena SUA Complex includes the Upper Michigan Intrastate and Central Michigan Intrastate Air Quality Control Regions and all or parts of 13 counties in Michigan, all of which are designated as being in attainment for all criteria pollutants. Though in attainment for the more stringent 2008 and 2015 ozone standards, Huron County is still subject to maintenance requirements for the revoked 1997 ozone NAAQS (USEPA, 2023). Table 3-1 shows the air quality control regions and attainment statuses by county and identifies where each component of the Proposed Action would occur. Of the 46 ambient air quality monitors in Michigan, only one—the Harbor Beach monitor in Huron County—is within the study area (EGLE, 2019a). The Harbor Beach monitor collects data for ozone and meteorological conditions. Air quality at this station has experienced some days with high ozone levels but has demonstrated compliance with the ozone maintenance anti-backsliding requirements (see Table A-7 in Appendix A).

Since the study area includes an ozone maintenance area, the General Conformity Rule applies to this action. Per the General Conformity Rule, total direct and indirect emissions of the proposed project are compared to specified pollutant thresholds for which the area is in maintenance/nonattainment to determine whether the action is *de minimis* or requires a full Conformity Determination to ensure regional attainment goals are not hindered. See Appendix A, Section A.3 for background information on the General Conformity Rule.

Under the Prevention of Significant Deterioration Program, Section 162(a) of the Clean Air Act affords special protections to some federal lands such as national parks, national wilderness areas, and national monuments that are designated as Class I areas. The only Class I area within 300 kilometers of the study area is Seney Wilderness (40 CFR 81.414); see right inset. Mobile sources, including aircraft, are not subject to the requirements of Prevention of Significant Deterioration, but Seney Wilderness is included in this EA as a sensitive air resource.



### 3.4 Noise

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB)
- Frequency – the number of cycles per second the air vibrates, in Hertz
- Duration – the length of time the sound can be detected

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise; perceived importance of the noise; its appropriateness in the setting, time of day, and type of activity during which the noise occurs; and sensitivity of the individual.

The land underneath the Alpena SUA Complex consists of several forest regions, small- to medium-sized municipalities, and rural areas. General noise levels of existing conditions are available through the National Park Service (National Park Service, 2021). According to the National Park Service, noise levels range from the mid-30s to mid-40s L50 Sound Pressure Level (SPL) in the region where Alpena SUA Complex is located. SPL is a logarithmic measure of the effective acoustic pressure of a sound relative to a reference value and is measured in decibels. L50 is the level that is exceeded fifty percent of the time. In other words, noise is above L50 SPL fifty percent of the time and below L50 SPL the other fifty percent of the time. The higher SPLs are most likely due to sporadic or intermittent events. Ambient noise levels are higher in the areas under the Steelhead MOAs as compared to the areas where the Pike and Grayling MOAs are located.

Table 3-2 shows typical sound levels for various types of residential land uses. Very noisy urban areas have the highest sound levels at 66 A-weighted decibels (dBA) during the daytime and 58 dBA during nighttime hours. Normal suburban areas are 50 dBA during the day and 44 dBA at night. Rural land uses tend to be the quietest at 40 dBA during the day and 34 dBA at night. This corresponds with the sound levels that the National Park Service estimated in the region where the Alpena SUA Complex is located.

Figure 3-1 provides a chart of sound levels from typical noise sources. At the lower end of the scale, leaves rustling produce sound levels of approximately 20 dBA; a passing automobile or bus is around 60 to 70 dBA; and, at the higher end of the scale, an air raid siren at 120 to 130 dBA.

As shown in Table 3-3, SUAs that were modeled under the existing conditions include Steelhead MOA, Pike East MOA, Pike West MOA, Hersey MOA, R-4201A/B, and the Grayling Temporary MOA. As a temporary MOA, the establishment of the Grayling Temporary MOA must be requested annually, so the floor and ceiling can vary slightly year to year. This MOA was modeled with a floor of 5,000 feet MSL and a ceiling of 17,999 feet MSL. Training in the Grayling Temporary MOA normally occurs for only two weeks per year, and the mix of aircraft changes annually. R-4201A/B is above the Grayling Range, which was founded in 1913 as a multipurpose training range complex with an Army airfield. Training activities at the range include artillery, air-to-ground weapons, and aircraft operations. As a result, populations in this region are accustomed to high ambient noise levels from aircraft and artillery, including impulsive noise.



**Table 3-2 Typical Residential Sound Levels**

Residential Land Use	Daytime Sound Level	Nighttime Sound Level
Very Noisy Urban	66 dBA	58 dBA
Noisy Urban	61 dBA	54 dBA
Urban/Noisy Suburban	55 dBA	49 dBA
Quiet Urban/Normal Suburban	50 dBA	44 dBA
Quiet Suburban	45 dBA	39 dBA
Very Quiet Suburban/Rural	40 dBA	34 dBA

(ANSI/ASA, 2013)

Key: dBA = A-weighted decibels.

**Table 3-3 Existing Ldnmr and DNL Values within Alpena SUA Complex**

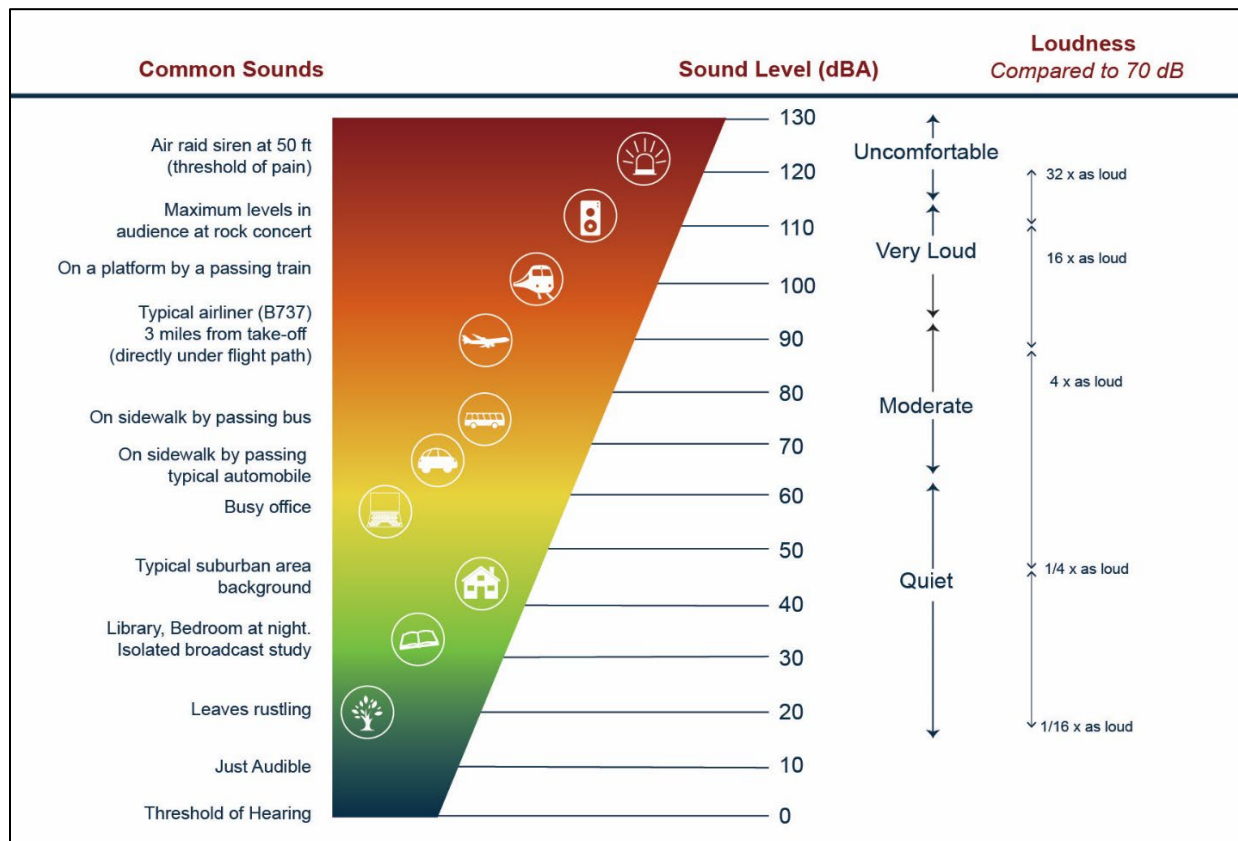
Airspace	Ldnmr	DNL
Steelhead MOA	35 dBA	35 dBA
Pike West MOA	35 dBA	35 dBA
Pike East MOA	35 dBA	35 dBA
Hersey MOA	<35 dBA	<35 dBA
R-4201A	62 dBA	61 dBA
R-4201B	45 dBA	44 dBA
Grayling Temporary MOA	<35 dBA	<35 dBA

(MIANG, 2021)

Note: Table 2-9 through Table 2-15 show the existing aircraft sortie and hours that generated the noise levels shown here.

Key: dBA = A-weighted decibels; DNL = Day-Night Average Sound Level; Ldnmr = Onset-Adjusted Monthly Day-Night Average Sound Level; MOA = Military Operations Area; R = Restricted Area; SUA = Special Use Airspace.

**Figure 3-1 Sound Levels from Typical Sources**



Source: Adapted from Cowan, 1994.

As shown in Figure 1-1, numerous VRs are within and adjacent to the Alpena SUA, including VRs 634, 664, 1624, 1625, 1626, 1627, 1628, 1644, 1645, 1647, and 1648. Some of the VRs are located within the Alpena SUA, particularly between Alpena CRTC and Grayling Range, and some of the VRs are completely outside of the Alpena airspace region. These existing VRs have low annual utilization rates. The highest number of sorties was 13 during one year on VR-1648 and the lowest was zero on several VRs; the average is only two sorties flown on each VR per year (Alpena, 2018 and 2019). As shown in Table 2-16, there are 234 annual sorties proposed for VR-1601 and VR-1602, which would result in a noise level of less than 35 dBA (as discussed in Section 4.4.1). Therefore, it can be expected that a VR with 13 annual sorties would not affect the ambient noise environment with noise levels of 35 to 45 dBA. Given the low number of annual and monthly sorties, the existing VRs were not included in the noise model.

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr). DNL is the primary noise metric used to describe the aviation noise environment. DNL is defined as the average sound energy in a 24-hour period with a 10-decibel adjustment added to nighttime noise events occurring between the hours of 2200 and 0700. Ldnmr is the average sound energy in a 24-hour period with a 10-decibel adjustment added to the nighttime levels (similar to DNL), and up to an additional 11-decibel adjustment for acoustical events with onset rates greater than 15 decibels per second, such as high-speed jets operating near the ground. Because of the adjustments for rapid onset, Ldnmr is always equal to or greater than DNL. These noise levels are measured in dBA.

Table 2-9 through Table 2-15 show the existing aircraft sortie and hours that generated the noise levels shown in Table 3-3. As shown in Table 3-3, most of the noise levels in the Alpena SUA are at or below 35 dBA Ldnmr and DNL. The restricted areas have levels that are higher with R-4201A at 62 dBA Ldnmr and 61 dBA DNL, and R-4201B at 45 dBA Ldnmr and 44 dBA DNL.

### **3.5 Land Use**

“Land use” is the term used to describe the human use of land. It represents the economic and cultural activities (e.g., agricultural, residential, industrial, mining, and recreational uses) that are practiced at a given place. Public and private lands frequently represent very different uses. For example, urban development seldom occurs on publicly owned lands (e.g., parks, wilderness areas), while privately owned lands are infrequently protected for wilderness uses.

Land use differs from land cover in that some uses are not always physically obvious (e.g., land used for producing timber but not harvested for many years and forested land designated as wilderness will both appear as forest-covered, but they have different uses). Natural land use categories include state and national forests, state and national parks, wilderness areas, and other similar areas. Human-modified land categories include recreation areas, agricultural areas, research areas, pipelines and powerlines, airports and private airstrips, and other areas developed from natural land cover conditions. Sensitive land use includes those uses intended to preserve natural or cultural resources, contain recreational opportunities and public access, or provide for the management of public lands. Noise-sensitive land uses also include residences, hospitals, nursing homes, schools, churches, and outdoor amphitheatres and sports arenas.

For this EA, land use is described generally beneath the MOAs, with more emphasis on the land uses under the proposed low MOAs and VRs.

### **Regional Land Use**

Several recreational areas lie beneath the Alpena SUA Complex including the Atlanta State Forest Area, Grayling State Forest Area, the Huron-Manistee National Forest, and the Pigeon River County State Forest (see Figure 3-2). A portion of the Au Sable River is designated as a Wild and Scenic River, and the Au Sable and Pigeon Rivers are Michigan Natural Rivers (see also Section 3.6); the headwaters, branches, and main stems of these river systems provide high-quality trout fishing. The forest areas contain hiking trails and campgrounds, and the Pigeon River County State Forest has free-roaming elk herds. The Atlanta State Forest Area is 272,399 acres located between the cities of Alpena and Gaylord north of Michigan Highway 32 (USGS, 2021). This forest area is underneath the existing Grayling Temporary MOA and Pike West MOA. Grayling State Forest Area is 170,739 acres and dispersed underneath the existing Grayling Temporary MOA, Pike West MOA, and 400 to 500 acres under R-4201 (USGS, 2021). The Huron-Manistee National Forest encompasses 978,900 acres between the cities of Oscoda and Grayling; this area is underneath the existing Grayling Temporary MOA and Pike West MOA (USGS, 2021). The Pigeon River County State Forest is 98,104 acres, northeast of Gaylord and underneath the existing Grayling Temporary MOA (USGS, 2021). Noise-sensitive land uses such as hospitals, schools, and residences are located throughout the region beneath the Alpena SUA, but mostly within municipalities. For example, the city of Grayling has a hospital, several schools and churches, and residential areas. Cities such as Alpena and Gaylord have medical centers, schools, churches, and residences.

The interior land underneath the Steelhead MOA is dominated by farmland with small municipalities. Along the Lake Huron shoreline, there are scenic areas, parks (such as the Albert E. Sleeper and Port Crescent State Parks), and cultural resource areas (such as the Bay Port Historic Commercial Fishing District and the Tawas Point Lighthouse). Noise-sensitive land uses under the Steelhead MOA are located mostly along the shoreline and within the municipalities.

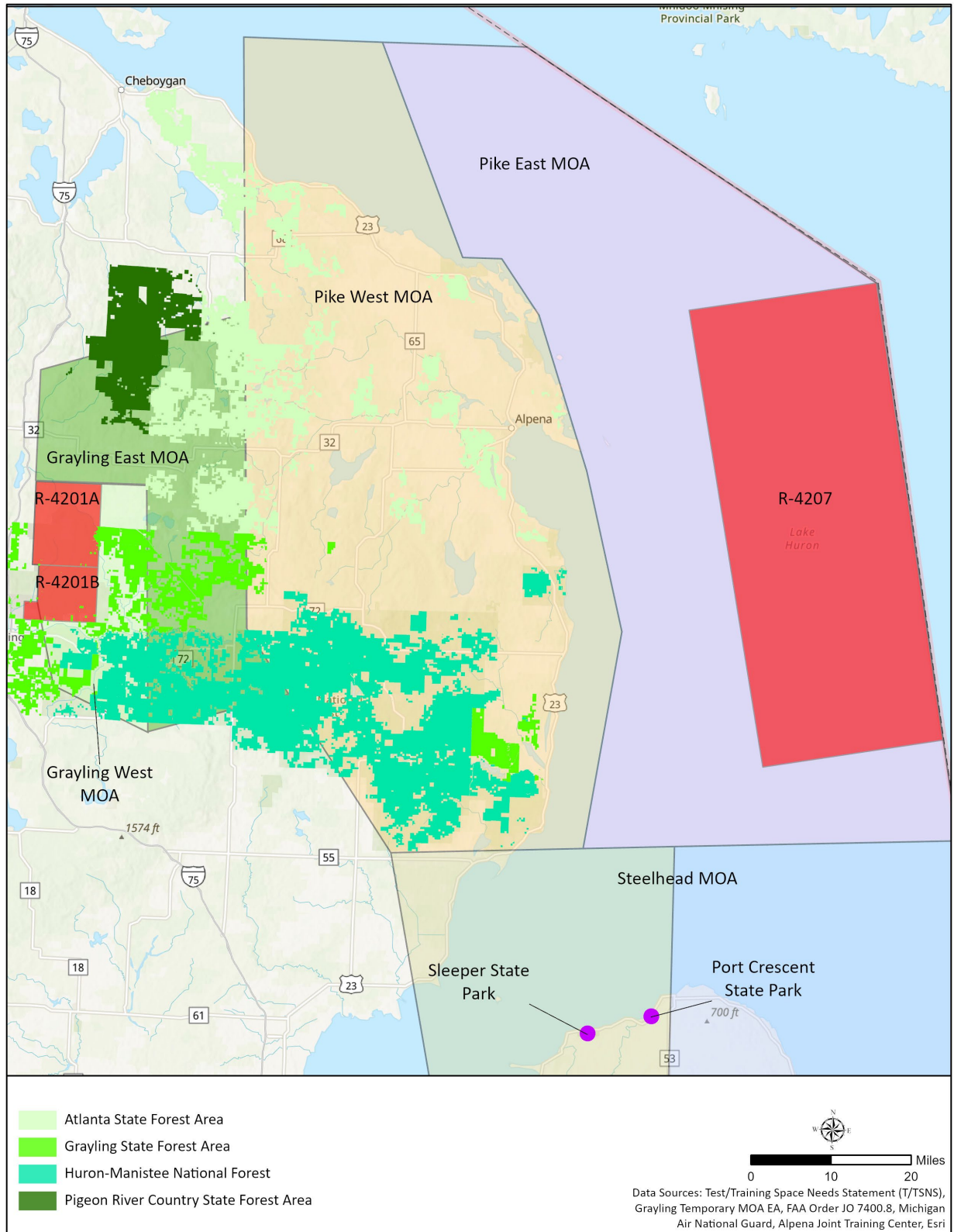
## **3.6 Water Resources**

This discussion of water resources in the study area includes a general overview of surface and coastal water resources below the proposed airspace changes. As the Proposed Action does not involve construction activities, there would be no potential for dredge/fill or other impacts on wetlands or development within any regulatory floodplains; therefore, wetland and floodplain resources are not discussed in detail. The Proposed Action would not involve long-term changes in water consumption, so groundwater resources are also not discussed in detail.

### **Watersheds and Surface Water**

The eastern portion of the proposed Alpena SUA changes are located above Lake Huron in northern and eastern Michigan. The remaining portions are located above several watersheds, most of which ultimately drain into Lake Huron (see watershed map in Figure A-4 and watershed information in Table A-8, both in Section A.8).

**Figure 3-2 Forest Areas Within and Adjacent to Alpena SUA Complex**



### **Coastal Resources**

The Coastal Zone Management Act of 1972 established national policy to preserve, protect, develop, restore, or enhance resources in the coastal zone, including the Great Lakes. Federal agencies have an obligation to implement actions within the coastal zone that are compatible to the maximum extent practicable with the enforceable policies of a state's federally approved coastal management program. Michigan's coastal zone extends a minimum of 1,000 feet from the ordinary high-water mark. The boundary extends further inland in some locations to encompass coastal lakes, river mouths, and bays; floodplains; wetlands; dune areas; urban areas; and public park, recreation, and natural areas. The detailed list of federal actions and state statutes is on the EGLE's website (EGLE, 2021). As a federal agency, the NGB is required to determine whether its proposed activities would affect the coastal zone. This takes the form of a consistency determination, a negative determination, or a determination that no further action is necessary.

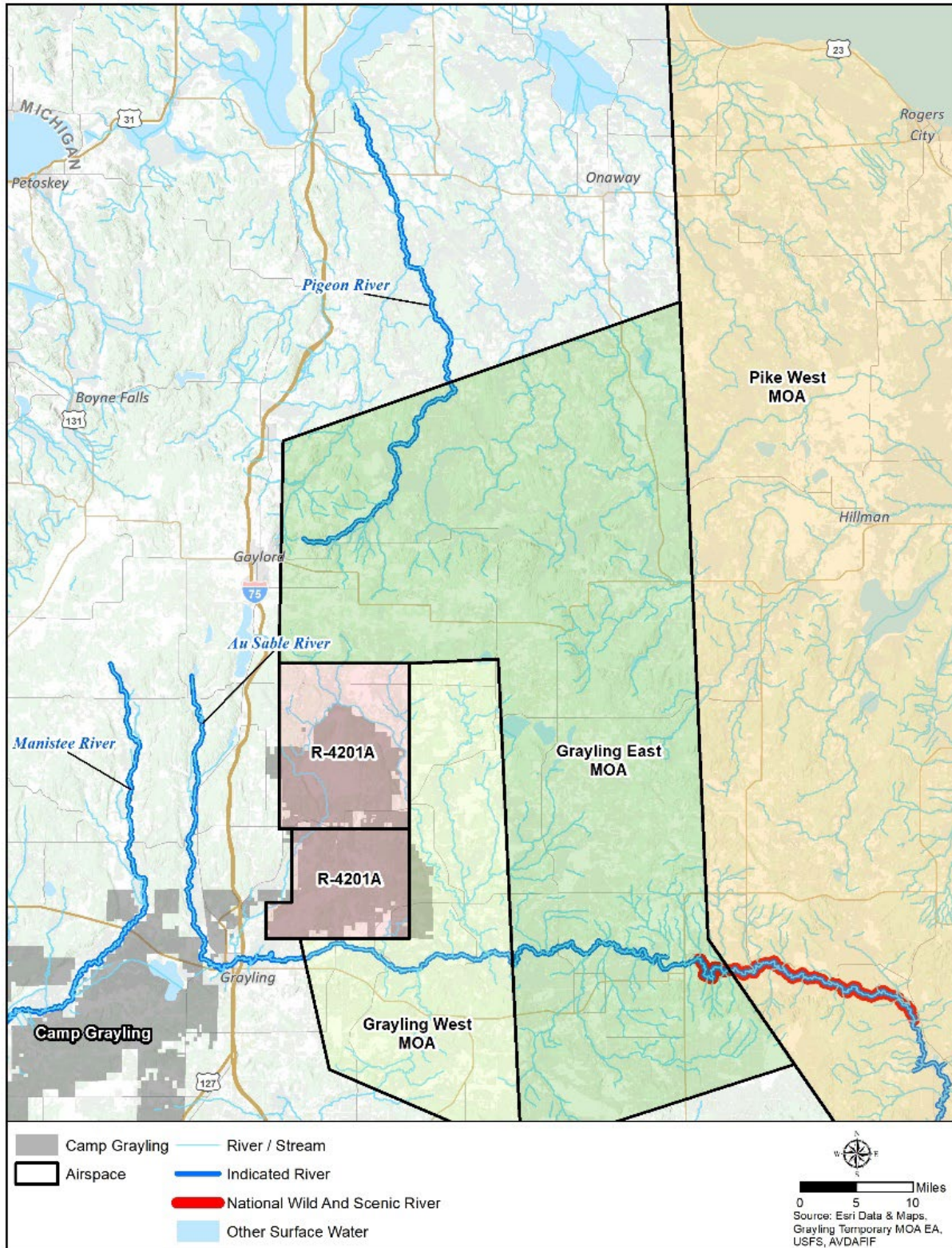
Some portions of airspace-related activities would occur over Michigan's coastal zone (i.e., proposed Steelhead North, East, and South MOAs are over portions of the coastal zone in Iosco, Arenac, Tuscola, Huron, and Sanilac Counties as well as the existing Pike East and Pike West MOAs over portions of Presque Isle, Alpena, Alcona, and Iosco Counties). However, airspace-related changes would not conflict with the enforceable policies of Michigan's coastal management program. A negative determination stating that the activity would not affect coastal uses or resources was sent to EGLE pursuant to Section 307 of the Coastal Zone Management Act; see Appendix C for materials. No response was received. In accordance with 15 CFR 930.35(c), if the State does not respond to a negative determination within 60 days, concurrence can be presumed.

### **Wild and Scenic Rivers and Natural Rivers**

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with characteristics that provide special natural, cultural, or recreational value. Section 2(a)(ii) of the Wild and Scenic Rivers Act allows the Secretary of the Interior to designate a river if a state governor requests designation; however, more commonly, Congress designates most rivers into the National Wild and Scenic Rivers System. Twenty-three miles of the Au Sable River in Oscoda and Alcona Counties is designated as Wild and Scenic beginning on the main stem from Mio Pond downstream to Alcona Pond (see Figure 3-3) (Nationwide Rivers Inventory, 2023). This portion of the river is below the existing Pike West MOA and Grayling Temporary MOA and would be underneath the Pike West MOA and proposed Grayling East MOA (as shown in Figure 3-3).

Michigan's Natural Rivers Program protects select rivers through zoning by limiting construction, land changes and earth moving, and the placement of structures (Michigan Act 451, Part 305). The Au Sable, Upper Manistee, and Pigeon Rivers are designated as Natural Rivers; the Au Sable and Pigeon Rivers are underneath the proposed Alpena SUA (Figure 3-3). Natural Rivers are assessed as part of Coastal Consistency.

**Figure 3-3 Rivers Within and Adjacent to the Proposed Alpena SUA**



### 3.7 Biological Resources

Biological resources include native or naturalized plants and animals and the habitats in which they occur. These include vegetation; wildlife; and threatened, endangered or sensitive species in a given area. Biological resources are integral to ecosystem integrity. The existence and preservation of biological resources are intrinsically valuable to society for aesthetic, recreational, and socioeconomic purposes. This section provides an overview of the natural ecological systems and protected species within the project area.

#### **Vegetation and Forestry**

The eastern portion of the Alpena SUA Complex is located above Lake Huron. On the western portion, the proposed Grayling East, Grayling West, and Pike West MOAs, as well as the proposed MTRs, are located over the Northern Lakes and Forests Level III Ecoregion. On the southern portion, the Steelhead MOAs are located over the Southern Michigan/Northern Indiana Drift Plains Level III Ecoregion (USEPA, 2021a). Ecoregions are hierarchical levels developed to describe and differentiate ecosystems based on categories of characteristics.

The Northern Lakes and Forests ecoregion is typically nutrient-poor glacial soils with coniferous and northern hardwood forests, moraine hills, many lakes, and sandy outwashes. Typical forest species found here are sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), aspen (*Populus* sp.), balsam fir (*Abies balsamea*), eastern white pine (*Pinus strobus*), and red pine (*Pinus resinosa*) (Wilken et al., 2011).

The Southern Michigan/Northern Indiana Drift Plains ecoregion is typified by many lakes and marshes as well as a diversity of soils and land uses. Agricultural uses are more common in this region as opposed to the Northern Lakes and Forests. Typical vegetation includes oak–hickory (*Quercus* sp.–*Carya* sp.) forests, beech (*Fagus* sp.) forests, and forested wetlands. Oaks, shagbark hickory (*Carya ovata*), sugar maple, and beech are the most common species.

#### **Wildlife**

The Northern Lakes and Forests ecoregion has an abundance of diverse environments that provide habitats for a variety of wildlife species including black bear (*Ursus americanus*), white-tailed deer (*Odocoileus virginianus*), lynx (*Lynx rufus*), and snowshoe hare (*Lepus americanus*) (Wilken et al., 2011). The Southern Michigan/Northern Indiana Drift Plains ecoregion is similarly diverse and supports white-tailed deer, coyote (*Canis latrans*), red fox (*Vulpes vulpes*), North American beaver (*Castor canadensis*), North American river otter (*Lontra canadensis*), and American mink (*Neovison vison*) (Wilken et al., 2011). Michigan streams, rivers, and lakes provide habitat and recreational fishing for various trout, bass, salmon, steelhead, and other fish species. Protected wildlife species that may be present are discussed under *Threatened and Endangered Species*.

Wildlife surveys performed in 2009 and 2020 at Alpena CRTC and Camp Grayling indicated that the most common species around the installations were Virginia opossum (*Didelphis virginiana*), eastern gray squirrel (*Sciurus carolinensis*), coyote, and common raccoon (*Procyon lotor*) (NGB, 2009; NGB, 2020a). The results of a bat survey performed in 2019 and finalized in 2020 noted that five bat species were observed: big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and little brown bat (*Myotis lucifugus*) (NGB, 2020b). As of May 2023, the little brown bat was state-listed as threatened

due to ongoing population declines (MDNR, 2023a). None of the other bat species observed are federal- or state-listed as threatened or endangered.

### Migratory Birds

Migratory birds, as listed in 50 CFR 10.13, are ecologically and economically important. The Migratory Bird Treaty Act of 1918 (Public Law 65-186; 16 USC 703 et seq.) prohibits the take of migratory birds and their nests, eggs, parts, or products without the appropriate permit and provides enforcement authority and penalties for violations. In 50 CFR 21.15, incidental take of migratory birds for military readiness activities is authorized, provided the action proponent confers with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate negative effects, if the action would adversely affect the sustainability of a population of a migratory bird species.

The proposed airspace changes are located in the Mississippi Flyway, one of four migratory flyways over the United States (Lincoln et al., 1998). The Mississippi Flyway is most heavily used by waterfowl during spring and fall migration. According to the USFWS Information for Planning and Consultation (IPaC) database, there are 31 migratory birds listed as USFWS Birds of Conservation Concern for the proposed MOAs, including the bald eagle (*Haliaeetus leucocephalus*) and red-headed woodpecker (*Melanerpes erythrocephalus*). See Appendix D for full list.

### Bald Eagles

The Bald and Golden Eagle Protection Act of 1940 (Public Law 87-884; 16 USC 668a-d) prohibits the taking or harming (i.e., harassment, sale, or transportation) of bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*), including their eggs, nests, or young, without the appropriate permit. In general, eagles (both bald and golden eagles) are recognized as one of the more hazardous wildlife species for aircraft operations by the FAA (NGB, 2009).

According to National Bald Eagle Management Guidelines (USFWS, 2007), bald eagles in northern Michigan begin nesting in January. Egg laying and incubation occurs in April, hatching in May, and fledging of young is completed by late July. The Integrated Natural Resource Management Plan for Alpena CRTC states that bald eagles are known to nest near Alpena CRTC, and resident eagles have used the installation for migration or foraging (MIANG, 2018). In addition, there are published special operations procedures for the existing VRs that identify the exact location of bald eagle nests and the time of year and vertical and horizontal distances to avoid them.

### **Threatened and Endangered Species**

The Endangered Species Act of 1973 was enacted to “conserve threatened and endangered species and the ecosystems on which those species depend.” The USFWS has legislative authority to list and monitor the status of species whose populations are considered imperiled. Regulations supporting the Endangered Species Act are codified and regularly updated in 50 CFR Part 17. A discussion of federal-listed species found within the footprint of the proposed airspace changes is included below.

Under Michigan Act 451 of 1994, commonly called the Natural Resources and Environmental Protection Act (NREPA), in Part 365, Endangered Species Protection, “a person shall not take, possess, transport . . . fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened,” unless first receiving an Endangered Species Permit from MDNR,



Wildlife Division. The State of Michigan maintains a list of threatened and endangered species, which they define as “a native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.” A list of the state-listed species that have been recorded within the counties under the Alpena SUA Complex is included in Appendix A, Section A.9.

The known or expected range of federal-listed species in the area under the proposed MOAs includes twelve animal species (Indiana bat [*Myotis sodalis*], northern long-eared bat [*Myotis septentrionalis*], tricolored bat [*Perimyotis subflavus*], piping plover [*Charadrius melodus*], red knot [*Calidris canutus rufa*], whooping crane [*Grus americana*], eastern massasauga [*Sistrurus catenatus*], northern riffleshell [*Epioblasma torulosa rangina*], Hine’s emerald dragonfly [*Somatochlora hineana*], Hungerford’s crawling water beetle [*Brychius hungerfordi*], Karner blue butterfly [*Lycaeides melissa samuelis*], and monarch butterfly [*Danaus plexippus*]) and four plant species (Houghton’s goldenrod [*Solidago houghtonii*], dwarf lake iris [*Iris lacustris*], eastern prairie fringed orchid [*Platanthera leucophaea*], and pitcher’s thistle [*Cirsium pitcher*]), according to the USFWS IPaC database. Critical habitats are mapped for Hine’s emerald dragonfly and piping plover, though no ground-disturbing activities are proposed that could affect mapped critical habitat. The IPaC species list is in Appendix D.

The USFWS IPaC database noted that the Kirtland’s Warbler Wildlife Management Area is under some of the proposed SUAs. The Wildlife Management Area consists of 125 separate sites totaling 6,684 acres located throughout jack pine forest habitat in the northern Lower Peninsula of Michigan. Kirtland’s warbler (*Dendroica kirtlandii*) was delisted from the Endangered Species Act in 2019, and is state-listed as endangered. Several of these management areas are under the proposed Graying East and West MOAs; none are under the proposed Steelhead Low MOAs. There are no ground-disturbing activities under the Proposed Action that could affect the Wildlife Management Area.

### 3.8 Cultural Resources

Cultural resources include archaeological sites; historic buildings, structures, and districts; and human-made or natural features important to a culture, subculture, or community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.
- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of cultural identity and traditions.

More information on the regulatory setting for cultural resources is included in Appendix A, Section A.12.

The area of potential effects (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program, or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. The APE is defined as the area underneath the proposed airspace modifications.

### **Historic Properties**

A review of the National Register of Historic Places (NRHP) and state Historic Register determined there were hundreds of historic properties underneath the MOAs and the proposed VRs. Hundreds of archaeological sites are also located underneath the proposed MOAs and VRs (K. Kolokithas, Personal communication, 2021). These include properties within Huron, Iosco, Sanilac, Otsego, and Crawford Counties. Historic properties include nineteenth-century residences and commercial buildings (e.g., churches, warehouses, stores); bridges; lighthouses such as the Sturgeon Point Light Station in Alcona County; shipwrecks such as the Pewabic Shipwreck and the Grecian Shipwreck sites in Lake Huron and within the Pike East MOA; archaeological sites such as the Sanilac Petroglyphs in Sanilac County; and prehistoric and historic period archaeological sites. Shipwrecks in Lake Huron are part of the Thunder Bay National Marine Sanctuary and Underwater Preserve, which is primarily within the Pike East MOA. There are approximately 116 sunken ships within the Sanctuary, which extends north-south from the western boundary of Presque Isle County to the southern boundary of Alcona County, and east from the Michigan shore to the international boundary with Canada. Ships in the Sanctuary range in date from 1846 to 1954.

### **Native American Treaty Rights**

The APE includes lands that are subject to treaties between the United States Government and Native Nations. CORA—the Chippewa Ottawa Resource Authority—gathers all Treaty fishing rights under its mantle. Following the signing of a series of treaties, Tribes retained certain rights, known as Reserve Treaty Rights. CORA exercises the Great Lakes fishing rights reserved by the Tribes in the Treaty of 1836, for which they reserve the right to hunt and fish for commercial, subsistence, and recreational purposes. CORA is the governing body that was established to aid in fishery management and to exercise Reserve Treaty Rights. All Government-to-Government consultation and correspondences are included in Appendix F.

## **3.9 Socioeconomics and Environmental Justice**

This section describes the population demographics, employment characteristics, economic activity, and related data providing key insights into the socioeconomic conditions that might be affected by a proposed action. Because of the large area the Alpena SUA comprises, and the lack of anticipated population or economic drivers associated with the action (i.e., no additional employment or long-term expenditures), the study area for socioeconomics is focused on the areas beneath the low-altitude SUA that would be established as part of the action. The socioeconomic information for the counties under the overall Alpena SUA is included in Appendix A, Section A.13.

The socioeconomic analysis also considers Environmental Justice and Children’s Health and Safety to ensure no groups bear a disproportionate share of adverse environmental consequences. These analyses will also focus on the low-altitude SUA. Because the actions considered in this EA could increase noise levels, particularly under R-4201A/B, the area under this airspace is also considered for disproportionate impacts on minority and low-income populations and children.

## **Regional**

Michigan's primary industry in 2020 was finance, insurance, real estate, rental, and leasing; this industry accounted for 18.8 percent of the Michigan Gross Domestic Product (GDP). The second largest industry in the state was manufacturing, which accounted for 13.8 percent of the state's GDP in 2020. The 2020 GDP in Michigan was \$515,928.3 million, which was ranked 14th in the United States (BEA, 2020). The 2019 population of Michigan was 9,884,116, which was a 1.0 percent increase over the state's 2010 population. As a basis of comparison, the population of the entire United States increased by approximately 6.3 percent during the same time.

## **Low-Altitude MOAs**

The Proposed Action includes several MOAs that would allow flying at altitudes lower than 1,000 feet AGL, including Grayling West MOA, Steelhead Low North MOA, Steelhead Low East MOA, Pike East MOA, R-4201A/B, and VR-1601/VR-1602. The following counties are at least partially under this airspace:

- Alcona County (Pike East MOA)
- Alpena County (VR-1601/VR-1602 and Pike East MOA)
- Arenac County (Steelhead Low North MOA)
- Crawford County (Grayling West MOA and R-4201A/B)
- Huron County (Steelhead Low North MOA and Steelhead Low East MOA)
- Iosco County (Steelhead Low North MOA, Steelhead Low East MOA, and Pike East MOA)
- Montmorency County (Grayling West MOA and VR-1601/VR-1602)
- Ogemaw County (Grayling West MOA)
- Oscoda County (Grayling West MOA)
- Otsego County (Grayling West MOA, R-4201A, and VR-1601/VR-1602)
- Presque Isle County (Pike East MOA)
- Roscommon County (Grayling West MOA)
- Sanilac County (Steelhead Low East MOA)

The socioeconomic characteristics of the counties under the proposed low airspace are described in the following tables. The counties under the proposed low-altitude airspace areas decreased in population between 2010 and 2019, except for Otsego County. The population within these counties also have a higher percentage of residents aged 65 and over and a lower percentage of individuals aged 18 or younger as compared with the state and national populations, indicating that there may be a higher population of retirees within these counties. Table 3-4 provides an overview of the population characteristics of the counties under the proposed low airspace; data for Michigan and the United States are also provided for context.

Housing characteristics for the counties under the proposed low airspace, shown in Table 3-5, indicate a high percentage of owner-occupied housing units within the study area. The median rent of the renter-occupied housing units is lower than the median rent within Michigan and the United States.

**Table 3-4 Population Characteristics Under Proposed Low Airspace (2019)**

County	2010 Population	2019 Population	Percent Change 2010–2019	Population Under 18 Years of Age (%)	Population Aged 65 and Over (%)
Alcona	11,238	10,405	-7.4%	12.6%	36.1%
Alpena	29,958	28,405	-5.2%	18.7%	23.9%
Arenac	16,487	14,883	-9.7%	18.1%	25.8%
Crawford	14,325	14,029	-2.1%	18.1%	25.8%
Huron	33,642	30,981	-7.9%	19.2%	25.9%
Iosco	25,893	25,127	-3.0%	16.6%	30.1%
Montmorency	9,760	9,328	-4.4%	14.8%	21.5%
Ogemaw	21,862	20,997	-4.0%	18.6%	26.3%
Oscoda	8,884	8,241	-7.2%	19.4%	27.6%
Otsego	24,445	24,668	0.9%	20.8%	21.7%
Presque Isle	13,380	12,592	-5.9%	15.5%	32.5%
Roscommon	24,932	24,019	-3.7%	14.8%	33.3%
Sanilac	44,010	41,170	-6.5%	21.4%	22.1%
Michigan	9,884,116	9,986,857	1.0%	21.5%	17.7%
United States	308,758,105	328,239,523	6.3%	22.3%	16.5%

(U.S. Census Bureau, 2019)

Note: 2019 data are the most recent data available from the U.S. Census Bureau.

**Table 3-5 Housing Characteristics Under Proposed Low Airspace (2019)**

County	Number of Housing Units	Owner-Occupied Housing Units (%)	Median Rent of Renter-Occupied Housing Units
Alcona	11,241	88.8%	\$627
Alpena	16,076	77.9%	\$627
Arenac	9,885	83.8%	\$604
Crawford	11,258	81.2%	\$735
Huron	21,332	80.9%	\$609
Iosco	20,573	79.9%	\$652
Montmorency	9,631	84.1%	\$668
Ogemaw	16,252	81.4%	\$701
Oscoda	9,282	85.3%	\$750
Otsego	14,928	78.9%	\$768
Presque Isle	10,496	88.8%	\$542
Roscommon	24,611	82.0%	\$684
Sanilac	23,155	78.7%	\$678
Michigan	4,629,611	71.2%	\$871
United States	139,684,244	64.0%	\$1,062

(U.S. Census Bureau, 2019)

Note: 2019 data are the most recent data available from the U.S. Census Bureau.

Table 3-6 shows the employment and economic characteristics of the study area. Within the study area, Sanilac County has the highest civilian labor force, and Oscoda County has the lowest. The labor force for the counties was, on the whole, a smaller percentage of the overall county population when compared with Michigan and the United States, further indicating that there is a high number of retirees in the region. For example, the civilian labor force in Montmorency County is 35.5 percent of the total population, whereas the labor force in Michigan is 49.6 percent of the total population.

**Table 3-6 Employment and Economic Characteristics Under Proposed Low Airspace (2019)**

County	Civilian Labor Force	Unemployment Rate	Per Capita Income	Median Household Income
Alcona	3,625	7.6%	\$25,636	\$40,484
Alpena	13,474	6.0%	\$25,957	\$43,363
Arenac	6,357	7.1%	\$24,328	\$42,290
Crawford	5,863	6.5%	\$26,294	\$47,977
Huron	14,559	4.6%	\$27,852	\$48,289
Iosco	9,818	7.2%	\$25,264	\$43,678
Montmorency	3,312	8.0%	\$23,958	\$41,772
Ogemaw	8,265	8.1%	\$23,787	\$40,373
Oscoda	3,152	10.3%	\$24,889	\$42,335
Otsego	11,495	5.8%	\$27,234	\$54,332
Presque Isle	5,043	7.2%	\$28,103	\$47,948
Roscommon	8,770	9.4%	\$25,807	\$42,054
Sanilac	18,979	6.0%	\$25,871	\$47,672
Michigan	4,948,824	5.9%	\$31,713	\$57,114
United States	163,555,585	5.3%	\$34,103	\$62,843

(U.S. Census Bureau, 2019)

Note: 2019 data are the most recent data available from the U.S. Census Bureau.

### **Environmental Justice**

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires federal agencies to consider the human health and environmental conditions in minority and low-income communities to ensure that any disproportionately high and adverse human health or environmental effects on these communities are identified and addressed.

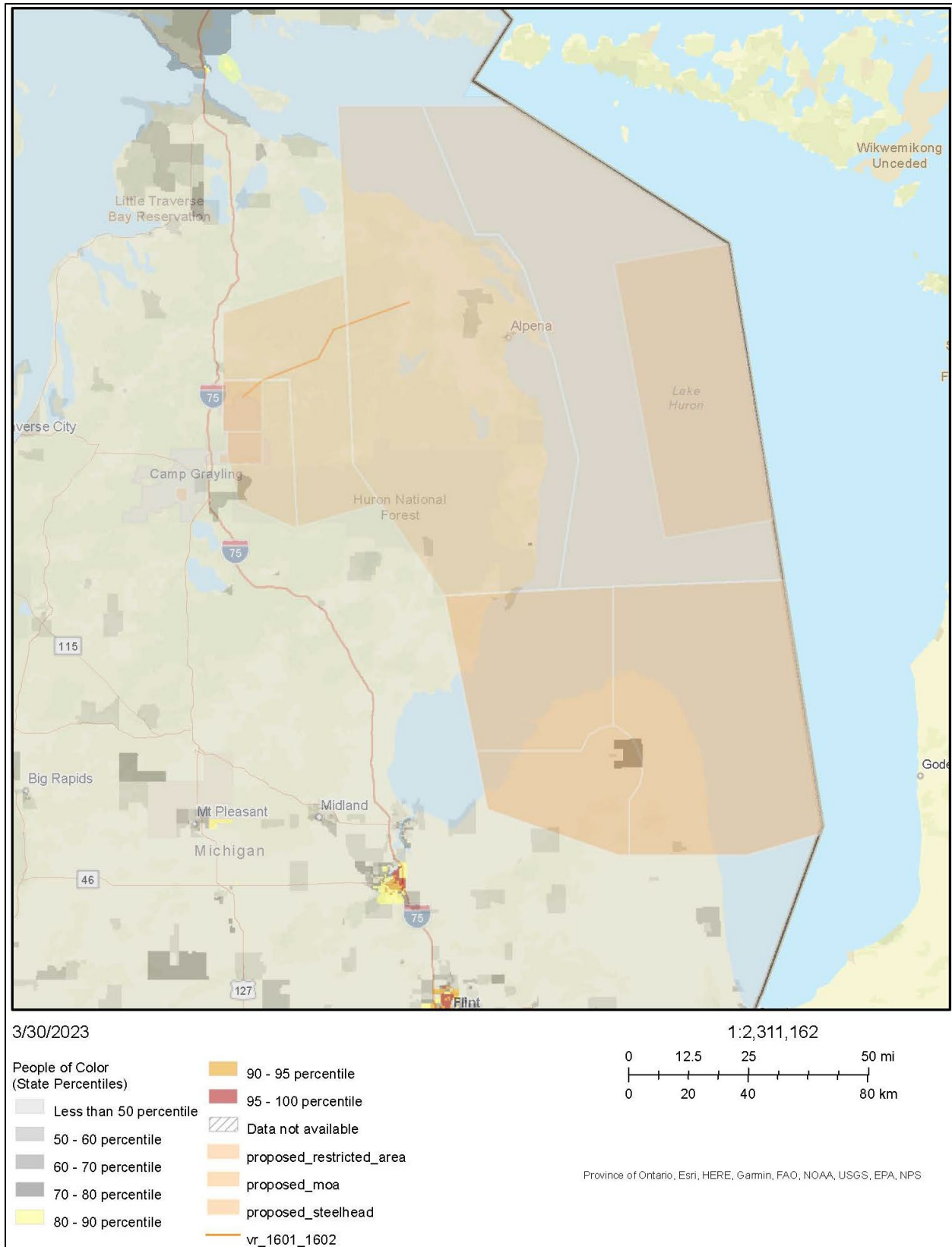
Table 3-7 shows demographic information on race, ethnicity, and poverty status in the area under R-4201A/B, which would experience increased noise (refer to analysis in Section 4.4.1). For the environmental justice analysis, demographics are analyzed at the census tract (CT) level to get a better picture of the affected population. Information for Michigan and the United States are provided for context. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is notably greater than the general population (CEQ, 1997). The minority population within each affected CT is less than 10 percent, which is substantially lower than the minority populations for both the state of Michigan and the United States. The minority populations of all areas underlying R-4201A/B are much lower than in Michigan and the United States. A poverty area is defined by the U.S. Census Bureau as a CT where 20 percent or more of the residents have incomes below the poverty threshold (U.S. Census Bureau, 1995). One CT—CT 9603, under R-4201A/B—meets the definition of a poverty area with a poverty rate of 22.3 percent.

The USEPA’s Environmental Justice Screening and Mapping Tool (called “EJScreen”) was used to further determine areas under the proposed airspace footprint that have higher percentiles of minority and low-income populations within the state (see Figure 3-5 and Figure 3-6).

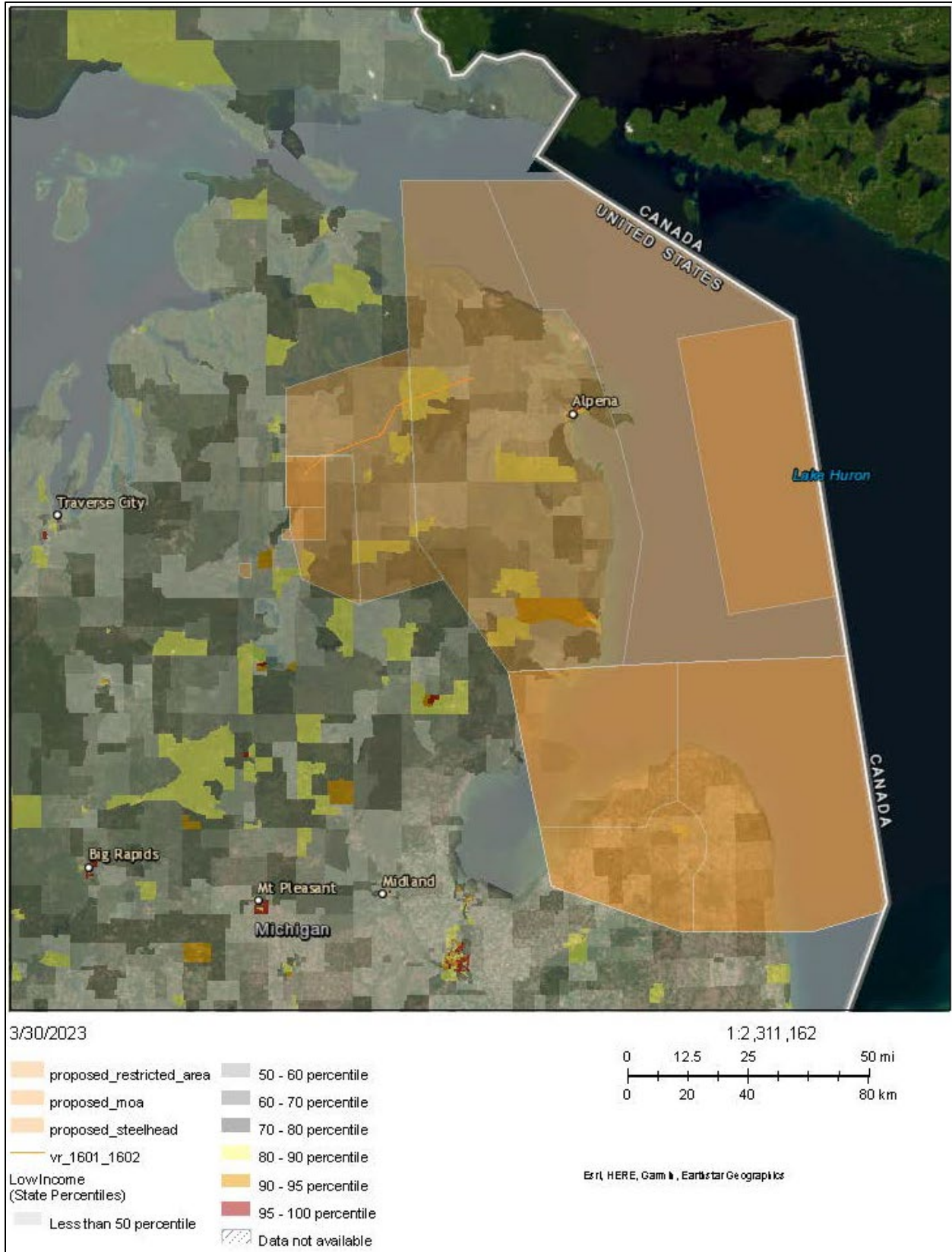
### **Protection of Children**

Table 3-8 shows the population of children within the study area; there are no areas that have substantially greater populations of minors, as compared with the state and national populations. There are no schools or childcare facilities located under R-4201A/B.

**Figure 3-4 Minority Populations Under Alpena SUA Using EJScreen Tool**



**Figure 3-5 Low-Income Populations Under Alpena SUA Using EJScreen Tool**



**Table 3-7 Minority and Low-Income Population Characteristics Under R-4201A/B (2019)**

Geographic Area	Percent White <sup>1</sup>	Percent Black <sup>1</sup>	Percent Hispanic or Latino <sup>2</sup>	Percent Asian or Pacific Islander	Percent American Indian or Alaska Native	Percent of Individuals Below Poverty Level
Otsego County	94.2%	0.6%	1.9%	3.4%	0.9%	10.0%
CT 9504	97.1%	0.4%	0.8%	1.4%	0.3%	7.7%
CT 9505	96.1%	0.0%	1.1%	0.4%	0.5%	11.8%
Crawford County	94.1%	0.9%	2.2%	0.8%	0.8%	14.0%
CT 9601	95.8%	0.0%	1.5%	0.4%	1.0%	14.9%
CT 9603	93.2%	2.1%	3.0%	0.3%	0.0%	22.3%
Michigan	74.7%	14.1%	5.3%	3.4%	0.7%	13.0%
United States	60.1%	13.4%	18.5%	6.1%	1.3%	10.5%

(U.S. Census Bureau, 2019)

Notes: 2019 data are the most recent data available from the U.S. Census Bureau.

<sup>1</sup> Non-Hispanic or Latino. <sup>2</sup> Of any race.

Key: CT = Census Tract.

**Table 3-8 Youth Population in the Study Area Under R-4201A/B (2019)**

Geographic Area	Population Under 18 Years of Age (%)	Population Under 5 Years of Age (%)
Otsego County	21.1%	5.2%
CT 9504	16.5%	4.7%
CT 9505	18.8%	4.7%
Crawford County	18.1%	4.7%
CT 9601	15.3%	2.7%
CT 9603	22.6%	5.5%
Michigan	21.9%	5.7%
United States	22.6%	6.1%

(U.S. Census Bureau, 2019)

Note: 2019 data are the most recent data available from the U.S. Census Bureau

Key: CT = Census Tract.



## Chapter 4. Environmental Consequences

This chapter presents the reasonably foreseeable environmental and socioeconomic effects resulting from the Proposed Action and alternatives, as detailed in Sections 2.1, 2.2, 2.3, and 2.4, on the affected environment described in Chapter 3. Analysis of environmental consequences is organized with all alternatives under each resource area.

### 4.1 Airspace Management

The study area for the Proposed Action includes the areas underneath the Alpena SUA Complex and aviation facilities and aircraft that are passing through that could be affected by changes in flight patterns and airspace availability. Impacts on airspace management are predicated to the extent that the Proposed Action would appreciably limit airspace access to many users; impose major restrictions on air traffic or adjacent airports; or cause conflicts or congestion for nonparticipating aircraft.

#### 4.1.1 Proposed Action (Alternative A)

Under the Proposed Action, the Minneapolis ARTCC would remain the controlling agency for all SUA in the Alpena SUA Complex, including the new proposed MOAs. The scheduling and using agency would remain the Alpena CRTC for airspace in the Alpena SUA Complex except for R-4201, where the using agency would remain Camp Grayling. Shared-use procedures are specified in a LOA between the using agency and the controlling agency. Currently, there is a LOA among Minneapolis ARTCC, Cleveland ARTCC, Toronto Air Canada Centre, and Alpena CRTC regarding procedures for control of aircraft operations to, from, and within ATC Assigned Airspace Areas and MOAs. The LOA includes agency responsibilities, airspace activation, and deactivation procedures, including notification times to the controlling agency when the scheduled activity has changed, been canceled, or was completed for the day. Under the Proposed Action, the LOA would be updated to include the new MOAs and any necessary procedure revisions.

When any of the MOAs are not in use, they would be released to the controlling agency and made available to nonparticipating aircraft. As discussed in Section 3.1 (see also Table A-3 and Figure A-3 in Section A.1), numerous general aviation airports are in the study area. Most of these airports are adjacent to the SUA Complex, not underneath it, and consist of general aviation traffic. When a MOA is being used, nonparticipating IFR traffic may be cleared through if IFR separation can be provided by ATC. Otherwise, ATC would reroute or restrict nonparticipating IFR traffic. To alleviate potential adverse impacts on IFR traffic under the Proposed Action, the MIANG would enter into a LOA with Minneapolis ARTCC and Cleveland ARTCC, to establish procedures for real-time separation and use of the airspace to allow civilian IFR aircraft access through the MOAs. Aircraft flying VFR can fly through an active MOA. VFR aircraft use see-and-avoid procedures, which states that the aircraft shall maintain vigilance so as to see and avoid other aircraft. Pilots can also contact the FAA Flight Service Station prior to flight for any pertinent NOTAMs or restrictions pertaining to their area of intended operation (FAA, 2021). The airspace legal description requirement would include that the airspace must be activated by NOTAM at least four hours in advance.

International aviation laws determine who has priority when utilizing an airspace (see inset, right, which summarizes U.S. regulations). The first priority is aircraft in distress. The second priority is air ambulance services, or small private jets or helicopters that fly to hospitals. Aircrews continually monitor communications related to air ambulance services. If a pilot is flying and receives an air ambulance notification, the pilot would leave the area immediately. Upon receiving notification that air ambulance services require priority within an airspace, air traffic controllers would contact pilots within the airspace and would evacuate the area immediately. Pilots are professionally trained to “see and avoid” conflicts while flying within military airspace.

As previously discussed, there are currently eight VRs that access R-4201 and Grayling Range from Alpena CRTC. Under the Proposed Action, two new VRs would be established between R-4201 and Alpena CRTC. During LFEs, there is an increase in the amount of military helicopter traffic between Alpena CRTC and Camp Grayling on approved Army routes to both the north and south of R-4201A. This turns off the MTR option for fixed-wing aircraft to ingress and egress the range at low altitudes during the prime training months of July and August. The proposed VRs would allow for military deconfliction between fixed-wing and rotary-wing aircraft during LFEs. Consequently, Alpena CRTC VR utilization is not expected to change from current levels, and the Proposed Action would result in beneficial effects during LFEs. Black Talon currently schedules and deconflicts all VRs (and all MTRs) located within Michigan; the scheduling of two additional VRs into and out of Grayling Range, but not additional aircraft utilization, would have no significant impacts.

Nonparticipating aircraft are not prohibited from flying within a VR; however, extreme vigilance should be exercised when conducting flight through or near these routes. Pilots should contact Flight Service Stations within 100 nautical miles of a particular VR to obtain current information or route usage in their vicinity (FAA, 2021). Information available includes times of scheduled activity, altitudes in use on each route segment, and the route width.

Under the Proposed Action, the ceiling of R-4201B would be raised from 9,000 feet to 23,000 feet MSL to match the ceiling of R-4201A. As a result, as summarized in Table 2-3, there would be an increase in sortie hours in R-4201B as compared to existing conditions. There would also be a decrease in hours in R-4201A. Under the Proposed Action, R-4201A/B would be used in conjunction more frequently. The total number of hours in R-4201A/B is 869 under existing conditions and 791 under the Proposed Action. Therefore, the total number of annual hours in R-4201 is not expected to substantially change. Given that Grayling Air Gunnery Range staff are already accustomed to scheduling aircraft operations in the range and airspace, and changes to the airspace under the Proposed Action are not expected to be substantial, no impacts on aircraft management are expected.

### Right-of-Way Rules

When there is a rule that gives another person the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear. Specifically:

- An aircraft in distress has the right-of-way over any other aircraft.
- A balloon has the right-of-way over any other aircraft.
- A glider has the right-of-way over airplanes or rotorcraft.
- An aircraft towing or refueling another aircraft has the right-of-way over engine-driven aircraft.
- Life Flights and ambulance flights are always given priority in airspace.

Military pilots are highly trained and maintain see-and-be-seen awareness throughout their training activities.

(41 CFR 91.113)

Nonparticipating aircraft are not allowed to fly through restricted areas (i.e., R-4201) when they are active. When the restricted area is active, ATC issues a clearance that ensures nonparticipating aircraft avoid the restricted airspace unless it is on an approved altitude reservation mission or has obtained its own permission to operate in the airspace and so informs the controlling facility. If the restricted area is not active and has been released to the controlling agency, ATC allows the aircraft to operate in the restricted airspace without issuing specific clearance for it to do so (FAA, 2021).

Currently, there are 10,181 square nautical miles of airspace in the Alpena SUA Complex, not including the Grayling Temporary MOA. Under the Proposed Action, the amount of charted SUA would increase to 13,344 square nautical miles. The increase in the amount of airspace is partly based on the need for the Proposed Action to have airspace that is of sufficient, contiguous size and altitude to accommodate LASDT and LOWAT tactics. This includes flying operations such as close air support, electronic attack, or chaff and flare deployment; depending on the training that is required, some SUAs would be requested more than others. The Grayling West MOA would be adjacent to R-4201A/B and would be used in coordination with training activities in the restricted area. Hersey MOA would be returned to the NAS. Although the change in flying operations and the amount of available airspace is not parallel, given the amount of airspace available, the proposed airspace could accommodate the estimated aircraft capacity.

The change in hours for the existing SUAs was compared to the estimated hours for the proposed SUAs. The number of hours in the Steelhead MOA would decrease by approximately 27 percent compared to existing conditions (refer to Table 2-9); Pike West MOA would increase by approximately 22 percent (refer to Table 2-10); Pike East MOA would increase by approximately 12 percent (refer to Table 2-11); and Hersey MOA would be returned to NAS (hours in R-4201 are discussed above).

Considering that civilian aircraft fly 365 days a year, day and night, there are 8,760 hours available in a year. When not in use, MOAs would be released to the controlling agency and made available to nonparticipating aircraft. Given this, the total number of hours available for civilian aircraft were compared to the projected number of hours in each proposed airspace as summarized in Table 2-3. Using this methodology, the proposed Grayling West MOA would be used by participating aircraft approximately five percent of the total available hours; the proposed Grayling East MOA would be used approximately three percent; the proposed Steelhead Low North and Steelhead Low South MOAs would each be used approximately two percent; and the proposed Steelhead Low East MOA would be used approximately four percent. Conversely, there would be times when surges in training activities would occur, and also periods of lower utilization. In addition, the total number of annual hours includes late-night hours when most civilian aircraft are not flying. However, even given these factors, the estimated percentage of time that the proposed airspace would be used by participating aircraft is fairly low.

Several airports are underneath the proposed Grayling East MOA, including Atlanta Municipal Airport, Oscoda County Dennis Kauffman Memorial Airport, Eagle II Airport, and Lost Creek (see also Table A-3 and Figure A-3 in Section A.1). The floor of the Grayling East MOA would be 10,000 feet MSL, so adverse effects on flights in and out of these airports are not expected. There are no airports directly underneath the proposed VRs; however, Atlanta Municipal Airport and Hillman Airport are located to the south of the proposed VR width.

Airports were identified under the proposed MOAs with floors that would be considerably lower than the existing SUA floors on-land (i.e., Steelhead Low North MOA, and Steelhead Low East MOA). There are no airports directly underneath the proposed Grayling West MOA. Grindstone Air Harbor Airport is located on the coast of Lake Huron and underneath the proposed Steelhead Low East MOA (which has a floor of 500 feet AGL). Grindstone Air Harbor Airport is a transient general aviation airport with approximately 50 operations per year (AirNav, 2021a). The estimated number of sorties in the Steelhead Low East MOA is 1,020 per year. Given that the 180 FW and 127 WG train approximately 264 flying days per year, there would be about four sorties per day on average in the Steelhead Low East MOA. In addition, in the Steelhead Low MOAs, participating aircraft would fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15. F-35 aircraft would not utilize the Steelhead Low MOAs under the Proposed Action. Therefore, for four months of the year, the floor of the Steelhead Low East MOA above Grindstone Air Harbor Airport would be 1,500 feet AGL. As a result, there would be a low number of operations at the Grindstone Air Harbor Airport and in the Steelhead Low East MOA, and measures would be implemented within the Steelhead Low MOAs, as discussed.

Huron County Memorial Airport is underneath the Steelhead Low South MOA. This airport consists of general aviation aircraft and has approximately 121 aircraft operations per week (AirNav, 2021b). To alleviate potential adverse effects on air traffic under the Proposed Action, the shape and altitude of Steelhead Low South MOA was designed to enable civil flight operations to arrive and depart Huron County Memorial Airport without entering military airspace. A seven nautical mile arc was incorporated into the proposed MOA design around the airport so that the floor of the MOA would be 4,000 feet MSL in this region. This enables aircraft to arrive and depart using their current published instrument approach procedures.

The Alpena CRTC is currently located at the Alpena County Regional Airport, which is underneath Pike West MOA. Under the Proposed Action, there would not be substantial changes to the Pike East or West MOAs. Alpena CRTC departures, arrivals, and training from Alpena County Regional Airport would not change substantially from current procedures. In addition, the aircraft operations procedures to and from the SUA would remain the same in an updated LOA. No significant impacts to Alpena County Regional Airport are expected from the Proposed Action.

There are a few airports within a 50-nautical-mile radius of the Alpena SUA Complex with a small percentage of commercial flights, such as Bishop International Airport, which is approximately 40- to 50-nautical miles south. However, airports with a large amount of commercial traffic, such as Detroit Metropolitan Wayne County Airport, are approximately 80 nautical miles from the Alpena SUA Complex. Given the distance, most commercial flights arriving or departing to Detroit would likely be above the ceiling of the MOAs (18,000 feet MSL). However, if the aircraft needed to fly through the MOAs when active, as previously discussed, ATC would provide IFR separation.

Coordination between the agencies for use of military airspace and other training assets is an ongoing activity. Considerable planning has occurred to anticipate needs, identify potential problems, and develop workable solutions for issues associated with use of these airspace and associated requirements. Such planning, continuing after implementation of the Proposed Action, would ensure that impacts associated with use of airspace and airspace management requirements are minimal.

#### **4.1.2 Alternative B: No Steelhead Low MOAs**

The scheduling and using agencies described under the Proposed Action in Section 4.1.1 would remain the same under Alternative B. Aircraft utilization would not vary substantially regardless of which alternative is selected. Under Alternative B, there would likely be more utilization in the Steelhead MOA and Grayling West MOA than is proposed for the Steelhead Low MOAs under the Proposed Action. The SUAs in the Alpena SUA Complex would be used together, similar to the Proposed Action; Grayling MOAs, R-4201, Pike MOAs, Steelhead MOA, and the ATCAAs would be used in conjunction to approximate the SUA volume requirements for complex missions. Therefore, a substantial change in the number of aircraft sorties and hours is not expected.

Under Alternative B, airports underneath and adjacent to the Steelhead Low MOAs would experience fewer impacts than under the Proposed Action given that the floor of the Steelhead MOA would remain at 6,000 feet MSL. Less chaff and flare would be used in training than under the Proposed Action (i.e., increase of approximately 510 chaff and 790 flare expenditures under Alternative B, compared with increase of 1,000 chaff and 1,500 flare expenditures under the Proposed Action). No other changes would be expected compared to the impacts described under the Proposed Action. Impacts on airspace management would not be significant.

#### **4.1.3 Alternative C: No Grayling East or West MOAs**

The scheduling and using agencies described under the Proposed Action in Section 4.1.1 would remain the same under Alternative C. Aircraft utilization would not vary substantially regardless of which alternative is selected. Alternative C would not satisfy part of the need to provide connecting airspace from the existing SUA complex to the Grayling Range for continuity. This alternative would also limit the amount of low-altitude airspace closer to the Grayling Range; therefore, there would be an increase in flight time and fuel usage from Alpena CRTC as compared to the Proposed Action. There would likely be more utilization in the Steelhead Low MOAs as compared to the Proposed Action, and Hersey MOA would be available as an alternative when the weather was unfavorable. However, a substantial change in the overall number of aircraft sorties and hours is not expected.

Under Alternative C, civilian airports underneath and adjacent to the Grayling East and West MOAs would experience fewer impacts than under the Proposed Action. Less chaff and flare would be used in training than under the Proposed Action (i.e., increase of approximately 510 chaff and 790 flare expenditures under Alternative C, compared with increase of 1,000 chaff and 1,500 flare expenditures under the Proposed Action). No other changes would be expected compared to the impacts described under the Proposed Action. Impacts on airspace management would not be significant.

#### **4.1.4 Alternative D: No Action Alternative**

Under Alternative D, airspace management would remain as described in Section 3.1, existing conditions. The need to provide sufficient, contiguous size and altitude to accommodate LASDT and LOWAT tactics and standoff weapons employment, to support ANG Instruction 10-110 would not be met. Components such as implementing the proposed VRs to allow for military deconfliction would not occur, resulting in minor adverse impacts on airspace management. Civilian airports underneath and adjacent to the Alpena SUA Complex would experience the same impacts as under current conditions and fewer impacts compared to the Proposed Action. Impacts on airspace management would not be significant.

## 4.2 Safety

Any increase in safety risks without risk management would be considered an adverse effect on safety. A proposed action could have a significant effect with respect to health and safety if it were to substantially increase risks associated with the safety of military personnel, contractors, or the local community; substantially hinder the ability to respond to an emergency; or introduce a new health or safety risk for which Alpena CRTC or Grayling Range is not prepared or does not have adequate management or response plans in place.

### 4.2.1 Proposed Action (Alternative A)

#### **Aircraft Safety**

The primary public concern regarding aircraft safety is the potential for aircraft accidents or mishaps. An increase in aircraft flight activities may be associated with an increased risk of aircraft mishaps. Although many investigations have been conducted to determine a direct cause and effect relationship between operational levels and aircraft mishaps, results are generally inconclusive because so many other unpredictable hazard factors (e.g., weather, operating environments, technical failures, terrorist actions, and pilot proficiency) can contribute to whether an accident occurs or is prevented (Congressional Research Service, 2003).

In probability analysis, an aircraft mishap is a low-probability, high-consequence risk because pilots are trained, and aircraft designed, to ensure that aircraft accidents are rare events. Under the Proposed Action, total sorties within SUA would increase within the proposed SUA expansion, to include the Grayling East and West MOAs and the three new Steelhead Low MOAs. Most aircraft accidents occur during takeoff or landing; second to these operations are mishaps involving high-performance maneuvering, such as operations that typically occur in a MOA. Minimizing flight safety risks is a priority. Aircrews are trained to see and avoid any risks, including in populated areas. Pilots operating within the Alpena SUA would continue to follow flight safety regulations dictating emergency and accident response in accordance with AF policy. In addition, flight safety regulations as described in Air Force Manual 11-202V1, Aircrew Training; Air Force Manual 11-202V3, Flight Operations; Air Force Instruction 11-418, Operations Supervision; Air Force Instruction 11-214, Air Operations Rules and Procedures, all contribute to the safe operation and use of aircraft.

Within the Alpena SUA Complex, R-4201/Grayling Range is the primary training range for the units. The 180 FW and 127 WG use Grayling Range daily due to its proximity and available training assets. Training assets include air gunnery range target areas, helicopter landing zones, and restricted airspace that are used in conjunction for military training. Established in 1917, the Grayling Range has a long history of air and ground operations. The Grayling Air Gunnery Range Manual (2020) has specific procedures and instructions for air and ground operations, weapons expenditures and safety including airspace violations, emergency response including fuel and fluid spills, fire response, and medical emergency. In the event of an in-flight emergency, such as mechanical failure, military pilots are trained to take all appropriate emergency measures, including avoiding populated areas, if possible. Trained maintenance crews perform inspections on each aircraft in accordance with DOD regulations. Maintenance activities are monitored to ensure that aircraft will perform safely under the rigors of operational and training events. The ANG has implemented and would continue to implement operational and administrative controls to ensure flight safety.

The controlling agency and using agency would stay the same for the airspace within the Alpena SUA Complex and R-4201. Given the increase in airspace that would occur and the well-established procedures that are already in place, the added potential for aircraft mishaps would be negligible as compared to the No Action Alternative.

Bird-aircraft strikes present a potential safety issue due to resident and migratory bird populations. The Alpena SUA Complex is within the Mississippi Flyway, one of four migratory flyways over the United States. ANG uses tools such as the Avian Hazard Advisory System (2015) and the Bird Avoidance Model to generate projected and geospatially confirmed bird data for use in military airspace. Alpena CRTC's Bird-/ Wildlife-Aircraft Strike Hazard (BASH) Plan (2020a) incorporates measures for reducing the potential for bird-aircraft strikes across the airfield and airspace. Additional information is in Section 4.7.

The proposed Grayling West, Steelhead Low North, and Steelhead Low East MOAs would each have a floor of 500 feet AGL, and the proposed VR-1601/1602 would have a floor of 300 feet AGL. Clusters of windmill turbines are within the proposed Steelhead Low North and Steelhead Low South MOAs with heights ranging between 1,068 feet and 1,362 feet above MSL (approximately 427 feet to 612 feet AGL), as well as several other height obstructions in the Steelhead Low East MOA around 500 feet AGL, as noted on the Detroit Sectional Aeronautical Chart (FAA, 2022a). Several height obstructions ranging from 315 feet to 649 feet AGL are within the proposed VR-1601/1602 width, as noted on the Lake Huron Sectional Aeronautical Chart (FAA, 2022b). No height obstructions above 500 feet were noted within the Grayling West MOA. Pilots are professionally trained to "see and avoid" conflicts while flying within military airspace, including any structures such as wind turbines, people, or vehicles. Pilots would continue to follow low-level guidance and remain 1,000 feet above the highest obstacle and 2,000 feet laterally when over congested or populated areas, as well as 500 feet above all known or observed antennas, turbines, and other obstacles (14 CFR 91.119).

The current LOA among Minneapolis ARTCC, Cleveland ARTCC, Toronto Air Canada Centre, and Alpena CRTC authorizes lights out operations within the Alpena SUA Complex with certain procedures. Lights out operations may be conducted provided all appropriate coordination and safety procedures are followed, including that the NOTAM identifies lights out operations, aircrews operating lights out must alter their course to remain clear of nonparticipating traffic, and aircrews indicate their flight plan by noting lights out and the airspace. Lights out flying in MOAs requires an evaluation of the MOA and surrounding airspace. If the evaluation is favorable, the MOA is publicly identified as approved for lights out flight operations by the FAA. To conduct those operations, the FAA issues a waiver to several Federal Aviation Regulations and mandates terms and conditions whereby lights out flying can be conducted with the safety of nonparticipating aircraft in mind.

Pilots would continue to conduct preflight planning, participate in low-altitude awareness training, and use in-flight warning systems to ensure low-altitude training is conducted safely. The MIANG would enter into a LOA with Minneapolis Center and Cleveland Center to establish procedures for real-time separation and use of the airspace to allow civilian IFR aircraft access through the MOAs. Implementation of the Proposed Action would introduce negligible aircraft safety risks beyond the existing conditions. No significant impacts are anticipated.

### **Chaff and Flare**

Chaff and flare expenditures would increase by approximately 20 percent under the Proposed Action (refer to Table 2-17 for quantities of existing and proposed chaff and flare use). As used in Air Force training, these components would be deposited in the environment at rates that are nontoxic and undetectable (USAF, 1997). Safety risks have been examined in other studies and found to be extremely low; see inset, right (USAF, 2011; USAF, 2023a).

Due to the extremely high temperatures at which flares burn upon ignition coupled with minimum flare employment altitudes, the use of flares presents a small risk for fire. Fires can have a wide range of environmental effects. Immediate fire effects can threaten human health and safety, destroy surface vegetation, destroy wildlife and eggs, alter seeds and microbes in the soil, temporarily disrupt travel, and produce smoke. Delayed effects could alter mineral or pH levels in the soil, increase presence of invasive vegetation or insect species, increase vulnerability to wind and water erosion, or change wildlife habitats.

Existing military regulations require precautions to be taken to avoid injury or damage to persons or objects. This includes precautions for activities that increase the potential for fires, such as the release of flares. The area below the proposed Grayling West MOA is a prime wildfire area with large tracts of jack pine (*Pinus banksiana*) that can fuel volatile wildfires (see MDNR letter, July 15, 2021, Appendix B). At deployment altitudes greater than 1,500 feet AGL, a flare burns completely out before reaching the ground (USAF, 2011). Across the MOAs within the Alpena SUA Complex, no flares would be deployed below 2,000 feet AGL.

Within R-4201, flares may be deployed consistent with existing approved altitudes for the range as managed by Camp Grayling's Range Control Office. Air Force Instruction 11-214 would continue to be followed, including verifying current fire conditions prior to flare employment (ACC/A3TW, 2021). If necessary due to seasonal fire conditions, the altitude at which flares are deployed would be raised to 2,000 feet within R-4201 to decrease fire risk. Camp Grayling would continue to monitor and manage fire safety risks associated with training activities in accordance with existing plans and procedures. Over time, a changing climate in this area could worsen drought conditions and result in increased seasonal fire restrictions; this could lead to less training using flares.

Existing agreements and coordination efforts, such as wildland fire suppression, would remain in place or be revised as necessary to ensure continued ability to enable VFR aircraft to survey for and combat wildfires in forested areas. Therefore, the Proposed Action would present a low fire risk from increased flare deployment over existing conditions. No significant impacts are anticipated.

#### **Chaff and Flare Safety Risks**

The USAF Air Combat Command (1997) prepared a comprehensive report detailing the environmental effects of chaff and flare, including the following potential safety risks:

- inadvertent release or cloud drift clutters FAA, airborne radar, and satellite tracking
- power line arcing
- aircraft ingests chaff and affects engine efficiency
- chaff deployed near another aircraft, distracting pilot
- Class D Mishap from system malfunction (non-aircraft)
- high accident potential from system malfunction (non-aircraft)
- high accident potential from system malfunction (aircraft)
- injury from falling debris
- flare system malfunction

These potential safety risks from chaff and flare were found to be extremely low.

The NGB (2002) prepared a comprehensive EA analyzing chaff and flare deployment in ANG airspaces, including Pike and Steelhead MOAs, and determined that use of chaff and flare would be unlikely to significantly impact public safety. The quantities of chaff bundles and flares analyzed in the 2002 EA were higher than those proposed in this EA.



#### **4.2.2 Alternative B: No Steelhead Low MOAs**

Effects on safety under Alternative B would be comparable to those described under the Proposed Action. The obstructions noted within the Steelhead Low North and East MOAs would have no bearing as these MOAs would not be established under Alternative B. Existing aircraft safety procedures, including chaff and flare use, would remain in place. Alternative B would result in a 10 percent increase in use of chaff and flare, compared with existing use. No significant impacts are anticipated.

#### **4.2.3 Alternative C: No Grayling East or West MOAs**

Effects on safety under Alternative C would be comparable to those described under the Proposed Action. Existing aircraft safety procedures, including chaff and flare use, would remain in place under Alternative C. Alternative C would result in a 10 percent increase in use of chaff and flare, compared with existing use. No significant impacts are anticipated.

#### **4.2.4 Alternative D: No Action Alternative**

Under the No Action Alternative, the operating environment would remain comparable to those described in Section 3.2. No changes in safety risks would occur with continued use of the Alpena SUA Complex in its current configuration. No significant impacts are anticipated.

### **4.3 Air Quality**

Clean Air Act, Section 176(c)—General Conformity—requires federal agencies to demonstrate that proposed activities would conform to applicable State Implementation Plans for attainment of NAAQS. Huron County in the study area is an orphan maintenance area for the revoked 1997 ozone NAAQS, meaning that total direct and indirect ozone emissions must be compared to the ozone maintenance thresholds specified in 40 CFR 93.153(b) to determine if the Proposed Action would be *de minimis*, or if a full Conformity Determination is required. Ozone *de minimis* thresholds are measured by its precursors, volatile organic compounds and nitrogen oxides. All other criteria pollutants are in full attainment with NAAQS, so the General Conformity Rule does not apply to those pollutants. Though not a legal threshold, *de minimis* thresholds may be used to demonstrate that the total changes in project emissions for these pollutants are not significant. This approach to analysis is consistent with the Air Force's Air Quality EIAP Guide (AFCEC, 2020).

Impacts on air quality were evaluated for whether the alternative would contribute to a violation of the NAAQS. Per FAA Order 1050.1F, an alternative that causes pollutant concentrations to exceed one or more of the NAAQS for any of the time periods analyzed, or that increase the frequency or severity of any such existing violations would be significant. Air emissions were estimated using the DAF's Air Conformity Applicability Model (ACAM), Version 5.0.18b (AFCEC, 2023).

#### **4.3.1 Proposed Action (Alternative A)**

Appendix K contains the Record of Non-Applicability, the ACAM report showing record of conformity analysis, the ACAM report showing detailed air conformity applicability background and methodologies for air emissions estimates, and tables providing detailed and summary altitude utilization within the existing and proposed Alpena SUA.

### Regional Criteria Pollutant Emissions

Implementation of the Proposed Action would expand airspace, particularly low airspace, within the Alpena SUA Complex. The approximate mixing height (i.e., above which changes in aircraft operation would have no or negligible discernable effects on ground-level air quality) is 3,000 feet AGL (40 CFR 93.153(c)(2)(xxii)). The increase in available low airspace would change the distribution of sorties in the airspace, shifting some sorties from higher MOAs of baseline operations that are above the mixing height to proposed low MOAs below the mixing height. The proposed increase in aircraft sorties below 3,000 feet AGL would increase criteria pollutant emissions, particularly nitrogen oxides, across the region. The volume of the total SUA available would also expand, so criteria air pollutants would be dispersed over a larger area. Long-term, steady-state air emissions with General Conformity applicability are summarized in Table 4-1.

Only ozone emissions (measured as volatile organic compounds and nitrogen oxides, which are ozone precursors) within Huron County must demonstrate conformity. The applicable *de minimis* threshold for ozone maintenance is 100 tons per year of either nitrogen oxides or volatile organic compounds; the change in estimated annual aircraft emissions of measured ozone precursors (i.e., nitrogen oxides or volatile organic compounds) would be below this threshold.

**Table 4-1 Steady-State Air Emissions (Calendar Year 2024+)**

Pollutant	Action Emissions (ton/year)	General Conformity	
		Threshold (ton/year)	Exceedance (Yes or No)
<b>Huron Co, Michigan (orphan maintenance area for revoked 1997 ozone standard) <sup>1</sup></b>			
VOC	0.405	100	No
NO <sub>x</sub>	45.984	100	No
CO	3.999	—	—
SO <sub>x</sub>	2.918	—	—
PM <sub>10</sub>	5.454	—	—
PM <sub>2.5</sub>	4.902	—	—
CO <sub>2e</sub>	8,820.5	—	—

(AFCEC, 2023)

Note:

<sup>1</sup> To provide a maximum impact, all SUA aircraft changes were included within the Huron County ozone maintenance area; however, these emissions would be spread across the entire SUA, so actual emissions in Huron County would be much less than shown.

Key: CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalents; NO<sub>x</sub> = nitrogen oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 micrometers; PM<sub>10</sub> = particulate matter less than or equal to 10 micrometers; SO<sub>x</sub> = sulfur oxides; SUA = Special Use Airspace; VOC = volatile organic compounds.

The *de minimis* thresholds for most maintenance and nonattainment areas are 100 tons per year of any pollutant (see Table A-6 in Appendix A). The *de minimis* standards for sulfur dioxide, nitrogen dioxide, carbon monoxide, and particulate matter do not formally apply to this action because this area is fully in attainment for these criteria pollutants. However, these *de minimis* thresholds can be used to demonstrate that project emissions would not be significant. As shown in Table 4-1, total project emissions would be well below 100 tons per year for all criteria pollutants, demonstrating that the projected long-term increases in air emissions from the Proposed Action would not be regionally significant.

The only air quality monitor in the study area is in Huron County, under the proposed Steelhead Low East MOA. Ozone concentrations have not triggered any NAAQS violations since the

promulgation of the latest ozone standard in 2015 (Table A-7 in Appendix A). Low-level flying below 3,000 feet in the Steelhead Low MOAs would produce nitrogen oxide and volatile organic compound emissions, which react to form ground-level ozone. Given the relatively minor increases in emissions from aircraft, the Proposed Action would not cause any pollutant concentrations to exceed NAAQS. Impacts would not be significant. Methodology and emissions for aircraft operations in SUA below the mixing height are in the detailed ACAM report in Appendix K.

### **Sensitive Airsheds**

Seney Wilderness is the only Class I air quality area within 300 kilometers of the Proposed Action. Given the minor increases in criteria pollutant emissions and its distance, the Proposed Action would have no effect on air quality or visibility within Seney Wilderness. A brief discussion of visual resources is in Section A.11 of Appendix A.

### **Greenhouse Gas Emissions and Climate Effects**

In January 2023, the CEQ published greenhouse gas interim guidance directing agencies to consider (1) the potential effects of a proposed action on climate change including assessing GHG emissions and reductions from the proposed action, and (2) the effects of climate change on a proposed action and its environmental impacts (CEQ, 2023).

Implementation of the Proposed Action would contribute directly to regional emissions of greenhouse gases, namely carbon dioxide, from the combustion of fossil fuels emitted during aircraft operations. Estimated regional long-term greenhouse gas emissions would be approximately 8,821 tons (8,001 metric tons) of carbon dioxide equivalents (AFCEC, 2023).

However, overall, the Proposed Action would be expected to result in negligible changes in greenhouse gas emissions. The Proposed Action does not include changes in personnel, construction, ground-based operations or training, or stationary sources of air emissions. Regional increases in aircraft sorties within the proposed Alpena SUA would be offset by reductions in emissions in other airspace as well as reduced travel time to arrive to the training airspace. Therefore, the balance of greenhouse gas emissions was not further quantified, beyond localized changes associated with the ACAM output, because changes would be negligible.

### **Chaff and Flare**

Air quality issues associated with chaff and flare deployment include the potential for chaff to break down into respirable particle sizes and the possibility that hazardous air pollutants may be generated from pyrotechnic impulse cartridges used with some chaff models. The body of long-term research involving chaff particulate tests and health risk assessment suggests that these are not significant concerns on air quality (USAF, 1997; USAF, 2011; USAF, 2023a).

#### **4.3.2 Alternative B: No Steelhead Low MOAs**

Effects on air quality under Alternative B would be comparable to those described in Section 4.3.1. However, without establishing the Steelhead Low North and East MOAs, which both introduce low-level airspace below the mixing height, regional emissions would be slightly lower than the Proposed Action because the overall time spent flying at low levels would be less. For example, if an F-16 sortie includes 20 minutes in Pike East MOA, 20 minutes in Pike West MOA, 15 minutes in Steelhead MOA, and 5 minutes in Steelhead Low North or East MOA under the Proposed Action,

then that 5 minutes in the Steelhead Low North/East MOA would likely be redistributed under Alternative B to the Steelhead MOA, which is above the mixing height. This difference in emissions under Alternative B would be negligibly less than under the Proposed Action. Impacts would not be significant.

### **4.3.3 Alternative C: No Grayling East or West MOAs**

Effects on air quality under Alternative C would be comparable to those described in Section 4.3.1. However, without establishing the Grayling West MOA, which introduces low-level airspace below the mixing height, regional emissions could be slightly lower than the Proposed Action because sorties would involve less time at low levels. The example of sortie distribution that is discussed under Alternative B would also occur under Alternative C. As a result, air emissions under Alternative C would be slightly less as compared to the Proposed Action. This difference in emissions would be negligible. Impacts would not be significant.

### **4.3.4 Alternative D: No Action Alternative**

Under the No Action Alternative, air quality would remain comparable to what is described in Section 3.3. No changes in air emissions sources would occur with continued use of the Alpena SUA Complex in its current configuration. Impacts would not be significant.

## **4.4 Noise**

The noise impact analysis is evaluated for a potential increase in the existing noise environment and whether effects on humans would occur such as annoyance, speech interference, sleep disturbance, hearing loss, or disruption to children's learning. FAA Order 1050.1F provides the FAA's significance threshold for noise: The action would increase noise by 1.5 dBA DNL or more for a noise-sensitive area that is already exposed to noise at or above the 65 dBA DNL noise exposure level, or that would be exposed at or above the 65 dBA DNL level due to a 1.5 dBA DNL or greater increase, when compared to the No Action Alternative for the same timeframe (FAA, 2020). For example, an increase from 65.5 dBA to 67 dBA DNL is considered a significant impact, as is an increase from 63.5 dBA to 65 dBA DNL. For air traffic airspace actions, the FAA considers "reportable noise" change-of-exposure at population centers by the following specified amounts: an increase of 3 dBA from 60 dBA to <65 dBA DNL, or an increase of 5 dBA from 45 dBA to <60 dBA. When determining significance from aircraft operations in SUAs, Ldnmr is the accepted noise metric. Ldnmr has an 11 dBA adjustment for acoustical events with onset rates greater than 15 dBA per second, such as high-speed jets operating near the ground, and is assessed with flying days per month. As a result, Ldnmr is always equal to or greater than DNL and, therefore, a more conservative noise metric.

The noise analysis was conducted with the Noisemap suite of models through the BaseOps interface (Version 7.366). The MRNMap noise model predicts noise levels associated with aircraft operations in SUAs. The parameters considered in the modeling included aircraft type, aircraft operations, airspeed, power setting, the time spent within each airspace block, and the altitude distribution. Noisemap is the primary DOD-approved aircraft noise model, per DODI 4715.13, DOD Operational Noise Program, and Chapter 11 (Noise and Noise-Compatible Land Use) of the FAA's 1050.1F Desk Reference (FAA, 2020). See Appendix L, Noise Analysis Report, for more detailed information.

#### 4.4.1 Proposed Action (Alternative A)

##### **Aircraft Sorties**

SUAs that were modeled under the Proposed Action include Grayling West and East MOAs; Steelhead MOA; Steelhead Low East, Low North, and Low South MOAs; Pike East and West MOAs; R-4201A/B; and the MTRs, VR-1601 and VR-1602. Hersey MOA would be returned to the NAS under the Proposed Action. The sortie numbers and hours were obtained from Alpena CRTIC, Selfridge ANGB, and Toledo ANGB and represent an average over a year (MIANG & OHANG, 2021). The proposed sortie numbers and hours are based on a conservative annual estimate from average operational data and the planned mission and would be flown after the Proposed Action is implemented.

Table 2-3 summarizes the total existing and proposed sorties in the Alpena SUA Complex; the number of sorties and the time in each SUA are shown in Table 2-4 through Table 2-16. MRNMap was used to calculate noise levels for sorties within the existing and proposed SUAs. As shown in Table 4-2, most of the operational noise levels are at or below 45 dBA Ldnmr. The Grayling West MOA and Pike East MOA show levels of 45 dBA Ldnmr under the Proposed Action; the floors of those MOAs are 500 feet AGL and 300 feet AGL, respectively. The Steelhead Low North and East MOAs also have low floors (500 feet AGL); however, most of the sorties (870 sorties) are conducted with the A-10 aircraft. Generally, the maximum sound levels from the A-10 aircraft are quieter than the maximum sound levels from the F-16 aircraft. In the Pike East MOA, only 40 sorties are conducted annually with the A-10 and 80 sorties are conducted with the F-35 aircraft under the Proposed Action. A large increase in nighttime operations would also occur in the Pike East MOA, from 9 to 111; Ldnmr includes a 10 dBA adjustment added to the nighttime operations. The proposed Grayling West MOA was modeled with approximately 600 more sorties as compared to the Steelhead Low North and East MOAs.

**Table 4-2 Existing and Proposed Ldnmr Values within the Alpena SUA Complex**

Airspace	Existing Ldnmr	Proposed Ldnmr
Grayling West MOA	<35 dBA	45 dBA
Grayling East MOA	<35 dBA	<35 dBA
Steelhead MOA	35 dBA	40 dBA
Steelhead Low North MOA	35 dBA	40 dBA
Steelhead Low South MOA	35 dBA	40 dBA
Steelhead Low East MOA	35 dBA	40 dBA
Pike West MOA	35 dBA	35 dBA
Pike East MOA	35 dBA	45 dBA
Hersey MOA	<35 dBA	<35 dBA
R-4201A	62 dBA	63 dBA
R-4201B	45 dBA	57 dBA
Grayling Temporary MOA	<35 dBA	45 dBA
VR-1601 and VR-1602	<35 dBA	35 dBA

(MIANG, 2021)

Key: dBA = A-weighted decibels; Ldnmr = Onset-Adjusted Monthly Day-Night Average Sound Level; MOA = Military Operations Area; R = Restricted Area; SUA = Special Use Airspace; VR = Visual Flight Rules Military Training Route.

Within R-4201A, the noise level is 62 dBA Ldnmr under existing conditions and 63 dBA Ldnmr under the Proposed Action. Although the total number of sorties within R-4201A would decrease slightly, the number of nighttime sorties would increase from 86 to 121, or approximately 5 percent to 7 percent. As previously noted, Ldnmr includes a 10 dBA adjustment added to the nighttime operations. Within R-4201B, the noise level for existing conditions would be 45 dBA Ldnmr, which increases to 57 dBA Ldnmr under the Proposed Action. The number of sorties within R-4201B would increase from 323 to 1,665; however, the ceiling would also increase from 9,000 feet MSL to 23,000 feet MSL, providing higher altitudes for aircraft to train.

Similar to Ldnmr, the DNL noise levels, shown in Table 4-3, are mostly at or below 45 dBA DNL. The Grayling West MOA and Pike East MOA show levels of 45 dBA DNL. As discussed in Section 3.4, noise levels in the mid-30 to -40 dBA range, such as those in the Alpena SUA Complex, correspond to rural and very quiet suburban land uses. Therefore, an increase in noise levels from 35 dBA to 40 or 45 dBA is not considered a significant impact and would not have an effect on human populations such as annoyance, speech interference, sleep disturbance, hearing loss, or disruption to children's learning. The 61 dBA DNL noise level within R-4201A would remain the same under the Proposed Action. The 45 dBA DNL noise level within R-4201B would increase to 56 dBA DNL under the Proposed Action. As previously discussed, for air traffic airspace actions, the FAA considers "reportable noise" change-of-exposure at population centers by an increase of 5 dBA from 45 dBA to <60 dBA. Although there is an increase in noise of more than 5 dBA within R-4201B, the land use in this area is mainly undeveloped with a few scattered residences; there are no population centers (i.e., urban center or urban cluster) underneath the restricted area. Given that the noise levels are less than 65 dBA DNL, the noise levels would not be considered significant per the FAA's established significance thresholds for noise in FAA Order 1050.1F.

See also Appendix L (Noise Analysis Report) for more detailed information.

**Table 4-3 Existing and Proposed DNL Values within the Alpena SUA Complex Alpena**

Airspace	Existing DNL	Proposed DNL
Grayling West MOA	<35 dBA	45 dBA
Grayling East MOA	<35 dBA	<35 dBA
Steelhead MOA	35 dBA	40 dBA
Steelhead Low North MOA	35 dBA	40 dBA
Steelhead Low South MOA	35 dBA	40 dBA
Steelhead Low East MOA	35 dBA	40 dBA
Pike West MOA	35 dBA	35 dBA
Pike East MOA	35 dBA	45 dBA
Hersey MOA	<35 dBA	<35 dBA
R-4201A	61 dBA	61 dBA
R-4201B	44 dBA	56 dBA
Grayling Temporary MOA	<35 dBA	45 dBA
VR-1601 and VR-1602	<35 dBA	<35 dBA

(MIANG, 2021)

Key: dBA = A-weighted decibels; DNL = Day-Night Average Sound Level; MOA = Military Operations Area; R = Restricted Area; SUA = Special Use Airspace; VR = Visual Flight Rules Military Training Route.

Points of interest within the Alpena SUA Complex were chosen to assess noise levels at specific locations based on land uses that are anticipated to be noise sensitive. Noise-sensitive land uses are based on guidelines from DOD Instruction 4165.57 (DOD, 2021) and FAA Part 150, Airport Noise Compatibility Planning (14 CFR 150), and include state forests, residences, and cultural sites (see Figure 4-1).

Several points are located beneath the proposed Steelhead Low MOAs including Bay Port, Harbor Beach, Huron City, Sanilac Park, Sleeper State Park, and Tawas Lighthouse. As shown in Table 4-4, under the Proposed Action, some of these noise levels would increase by 6 or 7 dBA. However, all of the noise levels are below 40 dBA Ldnmr. As discussed in Section 3.4, noise levels in the mid-30 to -40 dBA range correspond to rural and very quiet suburban land uses and are not considered significant.

#### Land Use Compatibility

DOD Instruction 4165.57 and FAA Part 150 provide recommended land use compatibility based on DNL primarily to discourage high noise exposure in noise-sensitive land uses.

Land uses that are **Compatible** below 65 dBA DNL include:

- residential uses
- cultural activities
- parks
- outdoor recreational areas

(DOD, 2021)

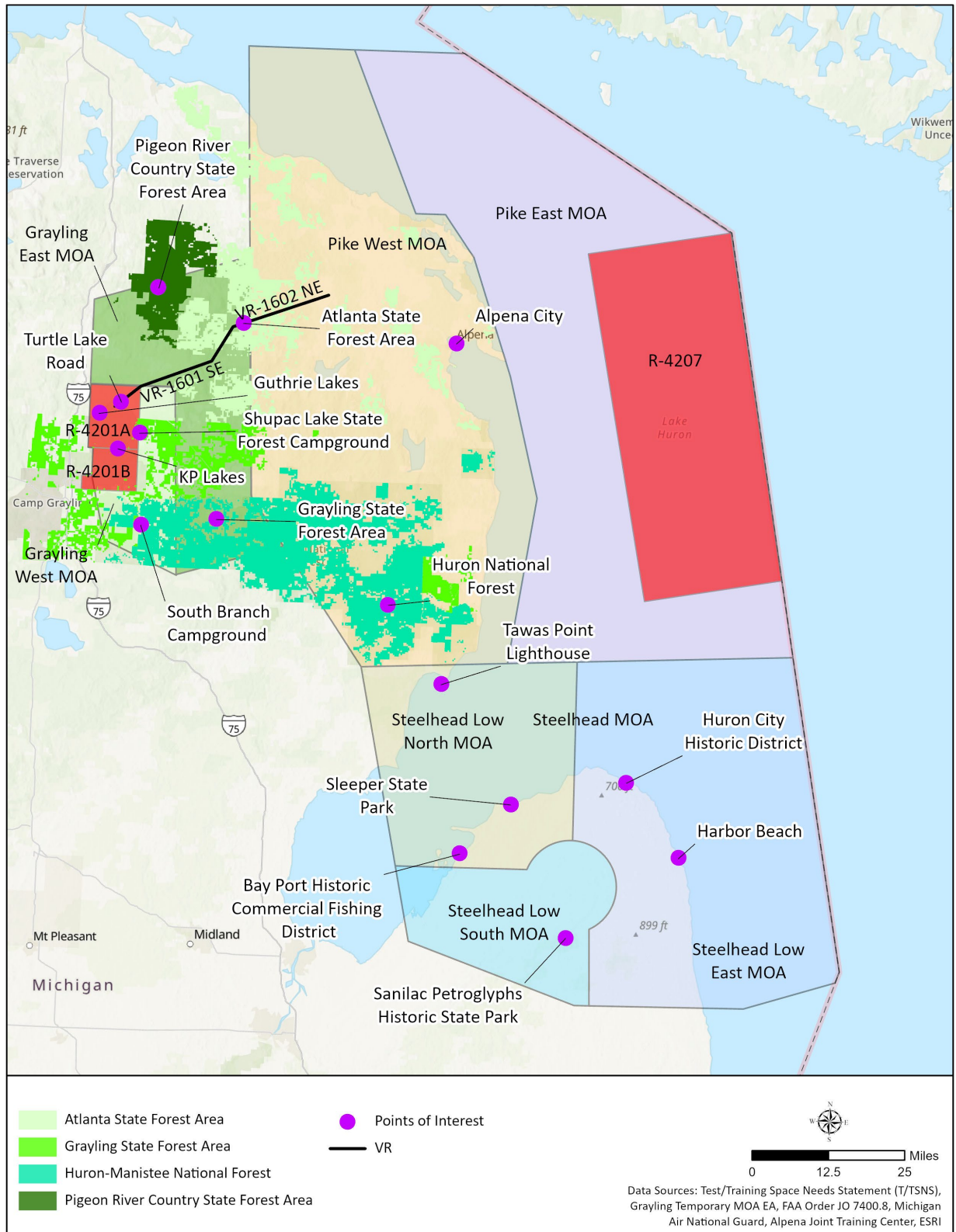
**Table 4-4 Ldnmr Values for Points of Interest**

Point of Interest (Airspace)	Existing Ldnmr	Change under Proposed Action
Alpena City (Pike West MOA)	36 dBA	2 dBA
Atlanta State Forest (VR-1601/1602; Grayling East MOA)	35 dBA	—
Bay Port Historic Commercial Fishing District (Steelhead Low North MOA)	38 dBA	6 dBA
Grayling State Forest (Grayling East MOA)	35 dBA	—
Guthrie Lakes (R-4201A)	62 dBA	1 dBA
Harbor Beach (Steelhead Low East MOA)	38 dBA	6 dBA
Huron City Historic District (Steelhead Low East MOA)	38 dBA	6 dBA
Huron National Forest (Pike West MOA)	36 dBA	2 dBA
KP Lakes (R-4201A/B)	48 dBA	8 dBA
Pigeon River Country State Forest (Grayling East MOA)	35 dBA	—
Sanilac Petroglyphs Historic State Park (Steelhead Low South MOA)	38 dBA	3 dBA
Shupac Lake State Forest Campground (R-4201A; Grayling West MOA)	62 dBA	1 dBA
Sleeper State Park (Steelhead Low North MOA)	38 dBA	6 dBA
South Branch Campground (Grayling West MOA)	35 dBA	12 dBA
Tawas Point Lighthouse (Steelhead Low North MOA)	37 dBA	7 dBA
Turtle Lake Road (VR-1601/1602; R-4201A)	63 dBA	1 dBA

(MIANG, 2021)

Key: dBA = A-weighted decibels; Ldnmr = Onset-Adjusted Monthly Day-Night Average Sound Level; MOA = Military Operations Area; R = Restricted Area; VR = Visual Flight Rules Military Training Route.

**Figure 4-1 Points of Interest within Alpena SUA Complex**





Guthrie Lakes is a residential community underneath R-4201A, and KP Lakes is a residential community underneath R-4201B. The Ldnmr level would increase at Guthrie Lakes by 1 dBA but would remain under 65 dBA Ldnmr. The Ldnmr level would increase at KP Lakes by 8 dBA, which would be a result of the increase in sorties under the Proposed Action. However, this increase would be less than the 65 dBA Ldnmr threshold. A condition of the establishment of R-4201A and R-4201B was that the airspace be over property owned by the military or the U.S. Government (Camp Grayling and Alpena CRTC, 2018). However, small portions of land may be privately owned if a conditional use lease agreement has been established between the landowner and the government. There is property that is not owned by the government within these restricted areas, including the housing community in Guthrie Lakes and KP Lakes. This has allowed for private residences to be built very close to the range and loud military training activities. Currently, there are noise abatement areas around Guthrie Lakes and KP Lakes (1,500 feet horizontal and vertical) restricting flight training activities below 1,500 feet AGL within a 1,500-foot radius of each community.

The South Branch Campground, within the proposed Grayling West MOA, has an existing noise level of 35 dBA Ldnmr, which would increase to 47 dBA Ldnmr under the Proposed Action. The increase in Ldnmr would still be within the typical ambient noise levels for that environment. Shupac Lake State Forest Campground is also located within the proposed Grayling West MOA; however, it is adjacent to R-4201A, which is why the noise level is higher at 62 dBA Ldnmr. Turtle Lake Road, which is 63 dBA Ldnmr, is under the proposed VR-1601 and VR-1602 and within R-4201A. Both points would increase by 1 dBA Ldnmr, which is not a significant increase. As previously stated, a significant increase occurs when an action would increase noise by 1.5 dBA DNL/Ldnmr or more for a noise-sensitive area that is already exposed to noise at or above the 65 dBA DNL/Ldnmr noise exposure.

Table 4-5 shows the DNL values for the points of interest. The DNL levels, and the changes under the Proposed Action, are similar to the Ldnmr levels shown in Table 4-4. Guthrie Lakes is 61 dBA DNL under existing conditions, which would not change under the Proposed Action. KP Lakes would increase by 7 dBA, but it would remain under 60 dBA DNL. Other points of interest with larger increases would have noise levels below 60 dBA DNL.

**Table 4-5 DNL Values for Points of Interest**

Point of Interest (Airspace)	Existing DNL	Change under Proposed Action
Alpena City (Pike West MOA)	36 dBA	2 dBA
Atlanta State Forest (VR-1601/1602; Grayling East MOA)	35 dBA	—
Bay Port Historic Commercial Fishing District (Steelhead Low North MOA)	38 dBA	6 dBA
Grayling State Forest (Grayling East MOA)	35 dBA	—
Guthrie Lakes (R-4201A)	61 dBA	—
Harbor Beach (Steelhead Low East MOA)	38 dBA	6 dBA
Huron City Historic District (Steelhead Low East MOA)	38 dBA	6 dBA
Huron National Forest (Pike West MOA)	36 dBA	2 dBA
KP Lakes (R-4201A/B)	48 dBA	7 dBA
Pigeon River Country State Forest (Grayling East MOA)	35 dBA	—
Sanilac Petroglyphs Historic State Park (Steelhead Low South MOA)	38 dBA	3 dBA
Shupac Lake State Forest Campground (R-4201A; Grayling West MOA)	61 dBA	—
Sleeper State Park (Steelhead Low North MOA)	38 dBA	6 dBA
South Branch Campground (Grayling West MOA)	35 dBA	12 dBA
Tawas Point Lighthouse (Steelhead Low North MOA)	37 dBA	7 dBA
Turtle Lake Road (VR-1601/1602; R-4201A)	61 dBA	—

(MIANG, 2021)

Key: dBA = A-weighted decibels; DNL = Day-Night Average Sound Level; MOA = Military Operations Area; R = Restricted Area; VR = Visual Flight Rules Military Training Route.

Table 4-6 shows the Lmax levels for the points of interest in the Alpena SUA Complex under existing conditions and the Proposed Action. Lmax is the maximum sound level from a single source. It is the highest A-weighted sound level that occurs, for example, during an aircraft overflight or from a piece of construction equipment. While Lmax represents the sound from a single event, DNL and Ldnmr provide a measure of the overall acoustical environment during a period of time but do not directly represent the sound level at any given time. The noise levels for Grayling State Forest and Pigeon Forest would have lower levels under the Proposed Action as compared to existing conditions because the proposed Grayling East MOA covers some of the same area as the existing Grayling Temporary MOA. However, Grayling East MOA would have a floor of 10,000 feet MSL, where the Grayling Temporary MOA was modeled with a floor of 5,000 feet MSL. South Branch Campground would increase from 86 dBA to 110 dBA because it is under the proposed Grayling West MOA, which would have a floor of 500 feet AGL. As previously discussed, Shupac Lake State Forest Campground is under the proposed Grayling West MOA but also adjacent to R-4201A, which is why the level is high.

**Table 4-6 Lmax Noise Levels for Points of Interest**

Point of Interest (Airspace)	Existing Lmax	Proposed Lmax
Alpena City (Pike West MOA)	86 dBA	86 dBA
Atlanta State Forest (VR-1601/1602; Grayling East MOA)	86 dBA	88 dBA
Bay Port Historic Commercial Fishing District (Steelhead Low North MOA)	86 dBA	115 dBA
Grayling State Forest (Grayling East MOA)	86 dBA	78 dBA
Guthrie Lakes (R-4201A)	128 dBA	128 dBA
Harbor Beach (Steelhead Low East MOA)	86 dBA	115 dBA
Huron City Historic District (Steelhead Low East MOA)	86 dBA	115 dBA
Huron National Forest (Pike West MOA)	86 dBA	86 dBA
KP Lakes (R-4201A/B)	127 dBA	127 dBA
Pigeon River Country State Forest (Grayling East MOA)	85 dBA	77 dBA
Sanilac Petroglyphs Historic State Park (Steelhead Low South MOA)	86 dBA	91 dBA
Shupac Lake State Forest Campground (R-4201A; Grayling West MOA)	128 dBA	128 dBA
Sleeper State Park (Steelhead Low North MOA)	86 dBA	115 dBA
South Branch Campground (Grayling West MOA)	86 dBA	110 dBA
Tawas Point Lighthouse (Steelhead Low North MOA)	86 dBA	115 dBA
Turtle Lake Road (VR-1601/1602; R-4201A)	128 dBA	128 dBA

(MIANG, 2021)

Key: dBA = A-weighted decibels; Lmax = Maximum Sound Level; MOA = military operations area;

R = Restricted Area; VR = Visual Flight Rules Military Training Route.

The noise levels for points under the proposed Steelhead Low MOAs, such as Harbor Beach and Sleeper State Park, would increase under the Proposed Action because the existing Steelhead MOA has a floor of 6,000 feet MSL and the proposed Steelhead Low East and North MOAs would have floors of 500 feet AGL. Given the proposed floors of these Steelhead Low MOAs, the following measures would be implemented that would reduce potential impacts:

- In the Steelhead Low MOAs, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15.
- No F-35 aircraft would be allowed in the Steelhead Low North, South, and East MOAs.

The Lmax levels for Guthrie Lakes and KP Lakes are high because those points are directly underneath the restricted areas. These levels are high under both the existing and proposed scenarios and do not increase under the Proposed Action. While individual flyover events would be loud at times, these events are infrequent and of short duration. As previously discussed, the FAA significance threshold for noise occurs when the action would increase by 1.5 dBA DNL or Ldnmr or more for a noise-sensitive area that is exposed to noise at or above the 65 dBA DNL/Ldnmr noise exposure level. Impacts would not be significant.

To determine speech interference, the number of flying days in the Steelhead Low MOAs was assessed. There would be approximately 22 flying days per month, which is approximately 264 flying days per year. Given that there are 1,020 sorties per year in each Steelhead Low MOA, there would be about 4 sorties per day. The sorties in the Steelhead Low North and South MOAs would only be in those airspaces for approximately 15 minutes. Therefore, it is likely that a very low number of flyover events would occur per hour in one particular area. In the Steelhead Low East MOA, aircraft would spend more time in the airspace, with approximately 22 percent (or 230 sorties per year) for 45 to 60 minutes. However, the Steelhead Low East MOA has more area than the other MOAs, with 2,149 square miles; as a result, there it is likely that a particular area would experience a very low number of aircraft flyover events per hour. Furthermore, populations would only be exposed to these levels outside; a typical dwelling built with standard materials provides 20 to 30 dB of noise-level reduction when the windows and doors are closed, if the structure is in good condition (U.S. Navy, 2005). To model the worst-case scenario, aircraft were modeled without the “seasonal shoreline” measure implemented within one nautical mile of the Lake Huron shoreline. As shown in Table 4-6, the noise level under the Steelhead Low MOAs without the seasonal shoreline measure would be 115 dBA Lmax (Bay Port, Harbor Beach, Huron City, Sleeper State Park, and Tawas Lighthouse). With the seasonal shoreline measure implemented, Lmax would be 102 dBA. As a result, single-event noise levels would be lower during these periods along the shoreline. These measures would reduce the number of instances that populations would be exposed to high single-event noise events.

Speech interference was also assessed in the proposed Grayling West MOA. This MOA would have approximately 1,603 annual sorties. The majority of the sorties—1,190 with the A-10 aircraft—would only spend 10 minutes in the MOA. It is unlikely that these sorties would fly over the same area more than once. The remaining sorties (413) would fly in the MOA between 5 to 60 minutes. Given that the Grayling West MOA is approximately 374 square miles, there is a low probability that a particular area would experience 4 aircraft flyover events per hour on a regular basis.

Research on sleep disturbance from a study in 2002 showed critical tolerance levels of six nighttime events of outdoor single event noise levels above 75 dB Lmax (DOD Noise Working Group, 2009). Aircraft flying in the Steelhead Low MOAs or the Grayling West MOA would likely be one per flying day. In the Steelhead Low MOAs, aircraft flying between 10:00 p.m. and 7:00 a.m. would account for six percent of the total operations; in the Grayling West MOA it would be five percent. Therefore, the chances that a particular location would experience one aircraft flyover at night would be rare. Aircraft flying at night in all of the MOAs would account for a lower percentage of operations than during the daytime hours of 7 a.m. to 10 p.m. Given that the Proposed Action would not have adverse impacts on speech interference and sleep disturbance, it is not expected that children’s learning would be affected.

Hearing loss from noise is the result of continuous long-term exposure to noise levels. Noise from aircraft flyovers is not continuous but consists of individual events where the noise levels exceed the background levels for a limited time. At 86 dBA, a person would have to be exposed to more than six hours of noise on a daily basis (USAF/SG, 2022). Since aircraft flights are intermittent and not continuous, individuals underneath the Alpena SUA complex are not exposed to long-term continuous noise.

A discussion of noise-generated vibrations due to aircraft flyovers is in Section 4.8.1.

A significant noise impact occurs when the action would increase noise by 1.5 dBA DNL/Ldnmr or more for a noise-sensitive area that is exposed to noise at or above the 65 dBA DNL/Ldnmr. Under the Proposed Action, none of the increases in noise levels would be at or above 65 dBA DNL/Ldnmr. Some of the areas would see increases in noise of 10 dBA from 35 dBA to 45 dBA DNL/Ldnmr. However, noise levels in the mid-30 to 40 dBA range correspond to rural and very quiet suburban land uses and include ambient noise levels in the Alpena SUA Complex. Therefore, an increase in noise levels from 35 dBA to 40 or 45 dBA would not have an adverse effect on human populations such as annoyance, speech interference, sleep disturbance, hearing loss, or disruption to children's learning. Under the Proposed Action, noise impacts would not be significant.

#### **4.4.2 Alternative B: No Steelhead Low MOAs**

Alternative B includes the same aspects of the Proposed Action, except that the three Steelhead Low MOAs would not be established. As a result, the noise levels in the area where R-4201A/B, Grayling MOAs, and Pike MOAs would be the same as discussed under the Proposed Action (see Table 4-2 through Table 4-6). The individual noise levels under the Steelhead MOA region for points of interest, as shown in Table 4-6, would remain at the current levels, which is in the 86 dBA Lmax range as compared to the 115 dBA Lmax range under the Proposed Action. Given that the Low MOAs would not be established under the Proposed Action, the noise levels under the Steelhead MOAs would remain at existing levels (35 dBA Ldnmr and DNL).

Under Alternative B, the sorties would be redistributed in the existing SUA as compared to the Proposed Action. However, because Alternative B does not include the establishment of the three Steelhead Low MOAs (i.e., Steelhead Low North, South, and East MOAs), no sorties would occur within any of the proposed Steelhead Low MOA boundaries. For example, under the Proposed Action, one F-16 sortie for one hour could fly in the following MOAs:

- Pike East: 20 min
- Pike West: 20 min
- Steelhead: 15 min
- Steelhead Low: 5 min

Under Alternative B (with no Steelhead Low MOAs), the same sortie could be redistributed in the existing MOAs as follows:

- Pike East: 20 min
- Pike West: 20 min
- Steelhead: 20 min

As a result, the change in noise levels between the Proposed Action and Alternative B would be minor. In addition, under Alternative B, the Steelhead Low MOAs would not be established; therefore, sorties would need to be conducted at higher altitudes in that airspace complex and the noise levels would be lower as compared to the Proposed Action. Impacts would not be significant.

#### **4.4.3 Alternative C: No Grayling East or West MOAs**

Alternative C would include the same aspects of the Proposed Action, except that the Grayling East and Grayling West MOAs would not be established, the Grayling Temporary MOA would continue to be requested to support annual exercises, and the Hersey MOA would remain with the MIANG. The Grayling West MOA would remain under 35 dBA Ldnmr and DNL under Alternative C (compared with 45 dBA Ldnmr and DNL under the Proposed Action). The areas that the Grayling East and Grayling Temporary MOAs overlay would remain under 35 dBA Ldnmr and DNL. The example of sortie distribution that is discussed under Alternative B would also occur under Alternative C. Overall, noise levels under Alternative C would be lower as compared to the Proposed Action. Impacts would not be significant.

#### **4.4.4 Alternative D: No Action Alternative**

Noise levels under the No Action Alternative would be the same as described under the existing conditions in Section 3.4. Most of the Ldnmr noise levels in the Alpena SUA are below 35 dBA. The restricted areas have levels that are higher, with R-4201A at 62 dBA Ldnmr and 61 dBA DNL, and R-4201B at 45 dBA Ldnmr and 44 dBA DNL. The Grayling Temporary MOA is one of the SUAs with noise levels below 35 dBA. As a temporary MOA, the establishment of the Grayling Temporary MOA must be requested every year. Training normally occurs for two weeks per year, and the mix of aircraft changes annually. As a result, the number of sorties that are flown in this MOA per year when it is activated remains low (309 sorties), as shown in Table 2-3. Given that the surrounding area is fairly rural, ambient noise levels in this area would be comparable to the Ldnmr and DNL noise levels when the Grayling Temporary MOA is established. Impacts would not be significant.

### **4.5 Land Use**

Determination of land use impacts is based on the degree of land use sensitivity in the area. Effects on land use are evaluated to the extent that a Proposed Action would (1) be inconsistent with applicable land use plans or policies; (2) preclude an existing land use; (3) preclude continued use of an area; or (4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is endangered. The analysis of environmental effects includes assessment of the regulatory setting for existing land uses and spatial analysis of land uses.

#### **4.5.1 Proposed Action (Alternative A)**

##### **Aircraft Sorties**

Land underneath the Alpena SUA Complex consists of several forest regions, small- to medium-sized municipalities, and rural areas. Most of the region where modifications and new SUA are proposed already have existing SUA. The implementation of the changes to the SUA under the Proposed Action would not preclude existing land uses on the ground. Furthermore, land use was assessed for noise impacts throughout the region, as discussed in Section 4.4.1 and below, and no significant adverse impacts were found. Based on an overall assessment of land use compatibility, the Proposed Action would not have significant impacts on land use.

Under the Proposed Action, the Atlanta State Forest Area would be underneath the Grayling East MOA and the Pike West MOA. The Grayling State Forest Area would be underneath the Grayling East MOA, Grayling West MOA, Pike West MOA, and R-4201. The Huron-Manistee National Forest would be underneath the Grayling East MOA, Grayling West MOA, and Pike West MOA; the Wild and Scenic portion of the Au Sable River from Mio to Alcona Ponds would be underneath the proposed Grayling East and Pike West MOAs. The Pigeon River County State Forest would be under the Grayling East MOA. Collectively, the forest areas are underneath the Grayling East MOA, Grayling West MOA, and Pike West MOA with a few acres underneath Pike East MOA and R-4201A/B. The operational noise levels for the Atlanta State Forest, Grayling State Forest, and Pigeon Forest would be lower under the Proposed Action as compared to existing conditions. The existing levels in these areas are 35 dBA DNL/Ldnmr or less and would not increase above 45 dBA under the Proposed Action. Noise levels would decrease from existing conditions in these areas because the proposed Grayling East MOA would have a floor of 10,000 feet MSL, where the Grayling Temporary MOA was modeled with a floor of 5,000 feet MSL. For all land uses, military training in the proposed SUAs would be dispersed throughout the SUA and individual training events would be relatively short in duration (lasting approximately 10 minutes to an hour). Operations within the SUA would mostly occur between 7:00 a.m. and 10:00 p.m., Monday through Friday. Some activity would occur at night; therefore, people camping on land beneath the airspace could hear aircraft after dark. Most of these areas are under existing SUA that current experience military training activities.

Land use under the three Steelhead Low MOAs is primarily agricultural with small municipalities scattered throughout the region and recreational areas on the coast. Overall DNL/Ldnmr levels would remain below 45 dBA, which would not adversely affect the existing land uses.

The U.S. Forest Service conducted a study on effects of aircraft overflights on visitor enjoyment of select wilderness areas (U.S. Forest Service, 1992). Approximately 20 percent were annoyed or highly annoyed by aircraft overflights, with low-altitude, high-speed aircraft reported as the most annoying. However, of those surveyed, aircraft intrusions did not appreciably impair users' overall enjoyment of their visits, nor did they reduce their reported likelihood of repeat visits. Therefore, while noise and aircraft activity may have localized, short-term effects on recreation, the Proposed Action would not be concentrated in any one area and would not be expected to have long-term effects on the recreational experiences offered under the SUA.

Noise impacts on noise-sensitive receptors and points of interest under the Grayling and Steelhead MOAs are discussed in Section 4.4.1. Figure 4-1 shows points of interest, and Table 4-5 and Table 4-6 show the changes in Ldnmr and DNL for those points of interest. Aircraft noise and sorties would not have significant impacts on recreational land uses under the SUA.

### **Chaff and Flare**

Flight activities within the Alpena SUA Complex currently use chaff and flare during training. Anticipated expenditures could increase by approximately 20 percent under the Proposed Action. Due to the extremely high temperatures at which flares burn upon ignition, the use of flares presents a small risk for fire. Flare-induced fire could adversely affect sensitive land uses such as forest, recreation, agriculture, and residential areas (NGB, 2002; USAF, 2011; USAF, 2023a). Remote areas with large fuel loads could experience high-intensity and damaging fires. However, the potential for flare-induced fires is reduced through existing operational and administrative procedures such as increasing the minimum flare release altitude or restricting the use of flares

during high fire risk weather. Training activities involving chaff and flare would continue to adhere to existing safety protocols. As discussed in Section 4.2.1, flares across the MOAs within the Alpena SUA Complex would be deployed at or above 2,000 feet AGL, presenting a low fire risk from use of flares. Within R-4201, flares may be deployed consistent with existing policies and procedures.

The streams, rivers, and lakes within the study area offer valued fishing and recreational opportunities. Historically and currently, chaff and flare are deployed across the entire airspace, including the existing Grayling Temporary MOA, when active. The increase in chaff and flare use under the Proposed Action in these areas would not be expected to affect water quality or aquatic species. A small amount of debris is produced from chaff and flare deployment, which would increase over existing conditions. Chaff and flares have been used for many years across the entire SUA with no reports or findings of observable chaff or debris accumulation. If observed, recreationists may feel that plastic or residual components are out of character with the surroundings in pristine areas, such as the Au Sable River, Huron-Manistee National Forest, and state forests. However, given the generally low proposed usage of chaff and flare and the size of the SUA, accumulation or observable litter would not be likely to affect recreationists or the recreational experiences within the area. Furthermore, chaff and flare duds or residues would not affect recreational fishing, which is discussed in Section 4.6.1.

#### **4.5.2 Alternative B: No Steelhead Low MOAs**

Alternative B includes the same aspects of the Proposed Action as described in Section 4.5.1; however, no regional impacts on land use would occur under the Steelhead Low MOAs. Impacts would not be significant.

#### **4.5.3 Alternative C: No Grayling East or West MOAs**

Alternative C includes the same aspects of the Proposed Action as described in Section 4.5.1. However, no change in operational noise levels would occur within the proposed Grayling West and East MOAs, so noise levels would be comparable in Atlanta State Forest, Grayling State Forest, and Pigeon Forest as under existing conditions. Impacts would not be significant.

#### **4.5.4 Alternative D: No Action Alternative**

Under the No Action Alternative, land use would remain comparable to what is described in Section 3.5. No changes in operational noise levels would occur. Impacts would not be significant.

### **4.6 Water Resources**

The analysis for water resources in this EA considers potential impacts on water quality and coastal resources. Airspace-related activities associated with the Proposed Action and alternatives would not involve construction and would not directly alter any water quantity, flow, percolation, or supply. As discussed in Section 3.6 and Appendix A, Section A.8, no impacts on groundwater resources, wetlands, or floodplains.

#### **4.6.1 Proposed Action (Alternative A)**

##### **Aircraft Sorties**

The proposed airspace modification would have no direct effect on water resources. The designated Wild and Scenic portion of the Au Sable River is under the existing Grayling Temporary MOA (floor of 5,000 feet MSL) and Pike West MOA (floor of 6,000 feet MSL), and the proposed Grayling East

MOA (floor of 10,000 feet MSL). Under the Proposed Action, the floor over the Wild and Scenic portion of the Au Sable would be the same or higher than under existing conditions. Therefore, the Proposed Action would not introduce a visual, audible, or other intrusion that is out of character with the river. No significant impacts to water resources are anticipated.

The potential for fuel or fluid spills is addressed in Section 4.2.1 and Section A.14 in Appendix A. Impacts on water quality would not be significant.

### **Chaff and Flare**

The increase in flare deployment could result in increased dud flares, which deteriorate when in water. The primary components of flare (magnesium oxide, magnesium chloride, and magnesium fluoride) do not pose an adverse risk to human and environmental health at the concentrations experienced in flare use (USAF, 2011; USAF, 2023a); see inset, right. The proposed increase in chaff bundles and flares would be distributed over a large land area. It is not anticipated or likely that dud flares would accumulate in the same place in sufficient concentrations to adversely affect water quality. Therefore, the increase in chaff and flare activity is not likely to have any adverse impact on sensitive aquatic systems.

In 2011, the USAF prepared a supplemental report on the environmental effects of chaff and flare to provide information on technological advancements in chaff (including R-188) and flares and consider the potential effects these changes could have on the environment (USAF, 2011). Chaff in an aquatic environment has not been found to significantly increase the concentration of any toxic aluminum constituents in sediments under airspace that has undergone 25 years of chaff operations. Concentrations of chaff in test environments were not found to result in a significant change in mortality to a variety of marine organisms in the Chesapeake Bay area (Wilson, et al., 2002, as cited in USAF, 2011). No effect was seen in marine organisms exposed to concentrations of 10 times and 100 times the expected environmental exposure.

Furthermore, the NGB prepared a comprehensive EA analyzing the effects of chaff and flare on aquatic environments in the Steelhead and Pike MOAs at rates higher than what are being proposed; no significant impacts on water quality were identified (NGB, 2002). While the Proposed Action would increase chaff and flare above existing levels, the amount of airspace would also increase, and proposed levels of chaff and flare use would remain well below the levels analyzed in the NGB's 2002 EA. Therefore, an increase in chaff activities would not have a significant impact on water resources.

#### **PFAS in Flares**

The public expressed concerns about per- and polyfluoroalkyl substances (PFAS) during the public review of the Draft EA. The M-206 flare contains a small amount of Teflon, which may contain PFAS; the type of PFAS potentially in the flare is not known.

PFAS are an emerging contaminant of concerns due to their widespread use, persistence in the environment, and potential for bioaccumulation. There are thousands of PFAS chemicals but currently only a few that are being studied for links between exposure and adverse health outcomes.

PFAS in flares would be destroyed during combustion, leaving no measurable PFAS in flare ash residue. It is highly unlikely that multiple dud flares (which have a very low 0.4% failure rate) would accumulate in a drinking water source sufficient to even approach the most conservative current USEPA health advisories for PFAS.

(USAF, 2023a)



Chaff release in airspace is not expected to affect the environment and chaff is not likely to be discernible within the environment. The effects of residual flare materials in aquatic environments would be comparable to the effects described for chaff residual materials. The body of literature suggests that chaff and flare would have no significant impacts on the aquatic environment (USAF, 2023a).

### **Coastal Resources**

Michigan's NREPA is the primary statute for coastal zone management. The Proposed Action would comply to the maximum extent practicable with Michigan's coastal zone policies and would not adversely affect sensitive coastal land uses or resources. The Au Sable and Pigeon Rivers are Natural Rivers protected under Part 305 of the NREPA; the Proposed Action would not affect these rivers' values, including free-flowing conditions or their fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic, and recreational values and uses. A negative determination was sent to EGLE pursuant to Section 307 of the Coastal Zone Management Act (see Appendix C). No response was received. In accordance with 15 CFR 930.35(c), if the State does not respond to a negative determination within 60 days, concurrence can be presumed.

#### **4.6.2 Alternative B: No Steelhead Low MOAs**

The potential impacts on water resources under Alternative B would be similar to those described for the Proposed Action in Section 4.6.1. Use of chaff and flare under Alternative B would increase by approximately 10 percent over existing conditions, which is half as much as described under the Proposed Action. This projected increase of chaff and flare would be distributed over the same land area as analyzed under the Proposed Action, which includes the Steelhead MOA. Impacts would not be significant.

#### **4.6.3 Alternative C: No Grayling East or West MOAs**

The potential impacts on water resources under Alternative C would be similar to those described for the Proposed Action in Section 4.6.1. Use of chaff and flare under Alternative C would increase by approximately 10 percent over existing conditions, which is half as much as described under the Proposed Action. Chaff and flare would be distributed at quantities still much lower than those analyzed in the NGB's 2002 EA. Impacts would not be significant.

#### **4.6.4 Alternative D: No Action Alternative**

Under the No Action Alternative, water resources would remain the same as those described in Section 3.6. No ground-disturbing activities would occur with continued use of the Alpena SUA Complex in their current configuration. Impacts would not be significant.

### **4.7 Biological Resources**

The impacts on biological resources would be adverse if a species or habitats of high concern are adversely affected over relatively large areas. Impacts are also considered adverse if disturbances cause reductions in population size or distribution of a species of high concern. As a requirement under the Endangered Species Act, federal agencies must provide documentation that ensures that agency actions do not adversely affect the existence of any threatened or endangered species. The Endangered Species Act requires that all federal agencies avoid "taking" federally threatened or endangered species (which includes jeopardizing threatened or endangered species habitat). Section 7 of the Endangered Species Act establishes a consultation process for agency actions that

may or will affect threatened or endangered species and their habitat that ends with USFWS concurrence or a determination of the risk of jeopardy from a federal agency project.

The areas where lower floors are proposed were carried through for further analysis of potential impacts on wildlife. This includes the Grayling West MOA (500 feet AGL floor), Steelhead Low North MOA (500 feet AGL floor), Steelhead Low South MOA (4,000 feet MSL floor), Steelhead Low East MOA (500 feet AGL floor), and the proposed MTRs (300 feet AGL floor).

#### **4.7.1 Proposed Action (Alternative A)**

##### **Wildlife**

The Air Force has done numerous studies on the effect of low-altitude aircraft noise on various types of wildlife and domestic animals (Manci, et al., 1998; Bowles, et al., 1990; LeBlanc, et al., 1991; USAF, 1994a; USAF, 1994b). Naïve (or previously unexposed) individuals usually exhibited brief behavioral responses similar to natural events that may cause startle. Test animals usually habituated to flyovers after 5–10 events. Due to the low utilization rates of the low-level routes and the width of the routes, multiple exposures to an individual animal are expected to be rare. Overflight events by fixed-wing aircraft vary in time from a few seconds to 15–30 seconds depending on the type of aircraft, speed of flight, power setting, altitude, and angle of flight to receiver. Species under the existing airspace are already habituated to aircraft activity without statistically significant differences in behavior and activity levels between preflight and postflight aircraft overflight occurrences.

Specifically, there have been studies that investigate the impacts of fixed-wing and rotary-wing aircraft on a variety of wildlife species. Wilson's plovers (*Charadrius wilsonia*) became more alert during rotary-wing aircraft flyovers, but this did not seem to negatively impact reproductive success (DeRose-Wilson, et al., 2015). Black ducks (*Anas rubripes*) decreased in reactivity to aircraft noise over time, whereas wood ducks (*Aix sponsa*) did not have the same decrease in reactivity (Conomy, et al., 1998). Mexican spotted owls (*Strix occidentalis lucida*) flushed more frequently when helicopters flew within 105 meters of their nesting sites, but flyovers within that distance did not have any significant impact on nesting activity and returned to normal behaviors within 15 minutes after the event (Delaney, et al., 1999). Mountain sheep (*Ovis canadensis nelsoni*), Sonoran pronghorn (*Antilocapra americana sonoriensis*), and Grant's caribou (*Rangifer tarandus granti*) did not exhibit significant short-term behavioral changes in response to military flyovers, but barren-ground caribou (*Rangifer tarandus*) exhibited variations in behavioral changes depending on seasonality (Krausman, et al., 1998; Krausman, et al., 2004; Lawler, et al., 2005; Maier, et al., 1998).

The increase in flight activity over an area as large as the proposed SUA and the various flight activities proposed fluctuate in altitude and location, so increases in aircraft flyovers in any one area would be infrequent. Therefore, the chance of individual wildlife being exposed to multiple overflights in any given time period would be rare. Newborn individuals would be expected to acclimate to aircraft activity with no long-term effects.

The Kirtland's Warbler Wildlife Management Area is located throughout the northern part of the Lower Peninsula of Michigan in Presque Isle, Montmorency, Oscoda, Ogemaw, Crawford, Kalkaska, Roscommon, and Clare Counties. The management area properties are located adjacent to state of Michigan lands. Kirtland's warbler was removed from protections under the Endangered Species

Act in 2019 but remains a state-listed endangered bird species. The Wildlife Management Area consists of 125 separate parcels of land that provide jack pine forest habitat. The proposed airspace changes are expected to result in some changes in noise levels that include this management area. Noise impacts are analyzed in detail Section 4.4.1, but changes in the airspace under the Proposed Action would not result in significant noise impacts. Noise levels for Grayling State Forest and Pigeon Forest would be lower under the Proposed Action as compared to existing conditions. Some areas under the proposed airspace, such as the Grayling West MOA (which is adjacent to the restricted areas), would see an increase in Lmax (single event) noise levels; levels within the restricted areas would remain the same. Overall, increases in Lmax within the range of the Kirtland's Warbler Wildlife Management Area would occur in areas that are within or adjacent to the existing restricted areas that currently have high Lmax levels. As a result, the warbler should be accustomed to higher levels in those areas. Therefore, the estimated increase in noise levels under the Proposed Action would not have a significant effect on the Kirtland's Warbler Wildlife Management Area sites.

#### Migratory Birds, including Bald Eagles

Visual disturbances to birds varies considerably depending on several factors, including: the species of birds; season of year; whether the bird (or species) is a solitary bird or in a flock; age or maturity of the bird; physiological stress due to any number of factors; particular activity individual birds are performing at the time of the disturbance (i.e., perching, feeding, nesting); distance of the bird to the potential disturbance and whether that disturbance is approaching the bird; type of disturbance to be determined by the bird if it is a potential threat (predator) causing the bird to flee (escape the threat); experience of the bird with similar disturbances and the determination if it was a threat (nonthreats form habituated responses to conserve energy for more life-threatening events); and whether there is associated noise with the specific visual stimulus and the type of noise.

Due to all these variables to be considered when assessing the potential for visual disturbances of aircraft on birds, it is nearly impossible to consider all possible scenarios. It is very well known that most wildlife, including birds, flush at the presence of humans. Researchers have examined certain species, like bald eagles, to assess their tendency to be disturbed by various anthropomorphic sources. For instance, Stalmaster and Kaiser (1997) examined the flushing responses of wintering bald eagles to military activity. Disturbances included weapons firing, helicopter overflights, and non-motorized (no noise) boating. They reported 32 percent of individuals flushed at more than 164 feet from an approaching disturbance. Forty-seven percent of the eagles exposed to helicopter overflights (197–394-foot altitudes) flushed, but few eagles flushed when helicopters were further than 984 feet. Stalmaster and Kaiser noted that adult eagles flushed less than subadults (assumed to be due to habituation), and nesting eagles tended not to respond to disturbances. Russell, et al. (1996) described nesting bald eagles at Aberdeen Proving Ground habituated to loud weapons noise. Stalmaster and Kaiser (1997) found only 8 percent of the observed eagles flushed to five types of weapons firing activity. These findings may indicate that close visual disturbances are more likely to disturb bald eagles than just noise disturbances without visual stimuli.

Though variation exists among species, most birds fly below 500 feet AGL, except during migratory flights, with the most common migratory altitude being between 500 and 1,000 feet AGL (Ehrlich et al., 1988). Approximately 95 percent of bird migration flights occur below 10,000 feet AGL, with the majority below 3,000 feet AGL (Lincoln et al., 1998). The proposed airspace changes are within the

Mississippi Flyway; therefore, the greatest potential for bird strikes under existing and proposed conditions would occur during the spring and fall migrations when birds are typically flying at higher altitudes.

The MIANG has established a BASH Plan, originally adopted in August 2013, and updated in 2020, that includes measures to help minimize the potential for bird strikes (MIANG, 2020a). Serving as an adaptive management tool, the BASH Plan for Alpena CRTC prescribes specific actions used to minimize impacts on birds including establishing a Bird Hazard Working Group, establishing aircraft operating procedures to avoid high-hazard situations (including migratory seasons), and providing guidelines for dispersing birds when they are present around the airfield. Changes to the airspace because of the Proposed Action would be subject to the existing BASH Plan, and there would be only a minor increase in sorties (approximately four sorties per day in each Steelhead Low MOA), including maneuvers occurring at altitudes utilizing a 500-foot AGL floor. While an increase in sorties creates a potential for additional bird strikes, the countermeasures established in the BASH Plan aid in the circumvention of these proposed increases; therefore, impacts on migratory birds would not be significant under the Proposed Action.

The proposed low-level expansion of airspace, particularly the Steelhead Low North and East MOAs over Lake Huron but also the Grayling West MOA, introduce the potential for bird strikes. Complete avoidance of collisions is not possible, but adherence to the BASH measures discussed above for the use of real-time bird information in bird avoidance models such as the Avian Hazard Advisory System (2015) integrated with conservative flight planning would minimize strike hazards. The proposed shoreline avoidance measure would reduce impacts on migratory birds, including bald eagles, in the Steelhead Low East, South, and North MOAs. In these MOAs, the participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline seasonally between May 15 and September 15, which is when shorebirds are most likely to use the lake for forage habitat.

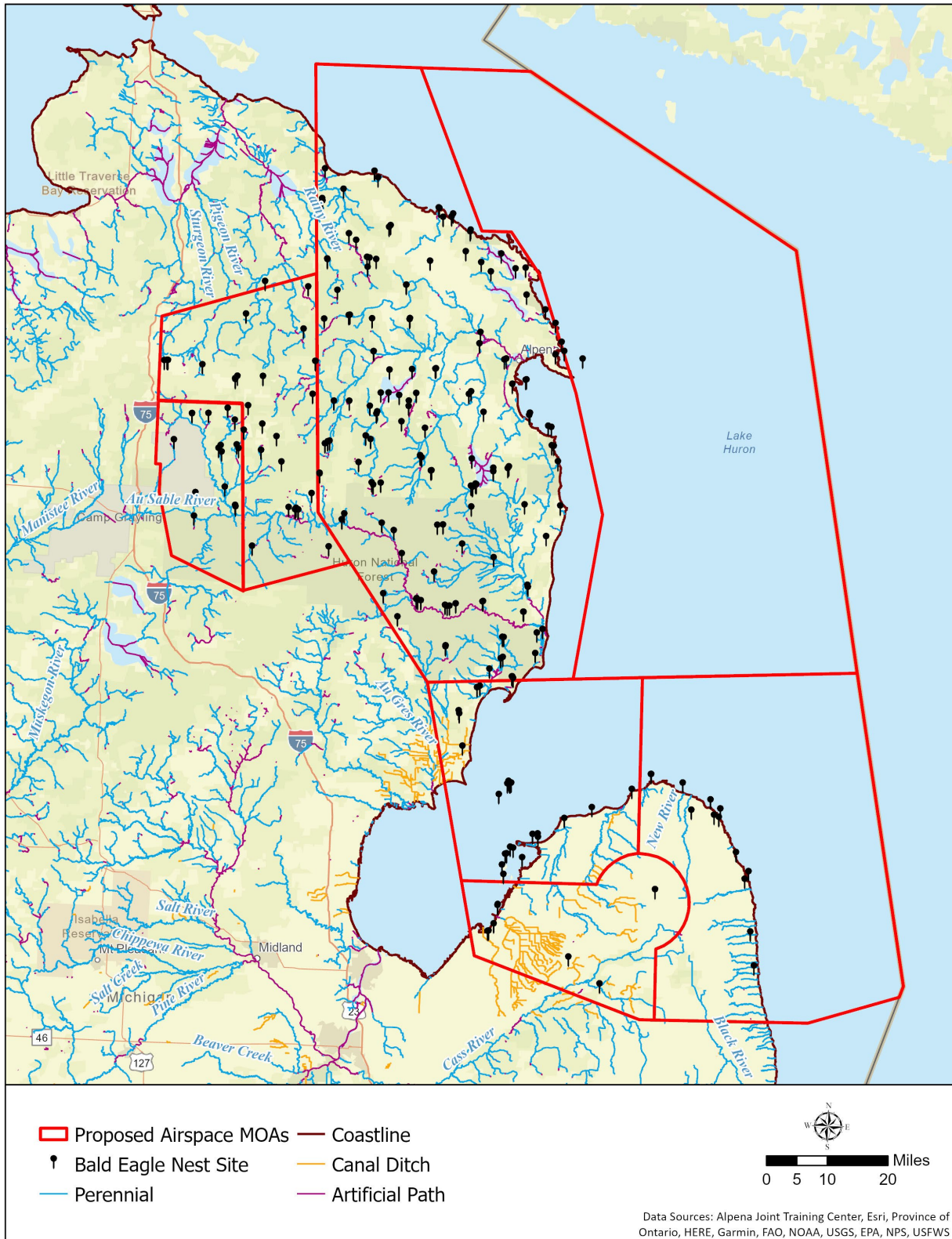
Migratory species involved in a bird-aircraft strike under the Proposed Action would be considered an incidental take pursuant to the Migratory Bird Treaty Act. The ANG reports all BASH incidents through the chain of command, up to the Air Force Safety Center and the USFWS. All bird remains are identified, and the Bird Hazard Working Group considers any additional measures to avoid or reduce the number of incidents.

Figure 4-2 depicts the locations of known bald eagle nests within the proposed MOAs in northeastern Michigan. The nest sites are typically associated with large lakes, ponds, and streams that support the bald eagle's fish-heavy diet.

The National Bald Eagle Management Guidelines outlines the following guidelines for activities that have the potential to affect bald eagles (USFWS, 2007):

- Avoid operating aircraft within 1,000 feet of bald eagle nests during the breeding season (December through August), except where eagles have demonstrated tolerance for such activity.
- Avoid use of the secondary crossing runway at Alpena County Regional Airport, especially during the breeding season from December through August.
- Maintain 1,000 feet of vertical and horizontal distance from known foraging and communal roost sites.

**Figure 4-2 Bald Eagle Nests within Alpena SUA Complex**



As a part of the monitoring program, a survey flight is flown by the USFWS in February/March to look for adults on nests that could potentially be incubating eggs. Subsequent flights are made to verify the presence of young in the nest. Future surveys would include the proposed Grayling West MOA, Steelhead Low North MOA, Steelhead Low East MOA, and VR-1601/1602 since the floors would be below 1,000 feet AGL. Bald eagle nest maps will be updated, including mitigation measures, as needed, based on results of annual surveys. This information would be published in the special operations procedures for the proposed VRs that identify the exact location of bald eagle nests and the time of year and vertical and horizontal distances to avoid them. As originally outlined in the Bald Eagle Management Plan for Alpena CRTC (NGB, 2009) that will become part of the Alpena CRTC Integrated Natural Resources Management Plan, the National Bald Eagle Management Guidelines for activities other than aircraft operations around eagle nests would continue to be followed.

The NGB's measures to avoid known bald eagle nests and areas where they congregate by at least 1,000 feet reduces the possibility of visual disturbances to bald eagles. The low frequency of aircraft overflight events in the Grayling West MOA, Steelhead Low East MOA, and the Steelhead Low North MOA reduce the chance that a passing aircraft would pose a visual disturbance to wildlife. This is consistent with the USFWS's early scoping recommendations on the proposed Alpena SUA proposal (dated September 27, 2021, Appendix B, page B-35 of the EA). With the implementation of the above existing guidelines already in use, impacts on bald eagles would not be significant.

#### Fish

Most fish use their lateral line for sensing vibrations, as their hearing is not as developed as in air-breathing vertebrates. Lateral lines use particle motion to sense these waves. Most of the research regarding in-water vibrations looks at huge power sources including pile drivers, seismic waves, explosions, wind turbines in the water, electric turbines, air guns, lightning, and sonic booms. Fighter aircraft flying on a low-level route at 300 feet AGL do not generate a wave pulse strong enough to be significant as the wave enters the water or vibrates the substrate that transmits the wave into the water. That is not to say that the sound of an aircraft could not be heard underwater, because it could be. But there are many other variables to consider when assessing the noise in water: the motion of the water can be much louder than any vibration. This is why bubble screens work to counter in-water pile driving. Invertebrates and fish make a lot of noise themselves, and they communicate with each other. Sound waves from the air reflect off the water's surface when the incoming wave is greater than 15 degrees. Therefore, aircraft must be almost overhead before a sound impulse would penetrate the water. Flowing water adds another dimension. Furthermore, aircraft training within MOAs would not fly over the same point at low altitude with any consistency. Therefore, there would not be high noise areas where the same fish are inhabiting.

#### Chaff and Flare

Studies on the environmental effects of air defense countermeasures have concluded that chaff and flare activities were not shown to have an adverse effect on wildlife in areas they were performed (USAF, 1997; USAF, 2011; USAF, 2023a). Toxicology studies on flare residual materials showed no chemical effects on biological resources, including wildlife. The amount of magnesium dispersed from flares was too small to result in toxicity, and the concentration of flare ash residue at any location is undetectable under normal circumstances due to the dispersal produced by burning in the airspace. As such, there would be no adverse effects on wildlife from chaff and flare deployment.

### **Domesticated Animals**

Mammals in particular appear to react to noise at sound levels higher than 90 dB. Typical mammal responses include the startle response, freezing, and fleeing the noise sources. Studies on domestic animals suggest that species appear to adjust to some forms of sound disturbance (Manci, et al., 1988). Anthony and Ackerman (1957) documented “anxiety-like” behavior on laboratory rodents and rabbits with noise levels between 132 and 140 dB; the animals appeared to adapt in this study but it was assumed that high levels of noise could overtax the homeostatic adaptive mechanisms (Manci, et al., 1988). The Lmax values modeled for the proposed Alpena SUA airspace modifications range from 86 dBA to 128 dBA (see Table 4-6 and Appendix L). The points with the highest Lmax values at 127 or 128 dB would experience no change in Lmax from the existing condition (i.e., those points already experience a high Lmax).

Domesticated cats and dogs may react with a startle response to aircraft overflights that are lower, particularly if outside and accompanied with visual intrusion. Noise levels within the Alpena SUA would not be sustained, nor would the same location be frequently affected. After an aircraft overflight, most mammals—including cats and dogs—would return to normal behaviors.

Much of the area beneath the existing Steelhead MOA and proposed Steelhead Lows MOAs supports agriculture. Head, et al. (1993) studied behavior and milk yield responses of dairy cattle to simulated jet aircraft noise. Head, et al. found that no dairy cows showed signs of startle, freeze, or retreat from noise at any time during the exposures to aircraft noise. The cows were not agitated or aggressive during subsequent milking. Milk yields, milk component percentages, and residual milk were not affected significantly by noise exposures. LeBlanc, et al. (1991) reported on a study of pregnant horses exposed to fighter aircraft noise. The researchers found heart rate increased during noise periods, but without ectopic arrhythmias. Researchers observed adaptations to the noise with less heart rate increases after successive exposures. Treatment mares experienced a significant rise in serum cortisol only after the first noise event. Progesterone concentrations were within normal range. All mares delivered live, normal foals without assistance. Other livestock studies have been conducted with corroborating results, including pigs, laying hens, turkey poults, ratites, beef cattle; no injurious events have been observed under controlled conditions (USAF, 1994a; USAF, 1994b).

Therefore, the Proposed Action would result in no measurable change in domesticated animal behaviors in the Alpena SUA Complex.

### **Threatened or Endangered Species**

Appendix D contains the Official Species List and Michigan Determination Key (“Dkey”) from the USFWS’s online IPaC tool. Table 4-7 summarizes determinations by federal species. The airspace changes outlined for the Proposed Action would have no effect or be not likely to adversely affect federal- or state-listed threatened or endangered species or critical habitat. The USFWS provided concurrence on September 2, 2022, and again on May 17, 2023, which are also in Appendix D.

The Proposed Action does not involve any ground-based activity or construction, so it would not impact federal- or state-listed threatened or endangered terrestrial animals, insects, aquatic species, or plants. Potential impacts on threatened or endangered species could be associated with aircraft operations in the project area. Terrestrial species under the existing airspace are already habituated to aircraft activity and would experience no significant impacts from changes in aircraft operations.

**Table 4-7 Summary of Federal Species and Critical Habitat and Effects Determinations**

Listed Species or Critical Habitat	Status	Determination <sup>1</sup>	Rationale of Proposed Action Effects
Dwarf Lake Iris ( <i>Iris lacustris</i> )	T	Not likely to adversely affect	No ground disturbance would occur. No alteration of species habitat or resources or direct harm to individual plants would occur from airspace changes.
Eastern Prairie Fringed Orchid ( <i>Platanthera leucophaea</i> )	T	Not likely to adversely affect	No ground disturbance would occur. No alteration of species habitat or resources or direct harm to individual plants would occur from airspace changes.
Houghton's Goldenrod ( <i>Solidago houghtonii</i> )	T	No effect	No ground disturbance would occur. No alteration of species habitat or resources or direct harm to individual plants would occur from airspace changes.
Michigan Monkey-flower ( <i>Mimulus michiganensis</i> ) <sup>2</sup>	E	No effect	No ground disturbance would occur. No alteration of species habitat or resources or direct harm to individual plants would occur from airspace changes.
Pitcher's Thistle ( <i>Cirsium pitcheri</i> )	T	No effect	No ground disturbance would occur. No alteration of species habitat or resources or direct harm to individual plants would occur from airspace changes.
Hine's Emerald Dragonfly ( <i>Somatochlora hineana</i> )	E	Not likely to adversely affect	No ground disturbance would occur. No impacts on or near wetland habitat would occur. Terrestrial species are habituated or would habituate to aircraft activity.
Hungerford's Crawling Water Beetle ( <i>Brychius hungerfordi</i> )	E	No effect	No ground disturbance would occur. No impacts on or near streams or rivers would occur.
Karner Blue Butterfly ( <i>Lycæides melissa samuelis</i> )	E	No effect	No ground disturbance would occur. No impacts on oak savannah or woodland habitats would occur. Terrestrial species are habituated or would habituate to aircraft activity.
Monarch Butterfly ( <i>Danaus plexippus</i> )	C	No effect	No ground disturbance would occur. No impacts on pollinator habitat would occur. Terrestrial species are habituated or would habituate to aircraft activity.
Northern Riffleshell ( <i>Epioblasma rangiana</i> )	E	No effect	No ground disturbance would occur. No impacts on or near streams or rivers would occur.
Eastern Massasauga ( <i>Sistrurus catenatus</i> )	T	Not likely to adversely affect	No ground disturbance would occur. No impacts on or near wetland habitat would occur. Terrestrial species are habituated or would habituate to aircraft activity. The Dkey identifies conservation measures for this species pertaining to use of erosion control, educational videos, wetland and upland habitat conservation, roadway vehicles, and revegetation of disturbed areas; however, these do not apply to the Proposed Action because there would be no ground disturbance.



Listed Species or Critical Habitat	Status	Determination <sup>1</sup>	Rationale of Proposed Action Effects
Indiana Bat ( <i>Myotis sodalis</i> )	E	No effect	No ground disturbance would occur. No removal of trees; modification of existing bridges, culverts, or hibernacula; or alteration of wetland or riparian habitat would occur. Nighttime sorties would be infrequent and distributed over a large geographic area.
Northern Long-eared Bat ( <i>Myotis septentrionalis</i> )	E	No effect <sup>1</sup>	No ground disturbance would occur. No removal of trees; modification of existing bridges, culverts, or hibernacula; or alteration of wetland or riparian habitat would occur. Nighttime sorties would be infrequent and distributed over a large geographic area. Project actions would not occur within 0.25 mile (1,320 feet) of a known hibernaculum or 150 feet of a known maternity roost tree. The Proposed Action may affect but is not anticipated to cause prohibited take and is therefore not likely to adversely affect the northern long-eared bat. The USFWS concurred with this determination on September 2, 2022. On May 17, 2023, the USFWS reviewed the action again and determined it would have no effect on this species.
Tricolored Bat ( <i>Perimyotis subflavus</i> ) <sup>3</sup>	PE	No effect	No ground disturbance would occur. No removal of trees; modification of existing bridges, culverts, or hibernacula; or alteration of wetland or riparian habitat would occur. Nighttime sorties would be infrequent and distributed over a large geographic area.
Piping Plover ( <i>Charadrius melodus</i> )	E	Not likely to adversely affect	No ground disturbance would occur. No modification of shoreline or dune resources would occur. Seasonal avoidance within 1,000 feet of the Lake Huron shoreline between May 15 and September 15 would further minimize impacts on the fall migration season (August 15–September 15).
Red Knot ( <i>Calidris canutus rufa</i> )	T	Not likely to adversely affect	No ground disturbance would occur. No modification of shoreline or dune resources would occur. Seasonal avoidance within 1,000 feet of the Lake Huron shoreline between May 15 and September 15 would further minimize impacts on the spring (May 15–June 15) and fall (July 1–September 30) migration seasons.
Whooping Crane ( <i>Grus americana</i> ) <sup>4</sup>	NEP	Not likely to adversely affect	No ground disturbance would occur. No modification of wetland and other habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields would occur.

Listed Species or Critical Habitat	Status	Determination <sup>1</sup>	Rationale of Proposed Action Effects
Critical Habitat: Hine’s Emerald Dragonfly	Final	Not likely to adversely affect	Critical habitat is in Presque Isle and Alpena Counties beneath the existing Pike West MOA, which has a floor of 6,000 feet MSL. No ground disturbance or alteration of wetland impacts would occur.
Critical Habitat: Piping Plover	Final	Not likely to adversely affect <sup>5</sup>	Critical habitat is in Presque Isle County beneath the existing Pike West MOA, which has a floor of 6,000 feet MSL, and in Iosco County beneath the proposed Steelhead Low North MOA, which has a proposed floor of 500 feet AGL. No ground disturbance or alteration of shoreline or dune resources would occur.

## Notes:

<sup>1</sup> The IPaC Dkey determined “may affect” for northern long-eared bat. The NGB initiated informal consultation with USFWS, and USFWS concurred with a determination of “no effect” for this species. This species designation also changed from threatened to endangered effective March 31, 2023. See Appendix D.

<sup>2</sup> Michigan Monkey-flower was identified in the species list on July 5, 2022, but not on April 11, 2023. It was retained for completeness.

<sup>3</sup> The tricolored bat was proposed for listing as endangered on September 14, 2022.

<sup>4</sup> The whooping crane was not included in the initial species list for this Proposed Action.

<sup>5</sup> The IPaC Dkey determined “no effect” on piping plover critical habitat; this determination was revised to “not likely to adversely affect” consistent with the determination for piping plover.

Key: AGL = above ground level; C = candidate species; Dkey = Michigan Determination Key; E = endangered; IPaC = Information for Planning and Consultation; MOA = Military Operations Area; MSL = mean sea level; NEP = nonessential experimental population; NGB = National Guard Bureau; PE = proposed endangered; T=threatened; USFWS = U.S. Fish and Wildlife Service.

### Bat Species

An initial determination of “may affect” was generated on IPaC for the northern long-eared bat (federal-listed species) due to the presence of a known hibernaculum beneath the Pike West MOA airspace in Alpena County. The floor of the Pike West MOA airspace utilized over the Alpena hibernaculum is 6,000 feet MSL, with vertical airspace usage of the Pike West MOA ranging from 6,000–17,999 feet MSL. Under the Proposed Action, the southern border of this airspace would be straightened, aligned with the ATCAA boundaries above, and shifted slightly north in accordance with the Steelhead MOA. No new SUA would be created laterally or vertically in Pike West MOA; only internal lateral boundaries would change. Utilization within Pike West MOA would increase under the Proposed Action by approximately 32 percent; however, with a floor of 6,000 feet MSL, this increase would be above the altitude at which the northern long-eared bat would normally be found based on their habitat preferences and foraging habits (Faure et al., 1993). Project actions would not occur within 0.25 mile (1,320 feet) of a known northern long-eared bat hibernaculum or 150 feet of a known maternity roost tree. The Proposed Action may affect but is not anticipated to cause prohibited take and is therefore not likely to adversely affect the northern long-eared bat. The USFWS concurred with this determination on September 2, 2022. On May 17, 2023, the USFWS reviewed the action again and determined it would have no effect on this species. See Appendix D.

Two other federal-listed bat species—Indiana bat (endangered) and tricolored bat (proposed endangered)—may be found within the study area according to the IPaC. Like the northern long-eared bat, these species are nocturnal, forage near water bodies, and roost in trees, when not in hibernation. Most sorties in the low MOAs are proposed to occur during daytime hours when bats

are not active, though some nighttime sorties are proposed (approximately 85 sorties per year in the Grayling West MOA and 63 sorties per year in the Steelhead Low MOAs, averaging fewer than two sorties per week at night, although there could be a surge in aircraft sorties during peak training periods and fewer sorties at other times). With the infrequency of nighttime sorties and the square acreage of the MOAs available for flying, there is a low probability that a particular area would experience a large number of aircraft flyover events on a regular basis. According to the Michigan Natural Features Inventory, the tricolored bat had one occurrence in Alpena County in 2010, but it has not been observed in any other counties in the study area, and there are no occurrences of the Indiana bat within the study area or surrounding counties. Therefore, these two bat species are unlikely to be present (Michigan State University, 2022a). No effects on the Indiana bat or tricolored bat are expected.

While no ground disturbance would occur under the Proposed Action, ground vibrations associated with airspace use at 300 feet AGL and above are possible. Few researchers have studied the effects of sound on Indiana bats. The studies that have been completed indicated that hibernating Indiana bats and little brown bats did not appear to respond to intense sound simulations, such as recordings of actual military activities played over a loudspeaker system (Shapiro & Hohmann, 2005). In addition, bats exposed to low-level flights exhibited no acute responses, such as panic flights, falling young bats, or startle responses. No significant differences in bat orienting responses were noted before, during, or after jet flights, but depressed levels of bat flights were noted for up to 30 minutes following the jet noise.

Under the Proposed Action, there could be a limited number of overflights that occur at night when bat species are active. Some bat species migrate or hunt at altitudes of 1,100 feet AGL; however, based on the behavior of migrating bats, it is likely that they are flying just above treetop level. In addition, bats stop to forage throughout the night, indicating that they are likely flying low enough to detect areas for feeding, drinking, and roosting (Peurach, et al., 2009; Roby, 2019). Northern long-eared bats primarily fly through the understory of forested areas while hunting and make short migrations to their winter hibernacula (USFWS, 2022). A study that looked at 147 recorded bat strikes, in which the pilots reported awareness of the strikes, concluded that the average altitude of bat-aircraft strike occurrence is approximately 1,100 feet AGL (Peurach, et al., 2009).

Most of the MOAs in the Alpena SUA have a floor of 4,000 feet MSL or higher; aircraft that train in these MOAs would not be conducting flights below 1,100 feet AGL. In the Grayling West MOA, approximately 11 percent of the total proposed sorties (180 sorties) would be conducted at 500–1,000 feet AGL with less than 1 percent (4 sorties) flown during the night hours (between 10:00 p.m. and 7:00 a.m.), when bats are active. In the Steelhead Low East MOA and the Steelhead Low North MOA, approximately 22 percent of the sorties would be conducted at 500–1,000 feet AGL with 3 percent of the total sorties (33 sorties) flown between 10:00 p.m. to 7:00 a.m. The proposed VRs would be established between 300 feet AGL and 1,500 feet AGL; however, none of the sorties would be flown between 10:00 p.m. and 7:00 a.m. Given the number of aircraft sorties that would be flown below 1,100 feet AGL during the night hours, the potential for bat-aircraft strikes is low.

#### Bird Species

According to the USFWS IPaC database, two federal-listed birds may also be found within the study area. Piping plover (endangered) and red knot (threatened) are migratory shorebirds that occupy coastal habitat along the Great Lakes. Piping plover critical habitat is also mapped in various

locations along the lakeshore. The body of research is not definitive as to the specific effects that low-altitude overflights may have on these two species but suggests that aircraft noise and intrusion would not be likely to adversely affect these species or critical habitat. Black et al. (1984) determined that low-altitude military training flights had no effect on the reproductive success of the great egret (*Ardea alba*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), or little blue heron (*Egretta caerulea*). Burger (1986) found that shorebirds did not flush in response to aircraft overflights but did flush in response to localized intrusions such as people or dogs on the beach. Hillman et al. (2015) studied multiple human disturbances on nesting behaviors of the least tern (*Sternula antillarum*), common tern (*Sterna hirunda*), gull-billed tern (*Gelochelidon nilotica*), and black skimmer (*Rynchops niger*), and found no evidence that military or civilian aircraft adversely affected incubation behavior for these species. DeRose-Wilson et al. (2015) determined that Wilson's plovers were more alert and scanned more during military rotorcraft overflights and also scanned more during military and civilian fixed-wing overflights, but heart rates and incubation rates did not change during any overflights, suggesting that there was not a direct link between increased vigilance and decreased reproductive success for this species.

Under the Proposed Action, the floor of the Pike East and Pike West MOAs would not be lowered from the existing airspace floor. With the proposed increase in the number of sorties in the Pike East and West MOAs, minor noise impacts would be expected, as discussed in Section 4.4.1. The noise levels anticipated under this alternative correspond to rural and very quiet suburban land uses, similar to the ambient noise levels in the Alpena SUA Complex. Bird species would be expected to be habituated to the existing aircraft activity and associated noise, and there would be no effect from the modifications to the Pike East and West MOAs.

The proposed Steelhead Low East and North MOAs, also above the Great Lakes shoreline, would have lower floors (i.e., from 6,000 feet MSL under the existing Steelhead MOA to 500 feet AGL under the proposed Steelhead Low East and North MOAs). The Lmax noise levels in the Steelhead Low MOAs would increase under the Proposed Action. However, given that there are 1,020 sorties per year in each Steelhead Low MOA, there would be an average of 4 sorties per day (assuming 264 flying days per year). The sorties in the Steelhead Low North and South MOAs would be in the airspace for approximately 15 minutes. Therefore, it is unlikely that there would be a large number of flyover events in one particular area. In the Steelhead Low East MOA, aircraft would spend more time, with approximately 22 percent (or approximately 230 sorties per year) spending 45 to 60 minutes in the airspace. However, the Steelhead Low East MOA covers more land area than the other MOAs, with 2,149 square miles; as a result, there is a low probability that a particular area would experience a large number of aircraft flyover events on a regular basis. Shorebirds are most likely to use the lake for foraging habitat. In addition, measures to restrict participating aircraft to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline seasonally only between May 15 and September 15 would further reduce the potential for minor disturbances from the Proposed Action. Overall, the Proposed Action would not be likely to adversely affect the piping plover, red knot, or piping plover critical habitat.

An experimental population, non-essential listing for whooping crane is in the state of Michigan. The Eastern Migratory Population of whooping crane are migratory birds that travel from their wintering grounds on the Gulf Coast of Florida. Since the initial reintroduction efforts, most summer whooping cranes within the Eastern Migratory Population have been recorded in central Wisconsin. Very few cranes have been recorded summering in southern Michigan. In 2020, four

whooping cranes were noted as summering in Michigan before returning to Wisconsin (Thompson, et al., 2022). No Eastern Migratory Population whooping cranes have been recorded in the study area. Therefore, the Proposed Action would not be likely to adversely affect this experimental, non-essential population of whooping cranes.

The impact on state-listed bird species (which are listed in Table A-9 in Appendix A, Section A.9) would be minor. As described under *Migratory Birds* above, most birds fly below 500 feet AGL, except during migratory flights, with the most common migratory altitude being between 500 and 1,000 feet AGL (Ehrlich et al., 1988). Bird populations in the region are habituated to the existing Alpena airspace. Measures to reduce impacts from the Proposed Action on migratory birds, including bald eagles, have been incorporated into the design for the Steelhead Low East, South, and North MOAs, as previously discussed. Furthermore, changes to the airspace under the Proposed Action would be subject to the MIANG BASH Plan, which includes measures to help minimize the potential for bird strikes, such as a bird hazard warning system and active and passive bird dispersal techniques (MIANG, 2020a). Approximately four sorties per day would occur in each Steelhead Low MOA. This minor increase in sorties, including maneuvers occurring at altitudes utilizing a 500-foot AGL floor, could create a potential for additional bird strikes. The countermeasures established in the BASH Plan would aid in the circumvention of these proposed increases. Overall, impacts on state-listed birds would not be significant under the Proposed Action.

#### **4.7.2 Alternative B: No Steelhead Low MOAs**

The potential impacts to biological resources under Alternative B would be the same as those described for the Proposed Action in Section 3.7. Impacts would not be significant.

#### **4.7.3 Alternative C: No Grayling East or West MOAs**

The potential impacts to biological resources under Alternative C would be the same as those described for the Proposed Action in Section 3.7. Impacts would not be significant.

#### **4.7.4 Alternative D: No Action Alternative**

Under the No Action Alternative, potential impacts to biological resources would remain unchanged. No ground-disturbing activities would occur with continued use of the Alpena SUA Complex in their current configuration. Impacts would not be significant.

### **4.8 Cultural Resources**

Analysis of potential effects on cultural resources considers both direct and indirect effects. Direct effects may be the result of physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the importance of the resource; introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting); or neglecting the resource to the extent that it deteriorates or is destroyed. For this analysis, changes in noise levels were considered. Noise levels can physically affect a structure through noise-related vibration, or alter the 'feel' of significant historic properties. The feel of an historic property is the expression of the aesthetic or historic sense of a particular period; it results from the presence of physical features, such as ambient noise, that convey the property's historic character.

#### **4.8.1 Proposed Action (Alternative A)**

Proposed airspace modifications and changes in aircraft operations could increase operational noise and alter the feel of historic properties that are present, but these would not be significant. Although there may be adverse effects to historic properties, implementation of the Proposed Action would not have significant effects on historic properties.

##### **Airspace**

No ground disturbance would occur associated with the proposed airspace changes, so no archaeological sites would be affected.

##### **Grayling East/West MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet AGL, which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet MSL). The operational noise level would be 45 dBA Ldnmr and DNL, as discussed in Section 4.4.1. Historic properties are located below this proposed MOA. Noise impacts under the Grayling East and West MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Section 4.4.1 provides the noise data for each MOA. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource. As a comparison, 40 dBA is in the noise range of a suburban area at night, and 55 dBA is comparable to a household refrigerator (Yale Environmental Health and Safety, n.d.).

Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB (Committee on Hearing, Bioacoustics, and Biomechanics, 1977). Even low-altitude flyovers of heavy aircraft do not reach the potential for damage (Sutherland et al., 1990). Vibrations to historic structures under the Grayling West and East MOA would not be a concern as the Lmax values at various points of interest under the Grayling East and West MOAs would be lower than noise levels at which vibrations could damage structures (i.e., 130 dB; see also Lmax values in Table 4-6). No ground disturbance would occur, so no archaeological sites would be affected. Therefore, there would be no adverse effects on historic properties from the establishment of Grayling East and West MOAs of the Proposed Action.

##### **Pike East/West MOAs**

Historic properties are underneath the Pike East and West MOAs. One such area is the Thunder Bay National Marine Sanctuary. However, under the Proposed Action, only lateral boundaries would be realigned, there would be no changes to the floor or ceiling of the MOAs. Noise levels would increase within Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within Pike West MOA. In addition, there would be no ground disturbance under either MOA. Therefore, there would be no adverse effects on historic properties under Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Historic properties are underneath these proposed MOAs, including the Sanilac Petroglyph site under the proposed Steelhead Low South MOA (discussed in more detail as a culturally sensitive site under National Historic Preservation Act Section 106 Consultation). Three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL, except from May 15 through September 15, when flights would only be restricted to fly no lower than 1,500 feet AGL within one nautical mile of Lake Huron. Areas underneath the Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL (as discussed in Section 4.4.1). Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the discussion in the Grayling East/West MOAs section above, the average noise level would be low, and single-event noise levels would be short term, so there would be no adverse effects regarding the historic feel of historic properties from increased noise levels (see Ldnmr and DNL levels in Table 4-4 and Table 4-5, respectively) and their structural integrity due to noise-generated vibrations (see Lmax levels in Table 4-6). Therefore, there would be no adverse effects on historic properties under the Steelhead and three Steelhead Low MOAs.

### R-4201A/R-4201B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL and there would be no ground disturbance. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr (and remain unchanged using the DNL metric at 61 dBA), and the noise level would increase from 45 dBA to 57 dBA Ldnmr (and 44 dBA to 56 dBA DNL) in R-4201B. Noise levels are assessed for an increase of 1.5 dBA at 65 dBA and higher. Under either metric, ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no effects on historic properties would occur from vibration.

### VR-1601/VR-1602

There are historic properties within the VR locations. Refer to the explanation of noise levels for adverse effects under the Grayling East/West MOAs analysis. The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on cultural resources. Section 4.4.1 provides the noise data for VR-1601/1602.

### **National Historic Preservation Act Section 106 Consultation**

The MIANG and NGB invited the Michigan SHPO and 16 federally recognized Tribes and 1 Treaty Organization potentially interested in these locations to consult pursuant to Section 106. The Tribes and Treaty Organization are listed in Table 4-8.

As discussed in Section 1.7, the NGB received requests to consult from the Miami Tribe of Oklahoma (January 10, 2023) and from CORA as the Treaty Organization that exercises Reserve Treaty Rights (December 13, 2022 & January 13, 2023). In response to these requests, NGB invited the sixteen

Tribes and one Treaty Organization to attend consultation meetings. A series of consultation meetings occurred in June 2023 to discuss the proposed airspace changes in more detail and provide a forum to voice Tribal concerns about environmental impacts and cultural landscape effects.

The Sanilac Petroglyphs are under the existing Steelhead MOA (floor of 6,000 feet MSL) and proposed Steelhead Low South MOA (proposed floor of 4,000 feet MSL); the change in noise levels in Ldnmr and DNL at this site were modeled with an increase of 3 dBA, and change in Lmax from 86 dBA to 91 dBA (see general location in Figure 4-1, and modeled noise in Table 4-4, Table 4-5, and Table 4-6). The NGB will include a three-nautical mile-radius buffer around the Sanilac Petroglyph site within the proposed Steelhead Low South MOA. In addition, the site will be avoided during certain times of the year based on information provided during the consultation with federally recognized Tribal governments. With implementation of this buffer and avoidance during certain times of the year, the NGB has determined there would be no adverse effect on historic properties under the Alpena SUA Complex for the proposed undertaking.

The Michigan SHPO concurred that the project would have no adverse effect per 36 CFR 800.5(b) on the Sanilac Petroglyphs with implementation the three-nautical-mile-buffer and avoidance during certain times of the year in a letter dated November 7, 2023. Correspondences with the Michigan SHPO pursuant to Section 106 are in Appendix E. All correspondence letters with Tribes and CORA as well as the Memorandum for Record of the Tribal consultation meetings are included in Appendix F.

**Table 4-8 Federally Recognized Tribes and Treaty Organization Consulted with Under Section 106**

Tribe Name	Tribe Name
Bay Mills Indian Chippewa Community	Lac Vieux Desert Band of Lake Superior
Grand Traverse Band of Ottawa and Chippewa Indians	Chippewa Indians
Hannahville Potawatomi Indian Community	Lac du Flambeau Band of Lake Superior
Huron Potawatomi-Nottawaseppi Huron Band of Potawatomi	Chippewa Indians of the Lac du Flambeau Reservation of Wisconsin
Keweenaw Bay Indian Community	Miami Tribe of Oklahoma
Little River Band of Ottawa Indians	Menominee Indian Tribe of Wisconsin
Little Traverse Bay Band of Odawa Indians	Red Lake Band of Chippewa Indians, Minnesota
Match-e-be-nash-she-wish Band of Potawatomi Indians of Michigan	Saginaw Chippewa Indian Tribe of Michigan
Pokagon Band of Potawatomi Indians	Sault Ste Marie Tribe of Chippewa Indians
	Chippewa Ottawa Resource Authority (CORA)

#### 4.8.2 Alternative B: No Steelhead Low MOAs

There would be no adverse effects to historic properties as described in Section 4.8.1. Effects would be similar, except the three Steelhead Low MOAs would not be established. Alternative B would not include a buffer around the Sanilac Petroglyphs because there would be no change at this site from the existing conditions. Therefore, implementation of Alternative B would not result in significant effects on historic properties.

#### 4.8.3 Alternative C: No Grayling East or West MOAs

There would be no adverse effects to historic properties as described in Section 4.8.1. Effects would be similar, except the Grayling East and West MOAs would not be established. Alternative C would



include a three-nautical-mile buffer around the Sanilac Petroglyphs and avoidance during certain times of the year within the Steelhead Low South MOA. Therefore, implementation of Alternative C would not result in significant effects on historic properties.

#### **4.8.4 Alternative D: No Action Alternative**

There would be no effect on historic properties under the No Action Alternative. There would be no changes in airspace or aircraft operations. Conditions would be as described in Section 3.8. Implementation of Alternative D would not result in significant effects on historic properties.

### **4.9 Socioeconomics and Environmental Justice**

Impacts on the socioeconomic environment of a region would be considered significant if the action were to affect the population and economic activity to the extent that there are substantial shifts in population trends, housing availability, regional spending or earning patterns, or local traffic patterns that would substantially reduce the levels of service on roads within local communities.

If there are potentially significant impacts on any environmental resource areas, the potential for disproportionately high and adverse effects on minority or low-income populations must be examined. If impacts on the physical or natural environment affect a minority or low-income population in a way that is unique and significant to that populations, the effects on that population must also be examined. Similarly, environmental health and safety risks that may disproportionately affect children must also be examined and determined.

Refer to Section A.13 of Appendix A for further information on Executive Orders 12898 and 13045 as well as detailed tables on population and housing characteristics and economic and employment characteristics in the socioeconomic study area.

#### **4.9.1 Proposed Action (Alternative A)**

Negligible-to-minor impacts on the socioeconomics of the region are anticipated, with no disproportionate impacts on minority or low-income populations.

Under the Proposed Action, there would not be any change in employment at Alpena CRTC, and as no construction is associated with Alternative A, there would not be any local expenditures for construction labor, materials, or supplies. Therefore, there would be no direct effects on local or regional sales volume, employment, income, or population under the Proposed Action. The Proposed Action would not change population levels, housing availability, or economics within the region associated with the establishment and change of the Alpena SUA.

Thirteen counties in Michigan would be located under proposed MOAs and VRs with altitude floors lower than 1,000 feet, and populations may experience noise associated with aircraft flying within the low altitude airspace (i.e., Alcona, Alpena, Arenac, Crawford, Iosco, Huron, Montmorency, Ogemaw, Oscoda, Otsego, Roscommon, Presque Isle, and Sanilac and Counties). However, the Ldnmr and DNL noise levels in all of the proposed MOAs would be well below significant levels. In addition, the proposed Steelhead Low East MOA would include a seasonal buffer, which would exclude military aircraft from flying lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15. This would reduce impacts to the populations during peak recreation times. Furthermore, as described in Section 4.4.1, while

individual flyover events would be loud at times, these events are infrequent and of short duration. Given the size of the proposed airspace (approximately 9,800 square miles) and the distribution of proposed training, the likelihood of an individual experiencing an overflight would be low and intermittent. Impacts to the socioeconomics and quality of life within the affected counties would not be significant.

As described in Section 4.5, Land Use, a study by the U.S. Forest Service (1992) concluded that aircraft overflights did not affect visitors' intent to revisit. Under the Proposed Action, training would be spread across a large area and would not be expected to occur in any one location on a repetitive basis, making the likelihood of an individual experiencing an overflight low and intermittent. As a result, the Proposed Action is not expected to have a significant impact on tourism within the study area.

Numerous general aviation airports are within the study area and adjacent to the proposed Alpena SUA Complex. Considerable planning has occurred to anticipate needs, identify potential problems, and develop workable solutions for issues associated with the use of the airspace and associated requirements. Such planning, continuing after implementation of the Proposed Action, would minimize impacts associated with the use of airspace and airspace management in the region, including potential economic impact of the proposed changes to the airspace. See Section 4.1.1, Airspace Management, for further discussion on the anticipated impacts to the specific airports and civilian aviators within and adjacent to the proposed Alpena SUA Complex.

Hazards associated with flare-induced wildfires could indirectly have adverse effects on socioeconomics by displacement of residents, loss of timber, loss of property, loss of seasonal tourism, and the cost of fire suppression; however, the increased potential for fire risk associated with the Proposed Action would be low (see Section 4.2.1). Training activities involving chaff and flare would continue to adhere to existing safety protocols, and the Proposed Action would not result in impacts on socioeconomics above existing conditions.

The Proposed Action is not expected to disproportionately affect minority or low-income populations. There are no significant adverse environmental impacts associated with the Proposed Action with any resource areas that would be expected to significantly, adversely impact the health or environment of minority or low-income populations living under the areas affected. Noise levels under the Proposed Action, including the populations identified using USEPA's EJScreen tool as areas with a high percentile of low-income populations, would remain below 65 dBA DNL/Ldnmr and would not create a health concern. Air emissions would not exceed any defined thresholds that are in place to protect public health. Aircraft sorties within the proposed airspace would be spread across a large area (approximately 9,800 square miles) and are not expected to occur in any one location on a repetitive basis; therefore, no population would be exposed to a disproportionate number of overflights and the associated impacts from those overflights.

As described in Section 4.4.1, adverse noise impacts would be associated within R-4201A/B. There are noise abatement areas around some of these residences (Guthrie Lakes and KP Lakes). Furthermore, noise impacts under the Proposed Action would not be significant. Although there is one CT—CT 9603—under R-4201 that was identified as a low-income population, the impacts of noise on this community would not be expected to be disproportionately higher in comparison to other communities located within the same county and under R-4201. No significantly adverse

human health impacts have been identified for the Proposed Action (see Section 4.2, Safety; Section 4.3, Air Quality; and Section 4.4, Noise); therefore, no further site-specific analysis or mitigation related to environmental justice would be warranted. Impacts would not be significant.

#### **4.9.2 Alternative B: No Steelhead Low MOAs**

Effects on socioeconomics, environmental justice, and protection of children under Alternative B would be comparable to those described in Section 4.9.1, but with reduced impacts on Iosco, Arenac, Huron, and Sanilac Counties from the elimination of the low-altitude flying areas associated with the Steelhead Low North and Steelhead Low East MOAs. Impacts would not be significant.

#### **4.9.3 Alternative C: No Grayling East or West MOAs**

Effects on socioeconomics, environmental justice, and protection of children under Alternative C would be comparable to those described in Section 4.9.1, but with reduced impacts on Otsego, Montmorency, Oscoda, Crawford, Roscommon, and Ogemaw Counties from the elimination of the low-altitude flying areas associated with the Grayling West MOA. Impacts would not be significant.

#### **4.9.4 Alternative D: No Action Alternative**

Under the No Action Alternative, the socioeconomic environment would remain comparable to those described in Section 3.9. No changes in the Alpena SUA Complex would occur. Impacts would not be significant.

## Chapter 5. Cumulative Effects

Cumulative effects are those impacts that result in the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The scope of the cumulative effects analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. The cumulative effects analysis qualitatively considers other reasonably foreseeable projects occurring within the same time frame and geographic extent as the Proposed Action. This EA does not consider future actions that are speculative.

The Draft EA included the proposal to relocate the F-35 Foreign Military Sales Pilot Training Center at Selfridge ANGB, Michigan. However, the decision has been made to locate that program to Ebbing ANGB, Arkansas (USAF, 2023b), so no cumulative impacts would be expected. Therefore, this project was subsequently removed from the cumulative effects analysis.

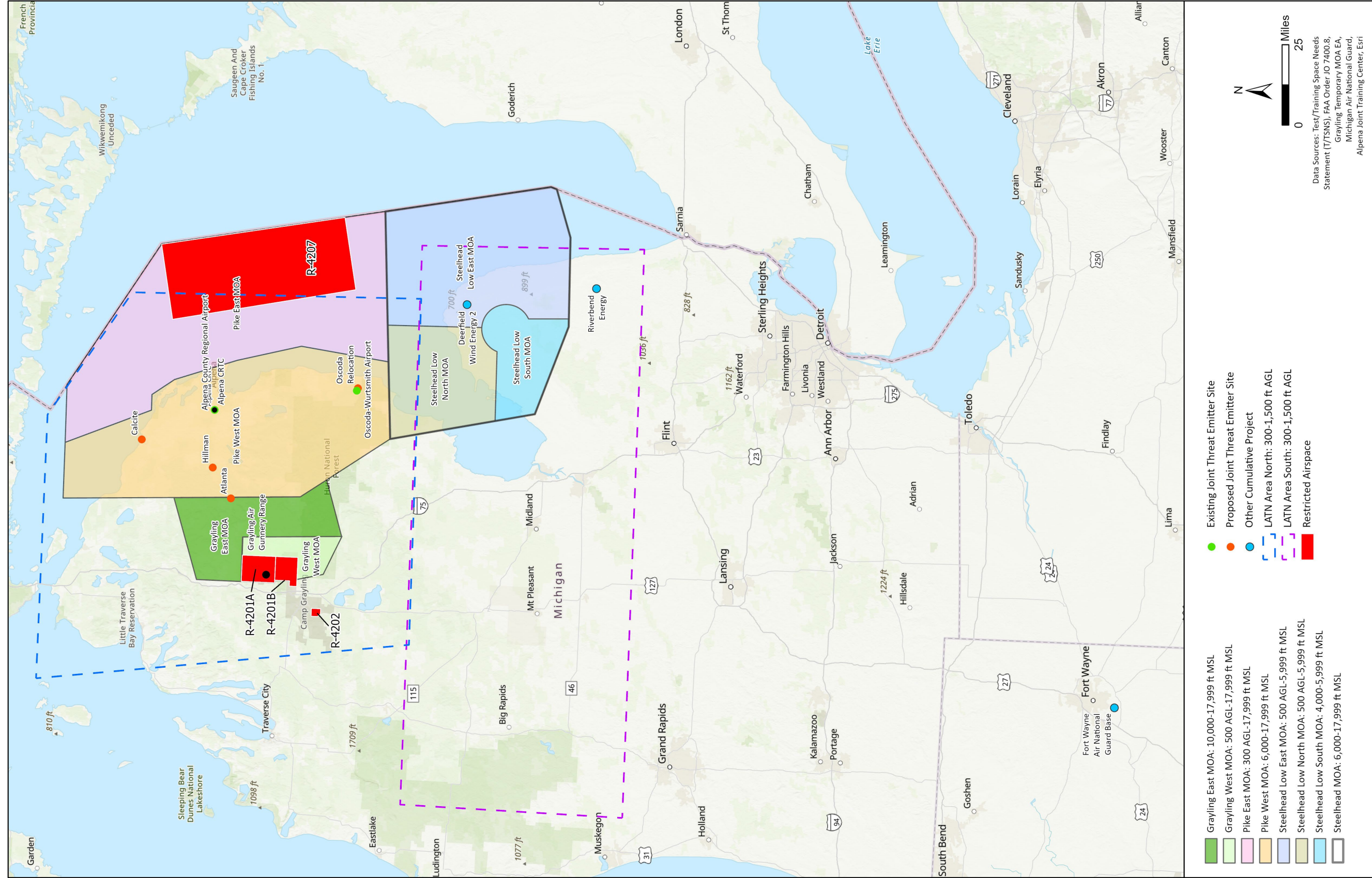
The proposed Alpena SUA modifications would occur over a land area covering approximately 9,800 square miles. Given this large area, the identification of projects considered for potential cumulative effects focused on large projects affecting the airspace.

### 5.1 Projects Considered

**Camp Grayling Expansion.** At the time that the Draft EA was published in November 2022, the Michigan Army National Guard was in the early planning stages to expand Camp Grayling via lease of state lands in Crawford, Kalkaska, and Otsego Counties (NGB, 2022; House, 2022). Under this proposal, soldiers would perform low-impact training to prepare for modern warfare. As of April 2023, MDNR declined to issue this lease (MDNR, 2023). Per a Memorandum of Agreement, signed April 21, 2023, Camp Grayling may submit a land use permit application annually for specified, small-formation, low-impact training activities within identified parcels that would not affect protected or sensitive habitats, inland lakes, or designated trout streams, nor the continued recreational or cultural use of these resources by the public or Tribes (MDNR and DMVA, 2023). Given the limits of approved training activities within these parcels, and the explicit exclusions of sensitive habitats, these training activities would pose little potential for cumulative impacts. If parcels are under a leasing agreement and being used for training, training activities would be coordinated with the Camp Grayling's Range Control to ensure no conflicts with ingress and egress of R-4201A/B. It is therefore not considered in further detail for potential cumulative effects.

**Modernization of Overwater Ranges.** The NGB is in the preliminary stages of assessing overwater range activity that is suitable for the use of air-to-surface inert weapons, specifically for the MQ-9 weapons systems and other comparable users. The NGB is preparing a proposal addressing the emerging need of overwater ranges capable of containing the weapons footprint of fielded and emerging stand-off weapons employed by ANG aircraft, such as air-to-ground missiles, lasers, and GPS-guided bombs. Four overwater ranges are being evaluated: R-4207, which is within the Alpena CRTC SUA, over Lake Huron; R-4305 at the convergence of Minnesota, Wisconsin, and Michigan over Lake Superior; R-5203 in New York over Lake Ontario; and R-6903 over Lake Michigan. No changes in charted airspace boundaries, altitudes, times of use, controlling agencies, or using agencies are planned at any of these overwater ranges. The location of R-4207 is shown in Figure 5-1.

Figure 5-1 Locations of Projects in Cumulative Effects Analysis



Modernization of R-4207 is needed to account for the changes in usage with new stand-off weapons and aircraft platforms to include the development of unmanned aerial vehicles and fifth generation fighter aircraft. Separate NEPA documentation is anticipated at a later date. R-4207 is part of the Alpena SUA, and it is often scheduled in combination with the surrounding airspace and could be scheduled in combination with the proposed MOAs. Therefore, future changes in R-4207 have a close causal relationship with this Proposed Action. The other overwater ranges (R-4305, R-5203, and R-6903) are removed somewhat from Alpena CRTC; while units may opt to use any of these airspaces, depending on specific training requirements and weather conditions, a causal relationship between changes in utilization at these ranges and the Proposed Action becomes harder to define. The timeline for implementing modernization of these overwater ranges is not certain. Therefore, potential changes in R-4207 in association with the Proposed Action are discussed only generally in this EA.

### **Construction of Joint Threat Emitter (JTE) Sites**

**within Alpena SUA Complex.** The NGB plans to construct and operate new Joint Threat Emitters (JTEs) across the Alpena SUA Complex. JTEs (see inset, right) simulate realistic integrated air defense training opportunities by creating high-density radiofrequency environments. Currently, MIANG has three permanent JTE sites, one each at Alpena CRTC, Grayling Range, and Oscoda-Wurtsmith Airport. The NGB and MIANG have identified three new sites that would provide advantageous training across the airspace complex:

Calcite Quarry in Presque Isle County; Atlanta

Municipal Airport, Montmorency County; and Hillman Airport in Montmorency County. In addition, the NGB and MIANG are considering relocating the existing Oscoda site approximately 4,300 feet to the southeast to minimize operational constraints. These locations are shown in Figure 5-1.



Construction activities at each JTE site would be conducted over approximately three months and involve minor grading of a 1- to 1.5-acre site, concrete pads for a prefabricated structure and the JTE, fencing, gravel access, and electrical and communications interconnections. Operationally, JTEs would be transported by trailer to each site as scheduled for training, which would vary site by site and day by day. Each JTE would have a minimum standoff distance maximum of 1,365 feet around it when in operation; as determined necessary during site selection and development, sensitive areas would be shielded from radiofrequency emissions. Other operational safety considerations and measures would be incorporated into site-specific standard operating procedures.

Originally, the JTEs were considered as part of this proposed airspace modernization to maximize training opportunities across the airspace; it was removed from this project to allow additional time to explore siting options for JTE. As the planning process progresses, different JTE sites may ultimately be identified, and separate NEPA analysis would be conducted as appropriate. As constructing and operating the JTE has independent utility outside the airspace modifications, the JTEs are not required to be considered as a connected action, but they are considered as a cumulative action. Construction activities on the ground would not likely have cumulative interactions with airspace activities, but the added training assets throughout the airspace are considered for operational cumulative effects.

**F-16 Mission Conversion at Fort Wayne ANGB.** The NGB proposes the full replacement of the A-10 mission to the F-16 mission for the 122d Fighter Wing (122 FW) out of Fort Wayne ANGB beginning in fiscal year 2023. The proposed F-16 mission conversion would increase annual airfield operations out of Fort Wayne International Airport, from approximately 4,032 A-10 operations to 4,400 F-16 operations. Proposed airfield operations would occur within the 122 FW's primary SUA (i.e., Twelve Mile/Hill Top MOAs, Jefferson Proving Ground MOAs/R-3403, Racer MOAs/R-3401, Buckeye/Brush Creek MOAs, and Red Hills MOA), but occasionally the 122 FW uses other airspace as weather alternates, including the Pike and Steelhead MOAs. The 122 FW conducts minimal operations in the Pike and Steelhead MOAs, which is not expected to change under the mission conversion. Ground-based components of the proposed F-16 conversion, including construction projects and increased personnel, would be geographically removed from this Proposed Action and are not discussed in more detail for potential cumulative effects. The NGB prepared an EA for the F-16 mission conversion. The location of Fort Wayne ANGB in relation to the proposed Alpena SUA modifications is shown in Figure 5-1.

**New Low-Altitude Tactical Navigation (LATN) Areas.** Alpena CRTC established two new LATN areas within the Alpena SUA Complex: LATN Area North and LATN Area South, shown in Figure 5-1. The LATNs primarily support C-130 and A-10 operations. All flights are VFR and at or below 250 knots. During the bald eagle nesting season, eagle nests would be avoided by 1,000 feet vertically and one-half mile laterally. Other restrictions are also included to avoid uncontrolled airports by three nautical miles, recreation areas, wildlife areas, noise-sensitive areas, and populated areas. Alpena CRTC categorically excluded this action from further NEPA analysis, but this project is carried forward for potential cumulative effects because it is within the same airspace.

**Alpena County Regional Airport Growth.** Alpena County Regional Airport opened a new passenger terminal and bridge in the spring of 2020. In the summer of 2020, the airport announced plans to construct a large hangar to store emergency response vehicles, up to 20 additional hangars, and an area where people can store boats and recreational vehicles. There are also plans to demolish the old terminal and construct a multipurpose events space that could double as a second terminal, if needed for future growth. These projects, which could be implemented by 2025, are discussed generally in this cumulative analysis for their contribution to growth. The location of Alpena County Regional Airport, collocated with Alpena CRTC, in relation to the proposed Alpena SUA modifications is shown in Figure 5-1.

**Oscoda-Wurtsmith Airport Spaceport.** Oscoda-Wurtsmith Airport was identified as a preferred location for a horizontal, low-orbit launch site for satellites. No formal project has yet been proposed, and so no detailed information is available as to specific requirements, timeline, or possible conflicts. Therefore, this project is not carried forward at this time for potential cumulative effects. The location of Oscoda-Wurtsmith Airport is shown in Figure 5-1.

**Wind Energy Projects.** Utility-scale wind energy projects are a growing sector in rural areas across Michigan, including Huron, Sanilac, and Tuscola Counties. Existing wind farms are already present, and the following two wind projects are proposed in or near the Alpena SUA:

- Deerfield Wind Energy 2 is underway in Huron County, following the first phase of Deerfield in 2016. Construction began in 2022 and should be complete sometime in 2023 (Liberty

Power, 2023a). As shown in Figure 5-1, this wind energy project is under the proposed Steelhead Low East MOA. Obstructions associated with this cluster of wind turbines are on the FAA's Detroit Sectional Aeronautical Chart (FAA, 2022a) and included in the discussion of potential safety impacts in Section 4.2.

- Riverbend Wind Energy is proposed in Fremont and Speaker Townships in Sanilac County. Construction of 50 turbines is planned to begin sometime in 2024 and be complete by 2025 (Liberty Power, 2023b). As shown in Figure 5-1, this wind energy project is outside the proposed Steelhead Low South MOA.

Additional wind energy proposals are possible in this area, given the market. New wind facilities would be subject to permitting and site review.

## 5.2 Analysis

### 5.2.1 Airspace Management

Proposed modernization of R-4207 would account for different types of aircraft operations and weapons within that overwater restricted area; modernization is not projected to increase sorties within R-4207. Access to additional JTEs would increase configuration possibilities and benefit military training scenarios. Collectively, modernization of R-4207, additional JTEs, and the proposed additions and modifications of Alpena SUA would increase training efficiencies within the airspace complex, primarily for the 180 FW out of Toledo ANGB and the 127 WG out of Selfridge ANGB. Since increases in sorties are not proposed, impacts are not anticipated to be significant. The proposal to modernize R-4207 will be further developed and analyzed in a separate NEPA document, which may provide additional insights to airspace management at that time.

Proposed airfield operations for the 122 FW at Fort Wayne ANGB would occur within the 122 FW's primary SUA (i.e., Twelve Mile/Hill Top MOAs, Jefferson Proving Ground MOAs/R-3403, Racer MOAs/R-3401, Buckeye/Brush Creek MOAs, and Red Hills MOA). Occasionally Pike and Steelhead MOAs would be used as weather alternatives. In fiscal year 2019, the 122 FW flew 24 sorties in Pike East MOA, 28 sorties in Pike West MOA, and 4 sorties in Steelhead MOA (Alpena, 2018 and 2019). The number of sorties that they currently conduct at these MOAs is minimal, and that is not expected to change under the proposed F-16 mission conversion. Any operations within the Pike and Steelhead MOAs would be coordinated through Minneapolis ARTCC; therefore, impacts would not be significant.

Aircraft do not fly over the same geographic area in the new LATNs more than once per day. "Acrobatic type activities" that are conducted in MOAs are not conducted in a LATN area. Activities in LATNs are non-hazardous and consist of slow speeds; aircraft fly VFR. Flights within the LATNs are coordinated with the Minneapolis ARTCC so they do not conflict with other airspace usage.

Alpena County Regional Airport is underneath Pike West MOA. Under the Proposed Action, there would not be substantial changes to Pike East or West MOAs; no significant impacts would result from the Proposed Action or from the proposed F-16 mission at Fort Wayne ANGB. If additional changes to the Alpena SUA Complex were proposed, an assessment of airspace management would be conducted. Cumulative effects would not be significant.



Wind turbine encroachment on military airspace is a concern with low SUA. Windmills already exist across the “Thumb” of Michigan, and existing and planned windmills pose a potential conflict with low-level military airspace. As such, the DOD has developed procedures to evaluate projects and work with developers to find commonly acceptable solutions. Windmills and other height obstructions are depicted on aeronautical charts, and pilots would note these and all obstructions during preflight planning and avoid these areas in accordance with minimum safe altitudes. Cumulatively, windmills combined with general aviation and low-level military aircraft all increase the demands within the airspace, but adherence to existing regulations would manage airspace use.

### **5.2.2 Safety**

Other cumulative actions would increase use of the Alpena SUA and surrounding airspace. Some of these users would be military, and others would be commercial and private aviators. Increased airspace users could increase the cumulative safety risks, as increases in aircraft flight activities are often associated with increased risk of aircraft mishaps, but, as stated in Section 4.2.1, research does not definitively support this due to the many factors that can result in a mishap (Congressional Research Service, 2003). Users of the airspace would continue to implement existing plans, protocols, and approvals that promote safe flying. Cumulative effects would not be significant.

As noted in Sections 4.2 and 5.2.1, existing and increased wind turbines pose some concerns for aircraft safety with low-level airspace. Some of the existing energy projects extend into the proposed Steelhead Low North and East MOAs. The Deerfield Wind Energy 2 would expand an existing windfarm in Huron County, with towers at 263–390 feet, below the Steelhead Low East MOA floor (Liberty Power, 2020). Pilots are professionally trained to “see and avoid” conflicts while flying within military airspace, including any structures such as wind turbines; pilots would continue to follow low-level guidance and remain 1,000 feet above the highest obstacle and 2,000 feet laterally when over congested or populated areas, as well as 500 feet above all known or observed antennas, turbines, and other obstacles (14 CFR 91.119).

Notably, potential safety risks associated with changes in types of aircraft operations and weapons training within R-4207 would be addressed in separate NEPA documentation. On-the-ground safety risks, such as localized high-frequency radiofrequency radiation during JTE operations, would also be addressed in separate NEPA documentation.

### **5.2.3 Air Quality**

The proposed modernization of R-4207 could have minor changes in air emissions associated with changes in types of aircraft operations and weapons training, but these would likely be collectively negligible considered with the Proposed Action.

JTE operations could also locally and regionally increase criteria pollutant emissions from transporting the units via truck/trailer as scheduled for training, but these kinds of operations would also be regionally negligible when considered with the Proposed Action. The JTEs themselves would not emit air pollution during operations.

Increased aircraft operations from other activities, including F-16 conversion at Fort Wayne ANGB, and establishment of the LATNs, would incrementally add to criteria and greenhouse gas pollutant emissions from the combustion of fuel. The 122 FW at Fort Wayne uses Pike and Steelhead MOAs as weather alternates, but their presence in the Alpena SUA would continue to be minimal. As the

establishment of the LATNs was categorically excluded from detailed analysis, air emissions are presumed negligible. Cumulatively, these increased aircraft operations would not be expected to result in noticeably degraded air quality or contribute to violations of any NAAQS.

Proposed projects at Alpena County Regional Airport and Oscoda-Wurtsmith Airport suggest general regional growth. As the region grows, increased air and automobile traffic would also contribute to increased emissions, which could diminish air quality within more urbanized areas like Alpena. The growth of the clean energy sector partially offsets long-term criteria and greenhouse gas pollutants. Cumulative effects would not be significant.

#### **5.2.4 Noise**

The proposed modernization of R-4207 would involve changes in types of aircraft operations and weapons training. Changes in operations and weapons in R-4207 would affect primarily noise-sensitive receptors in Lake Huron, compared with the noise-sensitive receptors in this Proposed Action that are primarily over land. Changes in the R-4207 noise environment would require additional analysis in separate NEPA documentation.

JTE operation at the new sites would not contribute cumulatively with the Proposed Action to the noise environment.

The 122 FW at Fort Wayne ANGB uses other airspace as weather alternates, including the Pike and Steelhead MOAs. In fiscal year 2019, the 122 FW flew 24 sorties in Pike East MOA, 28 sorties in Pike West MOA, and 4 sorties in Steelhead MOA (Alpena, 2018 and 2019). The number of sorties that they currently conduct at these MOAs is minimal, and that is not expected to change under the proposed F-16 mission conversion.

LATNs require that no aircraft fly over the same geographic area more than once per day. The LATNs mainly support C-130 and A-10 aircraft flying at or below 250 knots. One aircraft flying over a single area per day would not significantly increase the noise levels in any SUA. Per the LATN restrictions, pilots strive to avoid populated and noise-sensitive areas.

Most of the projects proposed at Alpena County Regional Airport include facilities to store emergency and recreational vehicles. Although there could be some minor construction noise impacts on the adjacent population, long-term operations on noise are not expected. If projects were to occur where a large increase in aircraft operations was expected, an analysis would be completed to estimate noise impacts.

Wind turbines are already present in the proposed Steelhead Low North and East MOAs, with turbines soon expanding within the Steelhead Low East MOA. Current evidence is sufficient to describe an association between wind turbines and feelings of annoyance. However, it is unclear whether this effect is due to the noise produced by wind turbines or separate factors such as the turbine's appearance or the person's personal views on wind turbines. There is limited or insufficient evidence to indicate an association between wind turbine noise and other proposed negative health impacts such as sleep disturbance or hearing loss (Expert Panel on Wind Turbine Noise and Human Health, 2015). Given that individual flyover events would be infrequent, and of short duration, and aircraft would not likely fly close to wind turbines, the cumulative effects on

noise of the proposed modifications and existing or proposed wind turbines would not be significant.

### **5.2.5 Land Use**

The cumulative projects discussed could result in some localized changes in land use, but cumulative effects on land use would not be significant within the region.

### **5.2.6 Water Resources**

Airspace actions would involve no ground disturbance, and, therefore, have little potential for cumulative effects on sensitive water resources.

### **5.2.7 Biological Resources**

The proposed modernization of R-4207 would involve changes in types of aircraft operations and weapons training over Lake Huron. Potential impacts of R-4207 modernization on bird, bat, and aquatic species would be addressed in separate NEPA documentation. As the Proposed Action would involve minimal changes in Pike East MOA, reasonably foreseeable additive impacts are not expected. Changes in the R-4207 noise environment would require additional analysis in separate NEPA documentation. Section 7 consultation pursuant to the Endangered Species Act would also be conducted, as needed.

Airspace actions could result in additional noise that could affect wildlife within the overall region, but the cumulative airspace actions would not be expected to provide any noticeable or significant noise impacts. The new LATNs are within the same airspace as the proposed SUA, and altitudes range from 300 feet to 1,500 feet AGL. Per the LATN restrictions, aircraft do not fly over the same geographic area in the new LATNs more than once per day, and wildlife areas are avoided to the maximum extent practicable. Measures described in Section 4.7 to reduce bird-aircraft strike and nesting bald eagle disturbance are implemented within the LATNs.

Wind turbines may attract a variety of bat species, with the greatest impact on migratory species (Horn, et al., 2008). However, it is unlikely that bats attracted to wind turbines would be at significant risk of being struck by passing aircraft because pilots would be well above all obstructions.

For these reasons, cumulative effects on biological resources would not be significant.

### **5.2.8 Cultural Resources**

The proposed modernization of R-4207 would involve changes in types of aircraft operations and weapons training over Lake Huron, which includes water and land subject to Reserved Treaty Rights as well as Thunder Bay National Marine Sanctuary and other known cultural resources. Potential impacts of R-4207 modernization on those cultural resources would be addressed in separate NEPA documentation. As the Proposed Action would involve minimal changes in Pike East MOA and would have no effect on Thunder Bay National Marine Sanctuaries, no reasonably foreseeable additive impacts would occur.

The flights within the proposed MOAs and within the LATN could cumulatively add to the number of flights over historic resources, though a resource would experience no more than one additional

overflight per day in the LATN. As such, cumulative impacts on cultural resources would not be significant.

As required for each undertaking, Section 106 consultation, pursuant to the National Historic Preservation Act, and Government-to-Government consultation would be conducted.

### **5.2.9 Socioeconomics and Environmental Justice**

Growth at Alpena County Regional Airport would be expected to provide benefits to the socioeconomics within the Alpena County region. The other projects concern airspace and would not have a significant, cumulative effect on socioeconomics when considered with the Proposed Action. Other cumulative actions would not adversely affect socioeconomics within the study area. Therefore, cumulative effects on socioeconomics would not be significant.

## Chapter 6. Management Actions / Special Procedures

The analysis in Chapter 4 does not identify any significant impacts from implementation of the Proposed Action or alternatives. The following discusses specific management actions or special procedures from Chapter 4 that would minimize adverse effects on the environment or human health and safety.

As discussed in Section 2.1, the following measures would be incorporated into the Proposed Action upon implementation. These measures were developed through previous environmental scoping and review efforts to reduce potential impacts:

- In the Steelhead Low MOAs, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15.
- No F-35 aircraft would be allowed in the Steelhead Low North, South, and East MOAs.
- The shape and altitude of the Steelhead Low South MOA were designed to enable civil flight operations around Huron County Memorial Airport without entering military airspace.
- The airspace legal description requirement would include that the airspace must be activated by NOTAM at least four hours in advance.
- The MIANG would enter into a LOA with Minneapolis Center and Cleveland Center to establish procedures for real-time separation and use of the airspace to allow civilian IFR aircraft access through the MOAs.

### **Biological Resources (Section 4.7)**

Bald eagles occur throughout the SUA. The following guidelines would be implemented to minimize potential effects on bald eagles:

- Avoid operating aircraft within 1,000 feet of bald eagle nests during the breeding season (December through August), except where eagles have demonstrated tolerance for such activity.
- Avoid use of the secondary crossing runway at Alpena County Regional Airport, especially during the breeding season from December through August.
- Maintain 1,000 feet of vertical and horizontal distance from known foraging areas and communal roost sites.
- Follow the National Bald Eagle Management Guidelines for activities other than aircraft operations around eagle nests.

### **Cultural Resources (Section 4.8)**

Tribal consultation efforts identified the following measures to ensure the proposed undertaking would have no adverse effects on the Sanilac Petroglyph site in Sanilac County:

- Implement a three-nautical mile-radius buffer around the Sanilac Petroglyph site within the proposed Steelhead Low South MOA.
- Avoid the site during certain times of the year based on information provided during the ANG's consultation efforts with federally recognized Tribal governments.

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## **Appendix A**

### **Applicable Laws, Regulations, and Executive Orders and Basis of Consideration for Resources Analyzed in this Environmental Assessment**

The National Guard Bureau (NGB), with the Federal Aviation Administration (FAA) as a cooperating agency, is preparing this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, as implemented by the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1500–1508, revised 2020), Department of the Air Force’s (DAF) Environmental Impact Analysis Process (EIAP; 32 CFR 989), and FAA’s Environmental Impacts: Policies and Procedures (FAA Order 1050.1F).

CEQ’s regulations encourage agencies to prepare brief EAs that provide sufficient evidence and analysis to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). To keep the text of the EA concise, supplementary information concerning regulatory and general resource background is included in this appendix.

In addition to NEPA and regulations that guide the implementation of NEPA, there are other environmental laws and Executive Orders that must be considered when preparing environmental analyses; these are summarized according to the general resources areas within which they are considered. The FAA also defines environmental impact categories that may be relevant to FAA actions in FAA Order 1050.F.

Table A-1 summarizes the full range of resources (or potential environmental impact categories) considered in this EA. The following sections provide the general background, regulatory context, and, where applicable, a more detailed discussion on the basis for not considering this resource in detail. Table A-2 summarizes potentially applicable laws, regulations, and policies, including those statutes that are often considered in EAs but not applicable to this Proposed Action.

**Table A-1 Summary of Environmental Resource Areas Analyzed in this Environmental Assessment**

Resource Area in this EA	FAA Environmental Impact Category*	Evaluated in Detail?	Sections for Further Information
Airspace Management	—	Yes	Section 3.1 Section 4.1 Appendix A, A.1
Safety	Safety Children's Environmental Health and Safety Risks	Yes	Section 3.2 Section 4.2 Appendix A, A.2
Air Quality	Air Quality Climate	Yes	Section 3.3 Section 4.3 Appendix A, A.3 Appendix K
Noise	Noise and Compatible Land Use	Yes	Section 3.4 Section 4.4 Appendix A, A.4 Appendix L
Land Use	Land Use	Yes	Section 3.5 Section 4.5 Appendix A, A.5
Department of Transportation Act, Section 4(f)	Department of Transportation Act, Section 4(f)	No	Appendix A, A.6
Geological Resources	Farmlands	No	Appendix A, A.7
Water Resources	Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers) Coastal Resources	Yes: surface water, coastal resources, wild and scenic rivers No: groundwater, wetlands, floodplains	Section 3.6 Section 4.6 Appendix A, A.8
Biological Resources	Biological Resources (including fish, wildlife, and plants)	Yes	Section 3.7 Section 4.7 Appendix A, A.9
Infrastructure and Transportation	Natural Resources and Energy Supply	No	Appendix A, A.10
Visual Resources	Visual Effects (including light emissions)	No	Appendix A, A.11
Cultural Resources	Historical, Architectural, Archeological, and Cultural Resources	Yes	Section 3.8 Section 4.8 Appendix A, A.12
Socioeconomics and Environmental Justice	Socioeconomics, Environmental Justice	Yes	Section 3.9 Section 4.9 Appendix A, A.13
Hazardous Materials and Wastes	Hazardous Materials, Solid Waste, and Pollution Prevention	No	Appendix A, A.14

Note: DAF resource areas were based on those identified in the AF Form 813, Request for Environmental Impact Analysis. FAA Environmental Impact Categories are defined in FAA Order 1050.F; they are listed and grouped here to facilitate FAA review processes. Neither NEPA nor CEQ implementing regulations define a full list of specific resource areas or categories of impact.



**Table A-2 Summary of Potentially Applicable Laws, Regulations, and Policies**

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance	EA Sections for Further Information
Bald and Golden Eagle Protection Act (16 USC section 668–668d)	All proposed activities would use established guidelines to minimize potential effects on bald eagles.	Biological Resources: Sections 3.7 and 4.7 Appendix D
Clean Air Act (42 USC section 7401 et seq.)	All the counties in the project area are in attainment for criteria pollutants, but Huron County is an orphan ozone maintenance area. Emissions would be well below <i>de minimis</i> ; therefore, a Conformity Determination is not required.	Air Quality: Sections 3.3 and 4.3; Appendix A, A.3; Appendix K
Clean Water Act (33 USC section 1251 et seq.)	No construction would occur, so no impacts on wetlands or waters of the United States would occur.	—
Coastal Zone Management Act (16 USC section 1451 et seq.)	Airspace modifications would not affect Michigan’s coastal zone. A negative determination will be sent to EGLE.	Water Resources: Sections 3.6 and 4.6 Appendix C
Comprehensive Environmental Response, Compensation, and Liability Act (42 USC section 9601 et seq.)	Not applicable. The Proposed Action would not involve using or storing hazardous or toxic chemicals.	Appendix A, A.14
Department of Transportation Act Section 4(f) (49 USC Section 303)	Not applicable. Military flight operations and designation of airspace for such operations are exempt for Public Law 105-85.	Appendix A, A.6
Emergency Planning and Community Right-to-Know Act (42 USC sections 11001–11050)	Not applicable. The Proposed Action would result in no changes in chemical substances or reporting requirements.	—
Federal Insecticide, Fungicide, and Rodenticide Act (7 USC section 136 et seq.)	Not applicable. The Proposed Action would not result in changes in the use of any pesticides or pesticide-treated products.	—
Endangered Species Act (16 USC section 1531 et seq.)	Determinations of “no effect” or “not likely to adversely affect” for federal-listed threatened or endangered species or critical habitat. U.S. Fish and Wildlife Service concurred on September 2, 2022, and May 17, 2023.	Biological Resources: Sections 3.7 and 4.7 Appendix D
Farmland Protection Policy Act (7 USC 4201 et seq.)	Not applicable. None of the affected soils are designated as prime or unique farmland.	Geological Resources: Appendix A, A.7
National Environmental Policy Act (42 USC sections 4321–4370h); CEQ-NEPA implementing regulations (40 CFR parts 1500–1508); DAF EIAP (32 CFR 989); FAA Environmental Impacts: Policies and Procedures (FAA Order 1050.1F)	This EA is prepared to comply with NEPA, as implemented by the CEQ, DAF, and FAA implementing regulations.	Entire EA is prepared to comply with NEPA

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance	EA Sections for Further Information
National Historic Preservation Act (54 USC section 306108 et seq.)	The Tribal consultation was conducted to include a series of meetings in June 2023. NGB agreed to implement a three-nautical-mile-buffer within the proposed Steelhead Low South MOA around the Sanilac Petroglyphs and avoidance during certain times of year. Michigan State Historic Preservation Office concurred with conclusion of no adverse effect, with the above measures, on November 7, 2023.	Cultural Resources: Sections 3.8 and 4.8 Appendix E Appendix F
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 USC section 1801 et seq.)	Not applicable. The Proposed Action would not affect essential fish habitat.	—
Marine Mammal Protection Act (16 USC section 1361 et seq.)	Not applicable. The Proposed Action would not affect marine mammals.	—
Migratory Bird Treaty Act (16 USC section 703–712)	All proposed activities would use the guidelines already established in the Alpena CRTC Bird/Wildlife Aircraft Strike Hazard Plan to minimize potential effects on migratory birds.	Biological Resources: Sections 3.7 and 4.7 Appendix D
Pollution Prevention Act (42 USC 13101[b])	The Proposed Action would result in negligible long-term changes in waste streams.	Appendix A, A.14
Resource Conservation and Recovery Act (42 USC section 6901 et seq.)	Not applicable. The Proposed Action would result in no long-term increases in the use of hazardous wastes or changes in the way that hazardous wastes are handled, stored, or disposed of.	Appendix A, A.14
Toxic Substances Control Act (15 USC sections 2601–2629)	Not applicable. The Proposed Action would result in no changes in chemical substances; reporting requirements would continue.	Appendix A, A.14
Wild and Scenic Rivers Act (16 USC 1271 et seq)	No construction activities are proposed. Aircraft activity already occurs over the portions designated as Wild and Scenic of the Au Sable, with floors at greater than 6,000 feet MSL. No effects on Wild or Scenic rivers would occur.	Water Resources: Section 3.6 and 4.6 Land Use: Section 3.5 and 4.5
Executive Order 11988, Floodplain Management, May 24, 1977	No construction would occur, so there would be no development within regulatory floodplains.	Water Resources: Section 3.6 and 4.6 Appendix A, A.8
Executive Order 11990, Protection of Wetlands, May 24, 1977	No construction would occur, so there would be no dredge or fill or other impacts wetlands.	Water Resources Section 3.6 and Appendix A, A.8
Executive Order 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations</i> , February 11, 1994	The Proposed Action is not expected to disproportionately affect minority or low-income populations.	Socioeconomics and Environmental Justice: Sections 3.9 and 4.9; Safety, Section 4.2; Air Quality, 4.3; Noise, Section 4.4

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	Status of Compliance	EA Sections for Further Information
Executive Order 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i> , April 21, 1997	Children would not be disproportionately affected from implementation of the Proposed Action.	Socioeconomics and Environmental Justice: Sections 3.9 and 4.9
Executive Order 13175, <i>Consultation and Coordination with Indian Tribal Governments</i> , November 6, 2000	The NGB and MIANG sent scoping letters and Section 106 consultation letters to potentially affected Tribes. Tribal consultation included a series of meetings in June 2023. NGB agreed to implement a three-nautical-mile-buffer within the proposed Steelhead Low South MOA around the Sanilac Petroglyphs and avoidance during certain times of year.	Cultural Resources: Table 4-8; Sections 3.8 and 4.8 Appendix B, Appendix F

(FAA, 2020)

Key: CEQ = Council on Environmental Quality Regulations; CFR = Code of Federal Regulations; CRTC = Combat Readiness Training Center; DAF = United States Air Force; EIAP = Environmental Impact Analysis Process; FAA = Federal Aviation Administration; NEPA = National Environmental Policy Act; USC = United States Code.

## A.1 Airspace Management

### Controlled Airspace

Controlled airspace is a generic term that encompasses the different classifications of airspace (Class A, B, C, D, and E airspace, shown in Figure A-1) and defines dimensions within which air traffic control service is provided to Instrument Flight Rules (IFR) flights and to Visual Flight Rules (VFR) flights. All military and civilian aircraft are subject to Federal Aviation Regulations.

**Figure A-1 Airspace Profile**



(FAA, 2016)

#### Class A Airspace

Class A airspace includes all flight levels or operating altitudes over 18,000 feet above mean sea level (MSL). Class A airspace is dominated by commercial aircraft utilizing routes between 18,000 and 60,000 feet MSL.

#### Class B Airspace

Class B airspace typically comprises contiguous cylinders of airspace, stacked upon one another, extending from the surface up to 14,500 feet MSL. To operate in Class B airspace, pilots must contact appropriate controlling authorities and receive clearance to enter the airspace. Additionally, aircraft operating within Class B airspace must be equipped with specialized electronics that allow air traffic controllers to accurately track aircraft speed, altitude, and position. Class B airspace is typically associated with major metropolitan airports. Detroit Metropolitan Wayne County Airport is the only Class B airport in Michigan, and it is not within the airspace directed affected in this EA.

#### Class C Airspace

Airspace designated as Class C can generally be described as controlled airspace that extends from the surface or a given altitude to a specified higher altitude. Class C airspace is designed and implemented to provide additional air traffic control (ATC) into and out of primary airports where aircraft operations are periodically at high-density levels. All aircraft operating within Class C airspace are required to maintain two-way radio communication with local ATC entities. Several

Class C airports are in Michigan (Bishop International, Gerald R. Ford International, and Capital Region International), but none are directly within the airspace affected in this EA.

#### Class D Airspace

Class D airspace encompasses a five-statute-mile radius of an operating ATC-controlled airport, extending from the ground to 2,500 feet above ground level (AGL) or higher. All aircraft operating within Class D airspace must be in two-way radio communication with the ATC facility.

#### Class E Airspace

Class E airspace can be described as general controlled airspace. It includes designated federal airways consisting of the high-altitude (J or “Jet” Route) system and low-altitude (V or “Victor” Route) system. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. Also included in this class of airspace are Federal Airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to or from the terminal or en route environment and en route domestic and offshore airspace, designated below 18,000 feet MSL.

#### **Uncontrolled Airspace**

Uncontrolled airspace (Class G) is not subject to restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the ground surface to 700 feet AGL in urban areas and from the ground surface to 1,200 feet AGL in rural areas. Uncontrolled airspace can extend above these altitudes to as high as 14,500 feet MSL if no other types of controlled airspace have been assigned. ATC does not have authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating in accordance with VFR.

#### **Special Use Airspace**

Special Use Airspace (SUA) consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. Except for Controlled Firing Areas, SUA is depicted on aeronautical charts, including hours of operation, altitudes, and the agency controlling the airspace.

Prohibited Areas and Restricted Areas (RA, or R-; e.g., R-4201A/B) are regulatory SUA that are established in FAR Part 73 through the rulemaking process. Warning Areas, Controlled Firing Areas, and Military Operations Areas (MOAs) are nonregulatory SUA. This EA involves RAs and MOAs.

MOAs are airspace areas designated outside of Class A airspace, to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. IFR traffic may be cleared to enter and pass through the area if adequate IFR separation criteria can be met, and procedures described, in a Letter of Agreement between the unit and the ATC-controlling agency (FAA JO 7400.2P). Nonparticipating VFR aircraft are not prohibited from entering an active MOA; however, extreme caution is advised when such aircraft transit the area during military operations. All MOAs within the United States are depicted on sectional aeronautical charts identifying the exact area, name, altitudes of use, published hours of use, and the corresponding controlling agency.

Warning Areas are airspace of defined dimensions over international waters that contain activity that may be hazardous to nonparticipating aircraft. Because international agreements do not provide for prohibition of flight in international airspace, no restrictions to flight are imposed. As such, Warning Areas are established in international airspace to alert pilots of nonparticipating aircraft to potential danger.

Controlled Firing Areas are established to contain activities that, if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft. The approval of a Controlled Firing Areas is only considered for those activities that are either of short duration or of such a nature that they could be immediately suspended upon notice that such activity might endanger nonparticipating aircraft. Examples of such activities include firing of missiles, rockets, anti-aircraft artillery, and field artillery; static testing of large rocket motors; blasting; and ordnance or chemical disposal.

### **Basis of Consideration in this EA**

Refer to Sections 3.1 and 4.1 for discussion and analysis pertaining to aircraft management. Figure A-2 and Figure A-3 show the existing and proposed SUA on FAA sectional aeronautical charts. Table A-3 identifies all airports within or just outside of the Alpena SUA Complex.

## **A.2 Safety**

### **Flight Safety Planning and Awareness Training**

Low-altitude operations are dynamic and highly demanding. Preflight planning, low-altitude awareness training, and in-flight warning systems ensure low-altitude training is conducted safely. These components emphasize ground and object avoidance, minimizing head-down-time, and implementing on-board warning systems as fail-safes during low-altitude flight.

**Preflight Planning.** Before each low-level training mission, pilots conduct preflight checks, mission planning, and briefing. Two key components of flight preparation for low-altitude operations are route planning and map study. During route planning the pilot determines turn points, key references, lines of communication, restricted fire areas, minimum risk routes, and airspace coordination areas. As low-altitude flight does not allow for a considerable amount of head-down time, the memorization of flight routing along with known tactical reference points aids in in-flight navigation and mission safety. Terrain, obstacle elevations, geographic funneling features, and areas for terrain masking are reviewed. Pilots identify terrain features that are evident and can serve as a stake in the ground for orientation (e.g., a mountain, large lake, dry lakebed, large intersection). Then a pilot identifies funneling features from these elements to help locate a target, turn point, or point of interest.

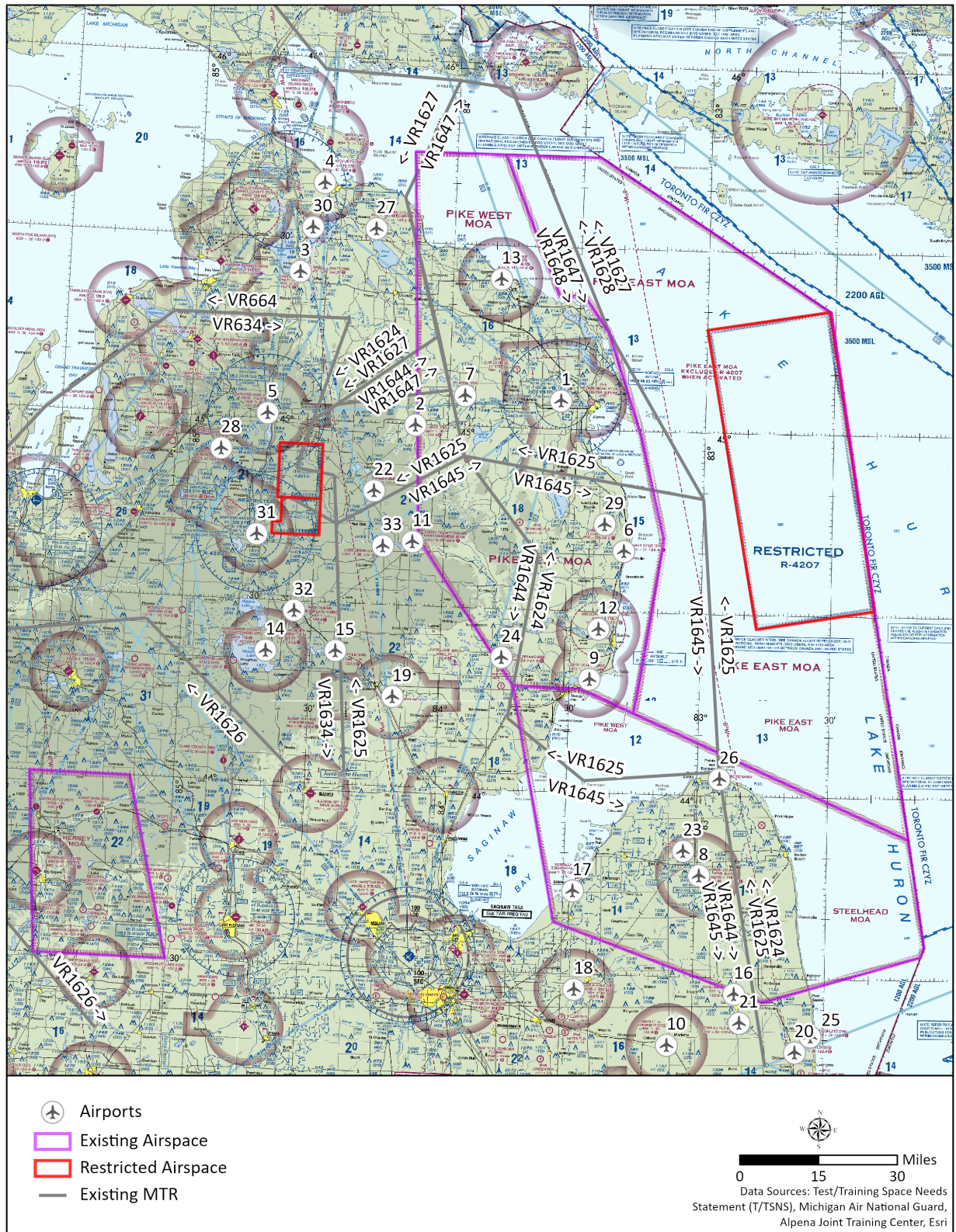
**Low-Altitude Awareness Training.** Pilots go through rigorous training emphasizing low-altitude awareness. The pilot develops task management skills that allow for accomplishing the mission while reducing the probability of ground impact. Pilot tasks during low-altitude missions fall into three main groups: (1) terrain clearance tasks, (2) other critical tasks, and (3) noncritical tasks. The lower the pilot operates the aircraft, the more time the pilot focuses on terrain clearance. Terrain clearance becomes a noncritical task only when leaving the low-altitude environment. The following are subtasks associated with terrain clearance:

**Table A-3 Airports Within or Adjacent to the Alpena Special Use Airspace Complex**

Airport	SUA
<b>Public/Municipal</b>	
1. Alpena County Regional Airport (APN)	Pike West MOA
2. Atlanta Municipal Airport (Y93)	Pike West MOA and Proposed Grayling East MOA
3. Calvin Campbell Airport (Y65)	West of Pike West MOA, north of proposed Grayling East MOA
4. Cheboygan County Airport (SLH)	West of Pike West MOA, north of proposed Grayling East MOA
5. Gaylord Regional Airport (GLR)	West of proposed Grayling East MOA, north of R-4201A
6. Harrisville Airport (5Y0)	Pike West MOA
7. Hillman Airport (Y95)	Pike West MOA
8. Huron County Memorial Airport (BAX)	Steelhead MOA, Proposed Steelhead Low South
9. Iosco County Airport (6D9)	Pike West MOA
10. Marlette Township Airport (77G)	South of Steelhead MOA and Proposed Steelhead Low South MOA
11. Oscoda County Dennis Kauffman Memorial Airport (51M)	Proposed Grayling East MOA
12. Oscoda-Wurtsmith (OSC)	Pike West MOA
13. Presque Isle County Airport (PZQ)	Pike West MOA
14. Roscommon Co. Blodgett Memorial (HTL)	South of proposed Grayling West MOA
15. Saint Helen Airport (6Y6)	South of proposed Grayling West MOA
16. Sandusky City Airport (Y93)	South of Steelhead MOA and Proposed Steelhead Low East MOA
17. Sebawaing Township Airport (98G)	Steelhead MOA, proposed Steelhead Low South MOA
18. Tuscola Area Airport (CFS)	South of Steelhead MOA and Proposed Steelhead Low South MOA
19. West Branch Community Airport (Y31)	South of Proposed Grayling East MOA
<b>Private</b>	
20. Arnold Field Airport (55G)	South of Steelhead MOA and Proposed Steelhead Low East MOA
21. Cowley Field Airport (96G)	South of Steelhead MOA and Proposed Steelhead Low East MOA
22. Eagle II Airport (8M8)	Proposed Grayling East MOA
23. Engler Field Airport (E53)	Steelhead MOA and Proposed Steelhead Low South MOA
24. Field of Dreams Airport (H80)	Pike West MOA
25. Flugplatz Airport (7MI)	South of Steelhead MOA and Proposed Steelhead Low East MOA
26. Grindstone Air Harbor Airport (29C)	Steelhead MOA, Proposed Steelhead Low East
27. Hoffman's Black Mountain Aerodome (2M7)	West of Pike West MOA, north of proposed Grayling East MOA
28. Lakes of the North Airport (4Y4)	West of R-4201A
29. Milwrick Flying M Airport (3L7)	Pike West MOA
30. Pbeaaye Airport (Y30)	West of Pike West MOA, north of proposed Grayling East MOA
<b>U.S. or State Government</b>	
31. Grayling AAF	West of R-4201B and proposed Grayling West MOA
32. Roscommon Conservation (3RC)	South of proposed Grayling West MOA
33. Lost Creek (5Y4)	Proposed Grayling East MOA

Note: Locations of airports are shown on Figure A-2 and Figure A-3.

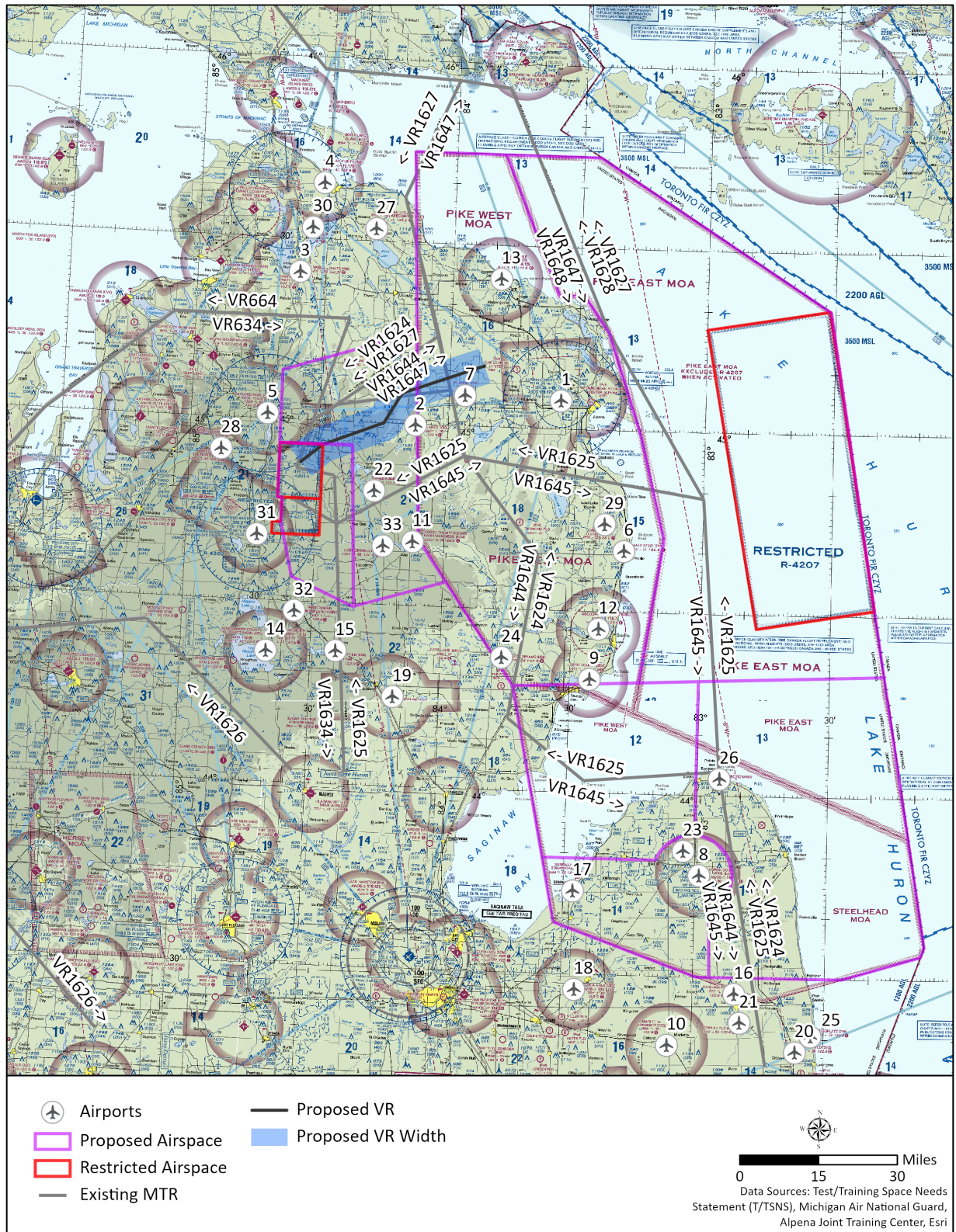
**Figure A-2 Existing Airspace Complex on FAA Sectional Aeronautical Chart**



Note: Airport numbers correspond to those shown on Table A-3.



**Figure A-3 Proposed Airspace Complex on FAA Sectional Aeronautical Chart**



Note: Airport numbers correspond to those shown on Table A-3.

- Aircraft Control: Control of the aircraft is paramount. Without aircraft control, every other task is meaningless.
- Altitude Control: Altitude control establishes the time available for a task. Consideration should be given to climbing to a higher altitude if a task is going to require significant head-down time.
- Vector Control: Head-down time can also be increased if there is a positive vector away from the ground and terrain clearance can be assured.

Because of the demanding nature of the low-altitude arena, becoming overtaken (i.e., task saturation) will occur at some point in time. Pilots are trained to recognize task saturation and act to reduce it. Pilots are also conditioned to develop a mental and physical cross-check that establishes acceptable terrain clearance and determines time available for other tasks.

### **Flight Mishaps**

Aircraft mishaps are categorized according to injury and damage (DOD, 2018):

- Class A: results in death, permanent total disability, damage equal to or greater than \$2 million, or a destroyed aircraft (excluding some unmanned systems)
- Class B: results in permanent partial disability, damage equal to or greater than \$500,000, or hospitalization for inpatient care of three or more individuals
- Class C: results in a nonfatal injury or occupational illness that caused loss of one or more days from work not including the day or shift it occurred, or damage equal to or greater than \$50,000
- Class D: recordable injury or illness not classified as A, B, or C; or damage equal to or greater than \$20,000

General mishap rates for aircraft within Alpena SUA are shown in Table A-4.

### **Basis of Consideration in this EA**

Refer to Sections 3.2 and 4.2 for discussion and analysis pertaining to aircraft safety.

**Table A-4 General Mishap Rates by Aircraft Type**

Aircraft	Class A Mishap Rate	Class B Mishap Rate	Pilot Fatality Rate	Overall Fatality Rate	Total Hours Flown (FY19)
<b>A-10</b>	<b>1.88</b>	<b>3.2</b>	<b>0.9</b>	<b>1.03</b>	<b>5,652,298</b>
B-2	0.7	7	0	0	142,944
B-52	0.32	2.59	1.28	4.07	7,907,212
C-12	0.38	0.38	0.51	1.28	779,359
C-130	0.82	1.46	0.74	3.39	19,852,569
C-135	0.54	1.62	0.84	3.92	16,121,776
C-17	1	2.08	0.09	0.15	3,405,825
F-15	2.31	4.49	0.65	0.78	6,798,701
<b>F-16</b>	<b>3.35</b>	<b>0.96</b>	<b>0.76</b>	<b>1.14</b>	<b>11,278,471</b>
F-35	3.11	4.15	0	0	96,313
H-1	2.86	1.16	1.02	2.52	2,063,501
H-60	3.48	2.54	1.87	7.36	747,420
T-1	0.09	0.46	0	0	2,153,554
V-22	6.22	40.42	1.04	4.15	96,485

(Air Force Safety Center, 2019)

Notes: Mishap and fatality rates are per 100,000 flight hours. The A-10 and F-16 in bold constitute most of aircraft within the Alpena SUA. Mishap information was not available for AV-8B, CH-47, FA-18A, or EA-18G aircraft.

### A.3 Air Quality

#### **Criteria Pollutant National Ambient Air Quality Standards**

In accordance with **Clean Air Act** requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. Measurements of these “criteria pollutants” in ambient air are expressed in units of parts per million (ppm) or in units of micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Regional air quality is a result of the types and quantities of atmospheric pollutants and pollutant sources in an area as well as surface topography, the size of the “air basin,” and prevailing meteorological conditions.

The Clean Air Act directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, the USEPA developed numerical concentration-based standards—National Ambient Air Quality Standards (NAAQS)—for pollutants that have been determined to impact human health and the environment and established both primary and secondary NAAQS. NAAQS are currently established for six criteria air pollutants: ozone ( $\text{O}_3$ ), carbon monoxide (CO), nitrogen dioxide ( $\text{NO}_2$ ), sulfur dioxide ( $\text{SO}_2$ ), respirable particulate matter including particulates equal to or less than 10 micrometers in diameter ( $\text{PM}_{10}$ ) and particulates equal to or less than 2.5 micrometers in diameter ( $\text{PM}_{2.5}$ ), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources in addition to maintaining visibility standards. The primary and secondary NAAQS are presented in Table A-5.

The criteria pollutant  $\text{O}_3$  is not usually emitted directly into the air but is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants, or “ $\text{O}_3$  precursors.” These  $\text{O}_3$  precursors consist primarily of nitrogen oxides ( $\text{NO}_x$ ) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. Regulatory agencies limit atmospheric  $\text{O}_3$  concentrations by controlling VOC pollutants (also identified as reactive organic gases) and  $\text{NO}_x$ .

The USEPA has recognized that particulate matter emissions can have different health effects depending on particle size and, therefore, developed separate NAAQS for coarse particulate matter ( $\text{PM}_{10}$ ) and fine particulate matter ( $\text{PM}_{2.5}$ ). The pollutant  $\text{PM}_{2.5}$  can be emitted from emission sources directly as very fine dust or liquid mist or formed secondarily in the atmosphere as condensable particulate matter, typically forming nitrate and sulfate compounds. Secondary (indirect) emissions vary by region depending upon the predominant emission sources located there and thus which precursors are considered significant for  $\text{PM}_{2.5}$  formation and identified for ultimate control.

The USEPA delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. When a region or area fails to meet a NAAQS for a pollutant, that region is classified as “nonattainment” for that pollutant. In such cases the affected state must develop a State Implementation Plan (SIP) that is subject to USEPA review and approval. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by the USEPA.

**Table A-5 National Ambient Air Quality Standards**

Pollutant	Primary/ Secondary	Averaging Time	Level	Form	
Carbon Monoxide (CO)	primary	8 hours	9 ppm	Not to be exceeded more than once per year	
		1 hour	35 ppm		
Lead (Pb)	primary and secondary	Rolling 3-month average	0.15 µg/m <sup>3</sup> (1)	Not to be exceeded	
Nitrogen Dioxide (NO <sub>2</sub> )	primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years Annual Mean	
	primary and secondary	1 year	53 ppb (2)		
Ozone (O <sub>3</sub> )	primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	
Particle Pollution	PM <sub>2.5</sub>	primary	1 year	12.0 µg/m <sup>3</sup>	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m <sup>3</sup>	annual mean, averaged over 3 years
	PM <sub>10</sub>	primary and secondary	24 hours	35 µg/m <sup>3</sup>	98th percentile, averaged over 3 years
		primary and secondary	24 hours	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO <sub>2</sub> )	primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	

(USEPA, 2021b)

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m<sup>3</sup> as a calendar quarter average) also remain in effect.

(2) The level of the annual NO<sub>2</sub> standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O<sub>3</sub> standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O<sub>3</sub> standards.

(4) The previous SO<sub>2</sub> standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO<sub>2</sub> standards or is not meeting the requirements of a SIP call under the previous SO<sub>2</sub> standards (40 CFR 50.4(3)). A SIP call is a USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Key: µg/m<sup>3</sup> = micrograms per cubic meter; CO = carbon monoxide; NO<sub>2</sub> = nitrogen oxides; O<sub>3</sub> = ozone; Pb = lead; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 micrometers; PM<sub>10</sub> = particulate matter less than or equal to 10 micrometers; ppb = parts per billion; ppm = parts per million; SO<sub>2</sub> = sulfur dioxide.

### General Conformity

The Clean Air Act required the USEPA to draft general conformity regulations that are applicable in nonattainment areas, or in designated maintenance areas (which are attainment areas that were reclassified from a previous nonattainment status and are required to prepare a maintenance plan for air quality). These regulations are designed to ensure that federal actions do not impede local efforts to achieve or maintain attainment with the NAAQS. The General Conformity Rule and the promulgated regulations found in 40 CFR Part 93 exempt certain federal actions from conformity determinations (e.g., contaminated site cleanup and natural disaster response activities). Other federal actions are assumed to conform if total indirect and direct project emissions are below *de minimis* levels presented in 40 CFR 93.153(b), as shown in Table A-6. The threshold levels—in tons of pollutant per year (tpy)—depend on the nonattainment status that USEPA has assigned to a region. For actions in nonattainment or maintenance areas, federal agencies must calculate all projected direct and indirect emissions and compare the total to the *de minimis* thresholds to determine if a formal General Conformity Determination is required.

**Table A-6 General Conformity *de minimis* Thresholds for Nonattainment and Maintenance Areas**

Nonattainment Designation	<i>de minimis</i> (tpy)
Ozone (VOCs or NO <sub>x</sub> ):	
Serious nonattainment areas	50
Severe nonattainment areas	25
Extreme nonattainment areas	10
Other ozone nonattainment areas outside an ozone transport region	100
Other ozone nonattainment areas inside an ozone transport region:	
VOC	50
NO <sub>x</sub>	100
Carbon monoxide: all nonattainment areas	100
SO <sub>2</sub> or NO <sub>2</sub> : all nonattainment areas	100
PM <sub>10</sub> :	
Moderate nonattainment areas	100
Serious nonattainment areas	70
PM <sub>2.5</sub> (direct emissions, SO <sub>2</sub> , NO <sub>x</sub> , VOC, and Ammonia):	
Moderate nonattainment areas	100
Serious nonattainment areas	70
Pb: all nonattainment areas	25
Maintenance Designations	<i>de minimis</i> (tpy)
Ozone (NO <sub>x</sub> , SO <sub>2</sub> , or NO <sub>2</sub> ):	
All maintenance areas	100
Ozone (VOCs):	
Maintenance areas inside an ozone transport region	50
Maintenance areas outside an ozone transport region	100
Carbon monoxide: all maintenance areas	100
PM <sub>10</sub> : all maintenance areas	100
PM <sub>2.5</sub> (direct emissions, SO <sub>2</sub> , NO <sub>x</sub> , VOC, and Ammonia): all maintenance areas	100
Pb: all maintenance areas	100

(40 CFR 93.153(b))

Key: CO = carbon monoxide; NO<sub>2</sub> = nitrogen oxides; NO<sub>x</sub> = nitrogen oxides; Pb = lead; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 micrometers; PM<sub>10</sub> = particulate matter less than or equal to 10 micrometers; ppb = parts per billion; ppm = parts per million; SO<sub>2</sub> = sulfur dioxide; tpy = tons per year; VOC = volatile organic compounds.

### **Air Operating Permits**

Title V of the Clean Air Act Amendments of 1990 requires state and local agencies to implement permitting programs for major stationary sources. A major stationary source is a facility (plant, base, activity, etc.) that has the potential to emit more than 100 tpy of any one criteria air pollutant, 10 tpy of a hazardous air pollutant, or 25 tpy of any combination of hazardous air pollutants; however, lower pollutant-specific “major source” permitting thresholds apply in nonattainment areas. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality.

### **Prevention of Significant Deterioration**

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be “significant” if a proposed project’s net emission increase meets or exceeds the rate of emissions listed in 40 CFR 52.21(b)(23)(i); or (1) a proposed project is within 10 kilometers of any Class I area (i.e., wilderness area greater than 5,000 acres or national park greater than 6,000 acres), and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of  $1 \mu\text{g}/\text{m}^3$  or more, per 40 CFR 52.21(b)(23)(iii). PSD regulations also define ambient air increments, limiting the allowable increases to any area’s baseline air contaminant concentrations, based on the area’s designation as Class I, II, or III (40 CFR 52.21(c)).

### **Greenhouse Gases**

Greenhouse gases (GHGs) trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere helps regulate the earth’s temperature and contribute to global climate effects. The principal GHGs that enter the atmosphere because of human activities are carbon dioxide ( $\text{CO}_2$ ), methane ( $\text{CH}_4$ ), nitrous oxide ( $\text{N}_2\text{O}$ ), and fluorinated gases. Each GHG has an estimated global warming potential that is a function of its atmospheric lifetime and ability to absorb and radiate infrared energy emitted from the earth’s surface. GHG emissions are standardized to  $\text{CO}_2$ , which has a value of one. The  $\text{CO}_2$  equivalent ( $\text{CO}_2\text{e}$ ) rate is calculated by multiplying the emissions of each GHG by its global warming potential and adding the results together to produce a single, combined emissions rate representing all GHGs.

### **Basis of Consideration in this EA**

The existing affected environment is presented in Section 3.3. The area affected by the Proposed Action encompasses a large land area, up to the mixing height of 3,000 feet AGL. Table 3-1 shows the air quality control regions and attainment statuses by county, identifying which proposed change occurs within each county. These counties encompass the study area for air quality, up to the mixing height for airspace operations.

Only one ambient air monitor is within the study area: Station No. 260630007 at Harbor Beach in Huron County. Available monitoring data are shown in Table A-7.

The DAF Air Conformity Applicability Model—ACAM—was used to estimate air emissions for the Proposed Action (AFCEC, 2023). Appendix K includes the Record of Non-Applicability for this action as well as the ACAM summary report and detailed report. The detailed ACAM report includes the methodologies and emissions supporting each activity associated with implementing the Proposed Action, as discussed in Section 4.3.

**Table A-7 Ozone Monitoring Data from Harbor Beach, Huron County, Michigan Monitoring Site (Station No. 260630007)**

Metric	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
No. Days 8-Hour Ozone Above 0.070 ppm	7	0	4	0	5	2	1	1	17	4	2
3 Year Average of 4th Highest 8-Hour Ozone Concentration (ppm)	—	—	0.068	0.067	0.068	0.065	0.071	0.072	0.074	0.068	0.067

(EGLE, 2019b; EGLE, 2020b)

Note: The NAAQS of 0.070 ppm became effective in 2015.

Key: ppm = parts per million.

#### A.4 Noise

Refer to Sections 3.4 and 4.4 of the EA for affected environment and environmental consequences pertaining to the noise environment.

#### A.5 Land Use

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws; however, no nationally recognized convention or uniform terminology has been adopted for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions.

#### **Basis of Consideration in this EA**

Refer to Sections 3.5 and 4.5 for discussion and analysis pertaining to land use.

#### A.6 Department of Transportation Act, Section 4(f)

**Section 4(f) of the Department of Transportation Act** protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) applies only to agencies within the U.S. Department of Transportation, including the FAA.

Section 4(f) properties include the following:

- parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public
- publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public
- historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public

#### **Basis of Consideration in this EA**

Military flight operations and designation of airspace for such operations are exempt from Section 4(f), per the U.S. Department of Defense Reauthorization in 1997 (Public Law 105-85). Therefore, Section 4(f) resources were not carried forward for detailed analysis in this EA.

## **A.7 Geological Resources**

Geological resources include topography, geology, and soils. Topography is typically described with respect to the elevation, slope, and surface features found within a given area. Geology may include bedrock materials, mineral deposits, and fossil remains. The principal geological factors influencing the stability of structures are soil stability and seismic properties. Soil refers to unconsolidated earthen materials overlying bedrock or parent material. Soils are typically described in terms of their type, slope, physical characteristics, and relative compatibility or limitations regarding particular construction activities and types of land use.

Consideration of geologic resources extends to prime or unique farmlands. The **Farmland Protection Policy Act** aims to minimize the loss of prime farmland and unique farmlands as a result of federal actions. The implementing procedures of the Farmland Protection Policy Act require federal agencies to evaluate the adverse effects of their activities on farmland, which includes prime and unique farmland and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects. Land that is already in urban development is not subject to the Farmland Protection Policy Act.

### **Basis of Consideration in this EA**

Airspace-related activities associated with the Proposed Action would not involve construction and would not directly alter topography, geology, or soils. The Proposed Action would not convert any important farmlands to non-agricultural uses. No coordination with the Natural Resources Conservation Service pursuant to the Farmland Protection Policy Act is required.

Flight activities within the Alpena SUA Complex currently use chaff and flare during training. Anticipated expenditures could increase by approximately 20 percent under the Proposed Action. Studies have indicated little or no potential for direct adverse effects on soil from the use of chaff or flare (USAF, 2011). Hazards associated with flare-induced fires could indirectly have adverse effects on soil by reducing soil productivity; however, the increased potential for fire risk associated with the Proposed Action would be low (see Section 4.2.1). Training activities involving chaff and flare would continue to adhere to existing safety protocols, similar to the existing conditions.

For these reasons, geological resources were not carried forward for detailed analysis in this EA.

## **A.8 Water Resources**

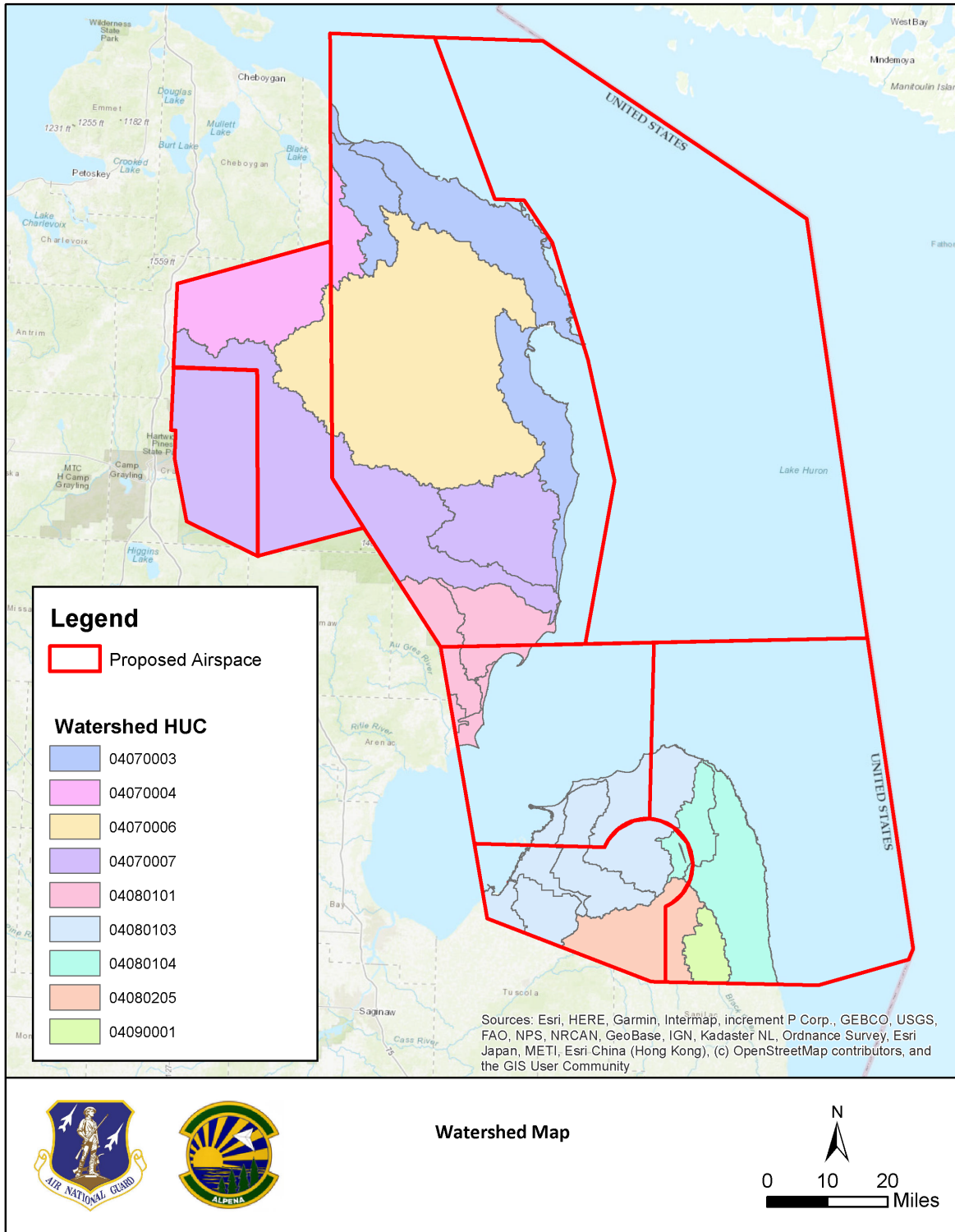
Refer to Sections 3.6 and 4.6 for discussion and analysis pertaining to water resources, including coastal resources. Figure A-4 and Table A-8 summarize regional watersheds within the Alpena SUA Complex.

### **Wetlands**

In response to growing potential for degradation of the national waters, Congress enacted the Federal Water Pollution Control Act Amendments of 1972 (later amended in 1977), which commonly came to be known as the Clean Water Act. The Clean Water Act gave USEPA the authority to establish the basic structure for regulating the discharge of pollutants into the waters of the United States. Section 404 of the Clean Water Act authorizes the Secretary of the Army to issue permits for the discharge of dredged or fill material into waters of the United States. The Proposed Action involves no construction activities, so there would be no potential for dredge, fill, or other direct or indirect impacts on wetlands or waters of the United States.



**Figure A-4 Regional Watershed Map**



**Table A-8 Watersheds in Study Area**

Hydrologic Unit Code (8)	Watershed Name
04070003	Lone Lake–Ocqueoc
04070004	Cheboygan
04070006	Thunder Bay
04070007	Au Sable
04080101	Au Gres–Rifle
04080103	Pigeon–Wiscoggin
04080104	Birch–Willow
04080205	Cass
04090001	St Clair

### **Floodplains**

Under 42 USC Section 4001 et seq., the Federal Emergency Management Agency is granted the authority to manage the National Flood Insurance Program, which consists of three components: flood insurance, floodplain management, and flood hazard mapping. The Federal Emergency Management Agency publishes Flood Insurance Rate Maps depicting the locations of the 100-year and 500-year floodplain boundaries. The Proposed Action involves no construction activities, so there would be no potential for development within regulatory floodplains or direct or indirect impacts on floodplains.

### **A.9 Biological Resources**

Refer to Sections 3.7 and 4.7 for discussion and analysis pertaining to biological resources.

State-listed threatened and endangered species, and state species of concern that have been recorded within the counties below the proposed Alpena SUA are listed in Table A-9.

**Table A-9 Comprehensive List of State-Listed Species Potentially Present in Counties Under Proposed Special Use Airspace**

Scientific Name	Common Name	State Status
<b>Birds</b>		
<i>Accipiter gentilis</i>	Northern goshawk	T
<i>Ammodramus savannarum</i>	Grasshopper sparrow	SC
<i>Anrostomus vociferus</i>	Eastern whip-poor-will	T
<i>Botaurus lentiginosus</i>	American bittern	SC
<i>Buteo lineatus</i>	Red-shouldered hawk	SC
<i>Canachites canadensis</i>	Spruce grouse	T
<i>Centronyx henslowii</i>	Henslow's sparrow	E
<i>Charadrius melodus</i>	Piping plover	E
<i>Chlidonias niger</i>	Black tern	T
<i>Chordeiles minor</i>	Common nighthawk	SC
<i>Circus hudsonius</i>	Northern harrier	SC
<i>Cistothorus palustris</i>	Marsh wren	SC
<i>Coturnicops noveboracensis</i>	Yellow rail	T
<i>Cygnus buccinator</i>	Trumpeter swan	SC
<i>Falco columbarius</i>	Merlin	SC
<i>Gallinula galeata</i>	Common gallinule	T
<i>Gavia immer</i>	Common loon	T

Scientific Name	Common Name	State Status
<b>Birds (continued)</b>		
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC
<i>Hydroprogne caspia</i>	Caspian tern	T
<i>Ixobrychus exilis</i>	Least bittern	T
<i>Lanius ludovicianus migrans</i>	Migrant loggerhead shrike	E
<i>Melanerpes erythrocephalus</i>	Red-headed woodpecker	SC
<i>Nycticorax nycticorax</i>	Black-crowned night-heron	SC
<i>Pandion haliaetus</i>	Osprey	SC
<i>Picoides arcticus</i>	Black-backed woodpecker	SC
<i>Rallus elegans</i>	King rail	E
<i>Setophaga cerulea</i>	Cerulean warbler	T
<i>Setophaga discolor</i>	Prairie warbler	SC
<i>Setophaga kirtlandii</i>	Kirtland's warbler	E
<i>Spiza americana</i>	Dickcissel	SC
<i>Sterna forsteri</i>	Forster's tern	T
<i>Sterna hirundo</i>	Common tern	T
<i>Vermivora chrysoptera</i>	Golden-winged warbler	T
<b>Mammals</b>		
<i>Glaucomys sabrinus</i>	Northern flying squirrel	SC
<i>Microtus pinetorum</i>	Woodland vole	SC
<i>Myotis lucifugus</i>	Little brown bat	T
<i>Myotis septentrionalis</i>	Northern long-eared bat	T
<i>Perimyotis subflavus</i>	Eastern pipistrelle	T
<b>Herpetofauna</b>		
<i>Clemmys guttata</i>	Spotted turtle	T
<i>Emydoidea blandingii</i>	Blanding's turtle	SC
<i>Glyptemys insculpta</i>	Wood turtle	T
<i>Lithobates palustris</i>	Pickerel frog	SC
<i>Opheodrys vernalis</i>	Smooth green snake	SC
<i>Necturus masculosus</i>	Mudpuppy	SC
<i>Pantherophis gloydi</i>	Eastern fox snake	T
<i>Sistrurus catenatus</i>	Eastern massasauga	SC
<i>Thamnophis butleri</i>	Butler's garter snake	SC
<b>Fish</b>		
<i>Acipenser fulvescens</i>	Lake sturgeon	T
<i>Ammocrypta pellucida</i>	Eastern sand darter	T
<i>Coregonus artedi</i>	Lake herring or Cisco	T
<i>Coregonus reighardi</i>	Shortnose cisco	X
<i>Coregonus zenithicus</i>	Shortjaw cisco	E
<i>Cottus ricei</i>	Spoonhead sculpin	SC
<i>Hiodon tergisus</i>	Mooneye	E
<i>Percina copelandi</i>	Channel darter	E
<i>Percina shumardi</i>	River darter	E
<i>Moxostoma carinatum</i>	River redhorse	T
<i>Moxostoma duquesnei</i>	Black redhorse	SC
<i>Notropis anogenus</i>	Pugnose shiner	E
<i>Notropis dorsalis</i>	Bigmouth shiner	T
<i>Sander canadensis</i>	Sauger	E

Scientific Name	Common Name	State Status
<b>Invertebrates</b>		
<i>Acella haldemani</i>	Spindle lymnaea	SC
<i>Alasmidonta marginata</i>	Elktoe	SC
<i>Alasmidonta viridis</i>	Slippershell	T
<i>Appalachia arcana</i>	Secretive locust	SC
<i>Appalachina sayanus</i>	Spike-lip crater	SC
<i>Atrytonopsis hianna</i>	Dusted skipper	SC
<i>Bombus affinis</i>	Rusty-patched bumble bee	E
<i>Bombus auricomus</i>	Black and gold bumble bee	SC
<i>Bombus borealis</i>	Northern amber bumble bee	SC
<i>Bombus pensylvanicus</i>	American bumble bee	E
<i>Bombus sandersoni</i>	Sanderson's bumble bee	SC
<i>Bombus terricola</i>	Yellow banded bumble bee	SC
<i>Brachionycha borealis</i>	Boreal brachionyncha	SC
<i>Brychius hungerfordi</i>	Hungerford's crawling water beetle	E
<i>Callophrys irus</i>	Frosted elfin	T
<i>Calypso bulbosa</i>	Calypso or fairy-slipper	T
<i>Cambaruno iris</i>	Rainbow	SC
<i>Cambarus robustus</i>	Big water crayfish	SC
<i>Chlosyne gorgone</i>	Gorgone checkerspot	X
<i>Cincinnatia cincinnatiensis</i>	Campeloma spire snail	SC
<i>Dorydiella kansana</i>	Leafhopper	SC
<i>Elliptio complanata</i>	Eastern elliptio	SC
<i>Epioblasma rangiana</i>	Northern riffleshell	E
<i>Epioblasma triquetra</i>	Snuffbox	E
<i>Erynnis martialis</i>	Mottled duskywing	SC
<i>Faxonius immunis</i>	Calico crayfish	SC
<i>Fontigens nickliniana</i>	Watercress snail	SC
<i>Hesperia metea</i>	Cobweb skipper	SC
<i>Lampsilis fasciola</i>	Wavyrayed lampmussel	T
<i>Lasmigona compressa</i>	Creek heelsplitter	SC
<i>Lasmigona costata</i>	Flutedshell	SC
<i>Ligumia recta</i>	Black sandshell	T
<i>Merolonche dolli</i>	Doll's merolonche	SC
<i>Nicrophorus americanus</i>	American burying beetle	X
<i>Papaipema astuta</i>	Astute stoneroot borer moth	SC
<i>Papaipema beeriana</i>	Blazing star borer	SC
<i>Obovaria subrotunda</i>	Round hickorynut	E
<i>Pachypolia atricornis</i>	Three-horned moth	SC
<i>Physella magnalacustris</i>	Great Lakes physa	SC
<i>Physella parkeri</i>	Broadshoulder physa	SC
<i>Planogyra asteriscus</i>	Eastern flat-whorl	SC
<i>Pleurobema sintoxia</i>	Round pigtoe	SC
<i>Potamilus alatus</i>	Pink heelsplitter	SC
<i>Ptychobranthus fasciolaris</i>	Kidney shell	SC
<i>Pyrgus centaureae wyandot</i>	Grizzled skipper	T
<i>Sagittunio nasutus</i>	Eastern pondmussel	E
<i>Simpsonaias ambigua</i>	Salamander mussel	E
<i>Somatochlora hineana</i>	Hine's emerald dragonfly	E
<i>Sphaerium fabale</i>	River fingernail clam	SC
<i>Stagnicola contracta</i>	Deepwater pondsnail	SC
<i>Stylurus laurae</i>	Laura's snaketail	SC

Scientific Name	Common Name	State Status
<b>Invertebrates (continued)</b>		
<i>Trimerotropis huroniana</i>	Lake Huron locust	T
<i>Utterbackia imbecillis</i>	Paper pondshell	SC
<i>Valvata perdepressa</i>	Purplecap valvata	SC
<i>Venustaconcha ellipsiformis</i>	Ellipse	SC
<b>Plants</b>		
<i>Adlumia fungosa</i>	Climbing fumitory	SC
<i>Agoseris glauca</i>	Prairie or pale agoseris	T
<i>Amerorchis rotundifolia</i>	Small round-leaved orchis	E
<i>Arnoglossum plantagineum</i>	Prairie Indian-plantain	SC
<i>Asclepias hirtella</i>	Tall green milkweed	T
<i>Asplenium rhizophyllum</i>	Walking fern	T
<i>Astragalus canadensis</i>	Canadian milk vetch	SC
<i>Astragalus neglectus</i>	Cooper's milk vetch	SC
<i>Botrychium michiganense</i>	Michigan moonwort	T
<i>Botrychium mormo</i>	Goblin moonwort	E
<i>Botrychium spathulatum</i>	Spatulate moonwort	T
<i>Cardamine maxima</i>	Large toothwort	SC
<i>Carex albolutescens</i>	Sedge	T
<i>Carex nigra</i>	Black sedge	E
<i>Carex richardsonii</i>	Richardson's sedge	SC
<i>Carex scirpoidea</i>	Bulrush sedge	T
<i>Cirsium hillii</i>	Hill's thistle	SC
<i>Cirsium pitcheri</i>	Pitcher's thistle	T
<i>Corispermum pallasii</i>	Pallas' bugseed	SC
<i>Crataegus douglasii</i>	Douglas's hawthorn	SC
<i>Cypripedium arietinum</i>	Ram's head lady's-slipper	SC
<i>Cypripedium candidum</i>	White lady slipper	T
<i>Dalibarda repens</i>	False violet	T
<i>Drosera anglica</i>	English sundew	SC
<i>Dryopteris filix-mas</i>	Male fern	SC
<i>Eleocharis engelmannii</i>	Engelmann's spike rush	SC
<i>Festuca altaica</i>	Rough fescue	SC
<i>Galearis spectabilis</i>	Showy orchis	T
<i>Grapphephorum melicoides</i>	Purple false oats	SC
<i>Gymnocarpium robertianum</i>	Limestone oak fern	T
<i>Huperzia selago</i>	Fir clubmoss	SC
<i>Iris lacustris</i>	Dwarf lake iris	T
<i>Isotria verticillata</i>	Whorled pogonia	T
<i>Juncus militaris</i>	Bayonet rush	T
<i>Juncus vaseyi</i>	Vasey's rush	T
<i>Lycopodiella subappressa</i>	Northern appressed clubmoss	SC
<i>Opuntia fragilis</i>	Fragile prickly pear	E
<i>Panax quinquefolius</i>	Ginseng	T
<i>Pinguicula vulgaris</i>	Butterwort	SC
<i>Platanthera leucophaea</i>	Prairie white-fringed orchid	E
<i>Potamogeton hillii</i>	Hill's pondweed	T
<i>Potentilla canadensis</i>	Canada cinquefoil	SC
<i>Prunus umbellata</i>	Alleghany or Sloe plum	SC
<i>Pterospora andromedea</i>	Pine-drops	T
<i>Pycnanthemum muticum</i>	Mountain mint	T
<i>Pycnanthemum verticillatum</i>	Whorled mountain mint	SC

Scientific Name	Common Name	State Status
<b>Plants (continued)</b>		
<i>Rhexia virginica</i>	Meadow beauty	SC
<i>Rorippa aquatica</i>	Lake cress	SC
<i>Salix pellita</i>	Satiny willow	T
<i>Solidago houghtonii</i>	Houghton's goldenrod	T
<i>Solidago vossii</i>	Voss's goldenrod	SC
<i>Sporobolus heterolepis</i>	Prairie dropseed	SC
<i>Stellaria crassifolia</i>	Fleshy stitchwort	E
<i>Thalictrum pubescens</i>	Tall meadowrue	SC
<i>Trichophorum clintonii</i>	Clinton's bulrush	SC
<i>Trichostema brachiatum</i>	False pennyroyal	T
<i>Tanacetum bipinnatum ssp. huronense</i>	Lake Huron tansy	SC
<i>Woodsia obtusa</i>	Blunt-lobed woodsia	T
<i>Zizania aquatica</i>	Wild rice	T

(Michigan State University, 2023)

Key: E = endangered; SC = special concern (rare or uncertain, not legally protected); T = threatened;  
X = presumed extirpated (legally threatened if rediscovered)

Note: This list includes all species potentially occurring in Alcona, Alpena, Arenac Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, and Sanilac Counties.

## A.10 Infrastructure and Transportation

Infrastructure systems include the local and regional network that supplies all drinking water production, storage, and distribution; wastewater collection treatment and disposal; storm water management, solid waste management, energy production, transmission, and distribution; and communications. Infrastructure systems can also include ground-based facilities, ranges, training areas, airfield pavements, and other supporting structures that are localized to a project site. Transportation includes the local and regional network of roadways, bus routes, railways, subways, bikeways, and trails.

### **Basis of Consideration in this EA**

The proposed airspace modifications would result in no changes in infrastructure systems or transportation networks. No extractive activities or changes in the energy supply are proposed. No new long-term increases in personnel or billets are proposed. For these reasons, infrastructure and transportation were not carried forward for detailed analysis in this EA.

## A.11 Visual Resources

Visual effects deal broadly with the extent to which a proposed action would produce light emissions that create annoyance or interfere with activities; or contrast with, or detract from, the visual resources and/or the visual character of the existing environment.

Light emissions include any light that emanates from a light source into the surrounding environment. Examples of sources of light emissions include airfield and apron flood lighting, navigational aids, terminal lighting, parking facility lighting, roadway lighting, safety lighting on launch pads, additional lighting to support nighttime commercial space launches, and light generated from such launches. Glare is a type of light emission that occurs when light is reflected off a surface (e.g., window glass, solar panels, or reflective building surfaces).

Visual resources include buildings, sites, traditional cultural properties, and other natural or manmade landscape features that are visually important or have unique characteristics. Visual character refers to the overall visual makeup of the existing environment where the proposed action and alternative(s) would be located. For example, locations near densely populated areas generally have a visual character defined as urban, whereas less developed areas have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, or deserts.

### **Basis of Consideration in this EA**

Airspace-related changes would not involve new lighting sources or intrusions that would affect the visual character within the Alpena SUA Complex. People under the proposed Steelhead Low North and East MOAs (within portions of Iosco, Arenac, Huron, and Sanilac Counties, and including Lake Huron); the proposed Grayling West MOA (within portions of Crawford, Otsego, and Oscoda Counties); and the proposed VR-1601/1602 (within portions of Alpena, Montmorency, and Otsego Counties) might observe increased aircraft activity at altitudes as low as 500 feet AGL. Undesirable visual intrusions are inherently subjective, but these increases would be short term and infrequent and would have a negligible visual effect.

Chaff and flare are already routinely used within the Alpena SUA Complex. Proposed use would increase overall by approximately 19–20 percent and would be deployed at lower altitudes under the Proposed Action (see Table 2-17 and Table H-1). A field study of the visibility of chaff and incidental debris in different environmental contexts concluded that significant aesthetic effects are unlikely. A survey of high-use areas did not indicate that chaff debris accumulates to create visual impacts; the potential for flare debris would be similar to chaff debris (USAF, 2011).

For these reasons, visual resources were not carried forward for detailed analysis in this EA.

### **A.12 Cultural Resources**

Cultural resources are governed by federal laws and regulations, including the **National Historic Preservation Act (NHPA)**, **Archeological and Historic Preservation Act**, **American Indian Religious Freedom Act**, **Archaeological Resources Protection Act of 1979**, and the **Native American Graves Protection and Repatriation Act of 1990**. Federal agencies' responsibility for protecting historic properties is defined primarily by Sections 106 and 110 of the NHPA. Section 106 requires federal agencies to consider the effects of their undertakings on historic properties. Section 110 of the NHPA requires federal agencies to establish—in conjunction with the Secretary of the Interior—historic preservation programs for the identification, evaluation, and protection of historic properties. **Executive Order 13175, Consultation and Coordination with Indian Tribal Governments**, and subsequent presidential memoranda, direct federal agencies to interact on a government-to-government consultation with Indian Tribes. Cultural resources also may be covered by state, local, and territorial laws.

### **Basis of Consideration in this EA**

Refer to Sections 3.8 and 4.8 of the EA for discussion and analysis pertaining to cultural resources.

### **A.13 Socioeconomics and Environmental Justice**

Socioeconomics includes the basic attributes and resources associated with the human environment, particularly population and economic activity (to include employment, personal income, and industrial growth). Impacts on these socioeconomic indicators can influence other components such as housing availability and public services.

The following tables provide an overview of the population, housing, economic, and employment characteristics of the counties under the Alpena SUA. Socioeconomic data are presented at the county, state, and national level to provide baseline socioeconomic conditions in the context of state and national trends. The most populated county under the Alpena SUA Complex is Tuscola County; the county with the lowest population is Oscoda County.

#### **Environmental Justice and Protection of Children**

**Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations***, requires federal agencies to consider the human health and environmental conditions in minority and low-income communities to ensure that any disproportionately high and adverse human health or environmental effects on these communities are identified and addressed.

A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is notably greater than in the general population (CEQ, 1997). Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The poverty threshold for a family of four in 2020 is \$26,246; although this number varies based on the amount of people and dependents within a family unit (USEPA, 2020). The Census Bureau defines a "poverty area" as a Census Tract (CT) where 20 percent or more of the residents have incomes below the poverty threshold; an "extreme poverty area" is a CT with 40 percent or more below the poverty level (U.S. Census Bureau, 1995).

In addition, because children may suffer disproportionately from environmental health and safety risks, **Executive Order 13045, *Protection of Children from Environmental Health and Safety Risks*** requires federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

#### **Basis of Consideration in this EA**

The modification and expansion of the Alpena SUA Complex would not result in changes in long-term employment, income, housing, or expenditures within the region. The SUA encompasses a large area, and there would not be changes in the overall utilization rates within the airspace. As such, the socioeconomics of the entire SUA Complex area would not be expected to change and is not considered in detail in this EA.



**Table A-10 Population and Housing Characteristics of Counties Under Alpena SUA (2019)**

County	2019 Population	Population <18 (%)	Population ≥65 (%)	Number of Housing Units	Owner-Occupied Housing Units (%)	Renter-Occupied Housing Units Median Rent
Alcona	10,405	12.6%	36.1%	11,241	88.8%	\$627
Alpena	28,405	18.7%	23.9%	16,076	77.9%	\$596
Arenac	14,883	18.1%	25.8%	9,885	83.8%	\$604
Cheboygan	25,276	16.2%	28.1%	18,651	82.4%	\$699
Crawford	14,029	18.1%	25.8%	11,258	81.2%	\$735
Huron	30,981	19.2%	25.9%	21,332	80.9%	\$609
Iosco	25,127	16.6%	30.1%	20,573	79.9%	\$652
Montmorency	9,328	14.8%	32.8%	9,631	84.1%	\$668
Ogemaw	20,997	18.6%	26.3%	16,252	81.4%	\$701
Oscoda	8,241	19.4%	27.6%	9,282	85.3%	\$750
Otsego	24,668	20.8%	21.7%	14,928	78.9%	\$768
Presque Isle	12,592	15.5%	32.5%	10,496	88.8%	\$542
Roscommon	24,019	14.8%	33.3%	24,611	82.0%	\$684
Sanilac	41,170	21.4%	22.1%	23,155	78.7%	\$678
Tuscola	52,245	20.3%	20.8%	24,525	82.4%	\$715
Michigan	9,986,857	21.5%	17.7%	4,629,611	71.2%	\$871
United States	328,239,523	22.3%	16.5%	139,684,244	64.0%	\$1,062

(U.S. Census Bureau, 2019)

Note: 2019 data are the most recent data available from the U.S. Census Bureau.

**Table A-11 Economic and Employment Characteristics of Counties Under Alpena SUA (2019)**

County	Civilian Labor Force	Unemployment Rate	Median Household Income	Percent of Individuals Living Below Poverty Line
Alcona	3,625	7.6%	\$40,484	18.0%
Alpena	13,474	6.0%	\$43,363	13.9%
Arenac	6,357	7.1%	\$42,290	17.2%
Cheboygan	11,319	7.5%	\$48,044	14.9%
Crawford	5,863	6.5%	\$47,977	14.0%
Huron	14,559	4.6%	\$48,289	13.7%
Iosco	9,818	7.2%	\$43,678	14.2%
Montmorency	3,312	8.0%	\$41,772	14.4%
Ogemaw	8,265	8.1%	\$40,373	18.2%
Oscoda	3,152	10.3%	\$42,335	15.4%
Otsego	11,495	5.8%	\$54,332	10.0%
Presque Isle	5,043	7.2%	\$47,948	10.8%
Roscommon	8,770	9.4%	\$42,054	15.3%
Sanilac	18,979	6.0%	\$47,672	13.6%
Tuscola	24,223	5.4%	\$49,988	11.6%
Michigan	4,948,824	5.9%	\$57,144	13.0%
United States	163,555,585	5.3%	\$62,843	10.5%

(U.S. Census Bureau, 2019)

Note: 2019 data are the most recent data available from the U.S. Census Bureau.

## A.14 Hazardous Materials and Wastes

In general, both hazardous materials and wastes include substances that might present substantial danger to public health or welfare or the environment when released or otherwise improperly managed. Substances may be considered dangerous because of their quantity; concentration; or physical, chemical, or infectious characteristics.

Evaluation of hazardous materials and wastes focuses on the storage, handling, use, transport, and disposal of these substances. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on the type of soil, topography, and water resources.

Hazardous materials are defined by 49 CFR 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR 173.” U.S. Department of Transportation regulations govern the transportation of hazardous materials.

Hazardous wastes are defined by the **Resource Conservation and Recovery Act (RCRA)**, as amended by the **Hazardous and Solid Waste Amendments**, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Universal wastes are a subset of hazardous wastes that are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials, as specified in 40 CFR 273. Five types of waste are currently covered under the universal wastes regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, hazardous waste lamps such as fluorescent light bulbs, and hazardous waste aerosol cans.

Special hazards are substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). USEPA is given authority to regulate special hazard substances by the **Toxic Substances Control Act (TSCA)**. Asbestos is also regulated by USEPA under the **Clean Air Act** and the **Comprehensive Environmental Response, Compensation, and Liability Act**.

The **Pollution Prevention Act** focused industry, government, and public attention on reducing the amount of pollution through cost-effective changes in production, operation, and raw materials use. Pollution prevention includes source reduction; practices that increase efficiency in the use of energy, water, or other natural resources; and practices that protect our resource base through conservation.

### **Basis of Consideration in this EA**

Like many military installations that have historically used chemical fire suppression technologies, Alpena CRTC is undergoing investigations to determine the extent of per- and polyfluoroalkyl substances (PFAS) in the soil and groundwater at the installation. As an airspace action with no on-the-ground components, the Proposed Action would not affect ongoing PFAS studies.

The proposed airspace modifications would result in no changes in waste production processes. No changes in the types of training missions or the mix of aircraft are proposed. Proposed airspace modifications would increase the use of chaff and flare; however, chaff and flare are not regulated as hazardous materials or wastes. Based on reviews of numerous toxicological studies, the principal components of chaff (aluminum, silica glass fibers, and stearic acid) would not pose an adverse impact to human and environmental health; they are unlikely to have significant effects on humans and the environment, based on the general toxicity of the components, the quantities used, the dispersion patterns, and the unlikelihood of the components to interact with other substances in nature to produce synergistic toxic effects.

M-206 flares are standard MTV—magnesium, Teflon, and Viton—flares (USAF, 2023a). Like chaff, the primary components of flare (magnesium oxide, magnesium chloride, and magnesium fluoride) do not pose an adverse risk to human and environmental health at the concentrations experienced in flare use (USAF, 2011). Teflon containing PFAS has been phased out of most applications over the past 10 years, but there are not data on whether Teflon in modern flares does or does not contain PFAS or similar materials (USAF, 2023a). Studies determined that a temperature of 1,830 degrees Fahrenheit destroys 99.9% of PFAS (Winchell, et al., 2021). Typically, flares burn in excess of 3,000 degrees Fahrenheit, so Teflon would combust almost entirely (USAF, 2023a). With a proposed annual usage of 9,400 flares, it is estimated that 38 may be duds and could land without combusting the Teflon. In this event, the duds would land within the proposed Alpena SUA footprint (approximately 9,800 square miles, or 8.3 million acres). Given this large area, this would be a very minor potential contribution of PFAS, if present, within the Teflon in the flares.

Military aircraft operating within the modified Alpena SUA Complex would continue to adhere to all applicable response plans in the event of an emergency. DAF fuel-dumping procedures would be followed, when necessary (i.e., in life-threatening emergency situations). Fuel dumping is not a component of any routine flight training and only occurs during in-flight emergency circumstances with a loss of life potential for the pilot (FAA Order JO 7110.65U, Section 4.10, Fuel Dumping). Aircraft mishaps also carry the potential for localized fueled fires, which often require the use of foaming agents—such as aqueous film-forming foam, or AFFF—to rapidly suppress a fire and protect human health and safety and property damage. Legacy AFFF spills and discharges from military installations are being investigated nationwide to determine the extent of PFAS contamination—primarily associated with perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). Since 2016, DOD has been removing legacy AFFF stores from its military inventory and replacing it with AFFF that is not considered bioaccumulative or biopersistent. In the event of a fuel fire, AFFF would be dispensed as required to respond to an emergency event. However, all discharges of AFFF are currently treated—and would continue to be treated—as a hazardous material spill with immediate cleanup, regardless of formulation, in accordance with existing policies (AFCEC, 2022). Fuel dumping procedures and emergency spill cleanup procedures

would remain unchanged under the Proposed Action. Therefore, potential effects do not warrant more detailed evaluation.

For these reasons, hazardous materials and wastes were not carried forward for detailed analysis in this EA.

## Appendix B

### Scoping and Early Intergovernmental Coordination

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**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

June 17, 2021

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Ms. Jessica Pruden  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
Region 3 – Midwest  
East Lansing Ecological Field Office  
2651 Coolidge Road, Suite 101  
East Lansing MI 48823

Dear Ms. Pruden

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. Pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 United States Code 4321 et seq.), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations Part 1500 et seq., as revised in July 2020), and the U.S. Air Force's Environmental Impact Analysis Process (32 Code of Federal Regulations Part 989), NGB will prepare an EA that considers the potential consequences of the proposed action to human health and the natural environment. The NGB has invited the Federal Aviation Administration (FAA) to be a cooperating agency in preparing the EA.

The purpose of this Proposed Action is to modify and establish airspace that supports military training and readiness requirements. This would contribute to the overall provision for an integrated, year-round, realistic training environment that encompasses airspace, facilities, and equipment. The need for the action is to provide airspace of sufficient contiguous size and altitude to accommodate tactics, techniques, and procedures that include low-altitude flight and high-altitude stand-off weapons employment to support Air National Guard Instruction 10-110.

The Proposed Action would include the following:

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- establishing two new visual routes (VR-1601 and VR-1602) between Alpena CRTIC and Grayling Air Gunnery Range
- establishing up to four Joint Threat Emitter (JTE) sites on the ground (Calcite, Atlanta, Hillman, and Oscoda)

A summary of the Proposed Action, two action alternatives, and the No Action Alternative, including figures showing airspace and JTE locations, are in Attachment 1.

Previously, environmental review was initiated for proposed changes in the Alpena SUA Complex, but, as of December 2019, NGB placed the project on hold to ensure concerns at all organizational levels could be considered and addressed. Since that time, modifications have been made to the Proposed Action, which are also included in Attachment 1.

As requested in previous discussions, proposed airspace changes have been provided to assist in determining impacts on migratory birds. Locations for proposed ground-disturbing activities are identified in the maps provided in Attachment 1.

The NGB respectfully requests any information or specific comments your agency may have regarding the locations of natural resources and potential impacts or concerns regarding potential impacts to natural resources, ecological, social, cultural, and archaeological resources. The NGB also requests any information that your agency may have regarding other proposed, ongoing, or recently completed projects in the area of the Proposed Action. A list of all tribes and agencies that are included on this distribution is included in Attachment 2.

Please provide any comments, concerns, or relevant background or supporting information within thirty (30) days of receipt of this letter to National Guard Bureau, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or by email at [kristi.kucharek@us.af.mil](mailto:kristi.kucharek@us.af.mil), with the subject titled as ATTN: ALPENA SUA EA. Thank you for your assistance.

Sincerely



KRISTI L. KUCHARAK  
NGB/A4AM Programming and Planning

Two Attachments:

1. Alpena SUA EA Summary of the Modification and Addition of Airspace at the Alpena Special Use Airspace Complex Proposal, including figures, May 2021
2. Alpena SUA EA Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) Distribution List, April 2021





**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

June 17, 2021

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Ms. Jennifer Day  
Great Lakes Regional Coordinator  
National Oceanic and Atmospheric Administration  
4840 South State Road  
Ann Arbor MI 48108

Dear Ms. Day

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. Pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 United States Code 4321 et seq.), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations Part 1500 et seq., as revised in July 2020), and the U.S. Air Force's Environmental Impact Analysis Process (32 Code of Federal Regulations Part 989), NGB will prepare an EA that considers the potential consequences of the proposed action to human health and the natural environment. The NGB has invited the Federal Aviation Administration (FAA) to be a cooperating agency in preparing the EA.

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Sincerely



KRISTI L. KUCHARAK  
NGB/A4AM Programming and Planning

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## NATIONAL GUARD BUREAU

3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

June 17, 2021

Ms. Jennifer L. Harty  
Cultural Resources Program Manager  
National Guard Bureau (NGB/A4VN)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762

Ms. Martha L. McFarlane-Faes  
Deputy State Historic Preservation Officer  
Michigan State Historic Preservation Office  
Cultural Resources Management Section  
300 North Washington Square  
Lansing MI 48913

Dear Ms. McFarlane-Faes

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. Pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 United States Code 4321 et seq.), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations Part 1500 et seq., as revised in July 2020), and the U.S. Air Force's Environmental Impact Analysis Process (32 Code of Federal Regulations Part 989), NGB will prepare an EA that considers the potential consequences of the proposed action to human health and the natural environment. The NGB has invited the Federal Aviation Administration (FAA) to be a cooperating agency in preparing the EA.

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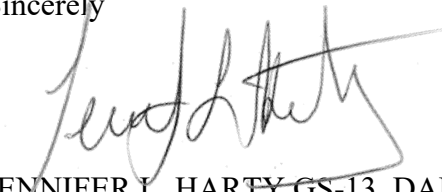
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The NGB is interested in information or agency-specific preliminary comments that would alleviate or highlight areas of concerns at the initial planning stages of this EA. Areas of concern may include potential effects to physical, ecological, social, cultural, archaeological, and tribal resources. The NGB also requests any information that your agency may have regarding other proposed, ongoing, or recently completed projects that could create or exacerbate impacts related to the Proposed Action. A list of all tribes and agencies that are included on this distribution is included in Attachment 2.

The NGB is preparing a National Historic Preservation Act Section 106 Review Request Submittal, which will be submitted later. This letter is to provide you with information on the proposed undertaking and the intent to prepare the EA.

Please respond with any comments you may have within thirty (30) days of receipt of this letter to Jennifer Harty, Cultural Resources Program Manager (A4), ATTN: ALPENA SUA EA, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157 or by email at [jennifer.harty@us.af.mil](mailto:jennifer.harty@us.af.mil) with the subject titled as ATTN: ALPENA SUA EA. Thank you for your assistance.

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JENNIFER L. HARTY GS-13, DAF  
Cultural Resources Program Manager

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cc: Mr. Brian Grennell, Cultural Resource Management Deputy, Michigan State Historic Preservation Office



**MICHIGAN AIR NATIONAL GUARD**  
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

June 18, 2021

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

<<Name>>  
<<Title>>  
<<Tribe Name>>  
<<Address>>  
<<City>> <<State>> <<ZIP>>

Dear <<Title>> <<Last Name>>

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. Pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 United States Code 4321 et seq.), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations Part 1500 et seq., as revised in July 2020), and the U.S. Air Force's Environmental Impact Analysis Process (32 Code of Federal Regulations Part 989), NGB will prepare an EA that considers the potential consequences of the proposed action to human health and the natural environment. The NGB has invited the Federal Aviation Administration (FAA) to be a cooperating agency in preparing the EA.

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The NGB and MI ANG respectfully request any information or preliminary comments that would alleviate or highlight areas of concerns at the initial planning stages of this EA. Areas of concern may include potential effects on physical, ecological, social, cultural, archaeological, and tribal resources. The NGB and MI ANG also request any information that you may have regarding other proposed, ongoing, or recently completed projects that could create or exacerbate impacts related to the Proposed Action.

The NGB is also preparing a letter to initiate National Historic Preservation Act Section 106 consultation, which will be submitted to you at a later date. This letter is to provide you with information on the proposed undertaking and the intent to prepare the EA. A list of all tribes and agencies that are included on this distribution is included in Attachment 2.

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Sincerely

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JAMES M. ROSSI, MI ANG  
Commander, Alpena CRTC

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Tribes

The Honorable Whitney Gravelle  
Chairwoman  
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Brimley MI 49715

Ms. Paula Carrick  
THPO  
Bays Mills Chippewa Indian Community  
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Armella Parker Elder Bldg  
Brimley MI 49715

The Honorable David Arroyo  
Chairman  
Grand Traverse Bay Band of Ottawa and  
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Ms. Sammie McClellan-Dyal  
Cultural Department Manager  
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Peshawbestown MI 49862

The Honorable Kenneth Meshigaud  
Chairperson  
Hannahville Indian Community  
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Wilson MI 49896-9728

Mr. Earl Meshigaud  
THPO  
Hannahville Indian Community  
N-14911 Hannahville B-1 Road  
Wilson MI 49896-9728

The Honorable Warren Swartz Jr.  
President  
Keweenaw Bay Indian Community  
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Baraga MI 49908

Mr. Alden Connor  
THPO  
Keweenaw Bay Indian Community  
16429 Bear Town Road  
Baraga MI 49908

The Honorable John Johnson  
President  
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Chippewa Indians of the Lac du Flambeau  
Reservation of Wisconsin  
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Lac du Flambeau WI 54538

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THPO  
Lac du Flambeau Band of Lake Superior  
Chippewa Indians of the Lac du Flambeau  
Reservation of Wisconsin  
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The Honorable James Williams Jr.  
Chairman  
Lac Vieux Desert Band of Lake Superior  
Chippewa Indians  
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Watersmeet MI 49969

Ms. Daisy McGeshick  
THPO  
Lac Vieux Desert Band of Lake Superior  
Chippewa Indians  
P.O. Box 249  
Watersmeet MI 49969

The Honorable Larry Romanelli  
Ogema  
Little River Band of Ottawa Indians,  
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Manistee MI 49660

Mr. Jonnie Sam  
THPO  
Little River Band of Ottawa Indians,  
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The Honorable Regina Gasco-Bentley  
Chairperson  
Little Traverse Bay Bands of Odawa Indians  
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Little Traverse Bay Bands of Odawa Indians  
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The Honorable Bob Peters  
Chairman  
Match-e-be-nash-she-wish Band of  
Potawatomi Indians of Michigan (Gun  
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Ms. Lakota Pochedley  
THPO  
Match-e-be-nash-she-wish Band of  
Potawatomi Indians of Michigan (Gun  
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2872 Mission Drive  
Shelbyville MI 49344

The Honorable Gunnar Peters  
Chair  
Menominee Indian Tribe of Wisconsin  
P.O. Box 910  
Keshena WI 54135

Mr. David Grignon  
THPO  
Menominee Indian Tribe of Wisconsin  
P.O. Box 910  
Keshena WI 54135

The Honorable Douglas Lankford  
Chief  
Miami Tribe of Oklahoma  
P.O. Box 1326  
Miami OK 74355

Ms. Julie Olds  
THPO  
Miami Tribe of Oklahoma  
P.O. Box 1326  
Miami OK 74355

The Honorable Jamie Stuck  
Chairperson  
Nottawaseppi Huron Band of the  
Potawatomi Indians  
1485 Mno-Bmadzewen Way  
Fulton MI 49052

Mr. Douglas Taylor  
THPO  
Nottawaseppi Huron Band of the  
Potawatomi Indians  
Pine Creek Indian Reservation  
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Fulton MI 49052

The Honorable Matthew Wesaw  
Chair  
Pokagon Band of Potawatomi Indians  
58620 Sink Road  
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Dowagiac MI 49047

Mr. Matthew Bussler  
THPO  
Pokagon Band of Potawatomi Indians  
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Dowagiac MI 49047

The Honorable Darrell Seki  
Chairperson  
Red Lake Band of Chippewa Indians,  
Minnesota  
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Red Lake MN 56671

Mr. Kade Ferris  
THPO  
Red Lake Band of Chippewa Indians,  
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Red Lake MN 56671

The Honorable Timothy Davis  
Chief  
Saginaw Chippewa Indian Tribe of  
Michigan  
7070 E. Broadway Road  
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Ms. Marcella Hadden  
THPO  
Saginaw Chippewa Indian Tribe of  
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6650 E. Broadway Road  
Ziibiwing Center of Anishinabe Culture &  
Lifeways  
Mount Pleasant MI 48858

The Honorable Aaron Payment  
Chairperson  
Sault Ste. Marie Tribe of Chippewa Indians  
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Sault Ste. Marie MI 49783

Ms. Marie Richards  
Cultural Repatriation Specialist  
Sault Ste. Marie Tribe of Chippewa Indians  
531 Ashmun Street  
Sault Ste. Marie MI 49783



**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

June 17, 2021

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

<<Name>>  
<<Title>>  
<<Organization>>  
<<Address>>  
<<City>> <<State>> <<ZIP>>

Dear <<Title>> <<Last Name>>

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. Pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 United States Code 4321 et seq.), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations Part 1500 et seq., as revised in July 2020), and the U.S. Air Force's Environmental Impact Analysis Process (32 Code of Federal Regulations Part 989), NGB will prepare an EA that considers the potential consequences of the proposed action to human health and the natural environment. The NGB has invited the Federal Aviation Administration (FAA) to be a cooperating agency in preparing the EA.

The purpose of this Proposed Action is to modify and establish airspace that supports military training and readiness requirements. This would contribute to the overall provision for an integrated, year-round, realistic training environment that encompasses airspace, facilities, and equipment. The need for the action is to provide airspace of sufficient contiguous size and altitude to accommodate tactics, techniques, and procedures that include low-altitude flight and high-altitude stand-off weapons employment to support Air National Guard Instruction 10-110.

The Proposed Action would include the following:

- establishing five new Military Operations Areas (MOAs): Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East

- discontinuing the annual request for the Grayling Temporary MOA
- modifying the internal lateral boundaries of three existing MOAs: Pike East, Pike West, and Steelhead
- returning Hersey MOA to the National Airspace System
- raising the vertical ceiling of an existing R-4102B from 9,000 feet above mean sea level (MSL) to 23,000 feet MSL to match the existing height of R-4102A
- establishing two new visual routes (VR-1601 and VR-1602) between Alpena CRTC and Grayling Air Gunnery Range
- establishing up to four Joint Threat Emitter (JTE) sites on the ground (Calcite, Atlanta, Hillman, and Oscoda)

A summary of the Proposed Action, two action alternatives, and the No Action Alternative, including figures showing airspace and JTE locations, are in Attachment 1.

Previously, environmental review was initiated for proposed changes in the Alpena SUA Complex, but, as of December 2019, NGB placed the project on hold to ensure concerns at all organizational levels could be considered and addressed. Since that time, modifications have been made to the Proposed Action, which are also summarized in Attachment 1.

The NGB respectfully requests any information or specific comments that would alleviate or highlight areas of concern at the initial planning stages of this EA. Areas of concern may include potential effects to physical, ecological, social, cultural, and archaeological resources. The NGB also requests any information that your agency may have regarding other proposed, ongoing, or recently completed projects that could create or exacerbate impacts associated with the Proposed Action. A list of all tribes and agencies that are included on this distribution is included in Attachment 2.

Please provide any comments, concerns, or relevant background or supporting information within thirty (30) days of receipt of this letter to National Guard Bureau, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or by email at [kristi.kucharek@us.af.mil](mailto:kristi.kucharek@us.af.mil), with the subject titled as ATTN: ALPENA SUA EA. Thank you for your assistance.

Sincerely



KRISTI L. KUCHAREK  
NGB/A4AM Programming and Planning

Two Attachments:

1. Alpena SUA EA Summary of the Modification and Addition of Airspace at the Alpena Special Use Airspace Complex Proposal, including figures, May 2021
2. Alpena SUA EA Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) Distribution List, April 2021

Federal Elected Officials

The Honorable Debbie Stabenow  
Senator  
3335 S. Airport Road West, Suite 6B  
Traverse City MI 49684

The Honorable Gary Peters  
Senator  
818 Red Drive, Suite 40  
Traverse City MI 49684

The Honorable Jack Bergman  
1st District Representative  
1396 Douglas Drive, Suite 22B  
Traverse City MI 49696

The Honorable John Moolenaar  
4th District Representative  
201 North Mitchell Street, Suite L4  
Cadillac MI 49601

The Honorable Dan Kildee  
5th District Representative  
601 South Saginaw Street, Suite 403  
Flint MI 48502

The Honorable Lisa McClain  
10th District Representative  
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Washington MI 48094

State and Local Elected Officials

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Lansing MI 48909

The Honorable Tammy Sumerix-Bates  
Executive Manager  
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720 W. Chisholm Street, Suite 7  
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The Honorable Shelly Pinkelman  
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Grayling MI 49738

The Honorable John Wallace  
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The Honorable Carl Altman  
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The Honorable Ken Glasser  
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Otsego County Board of Commissioners  
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Gaylord MI 49735

The Honorable Albert LaFleche  
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The Honorable Kyle Yoder  
Chair  
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Harrisville MI 48740

The Honorable Donald Jay O'Farrell  
Chairman  
Iosco County Board of Commissioners  
422 Lake Street  
Tawas City MI 48763

The Honorable Harold Woolhiser  
Chairman  
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120 N. Grove Street  
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Standish MI 48658

The Honorable Sami Khoury  
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Huron County Board of Commissioners  
250 E Huron Avenue, Room #305  
Bad Axe MI 48413

The Honorable Jenny David  
Chairperson  
Ogemaw County Board of Commissioners  
806 West Houghton Avenue  
West Branch MI 48661

The Honorable Thomas Bardwell  
Chairperson  
Tuscola County Board of Commissioners  
125 W. Lincoln Street, Suite 500  
Caro MI 48723

The Honorable Gary Heberling  
Chairperson  
Sanilac County Board of Commissioners  
Courthouse  
60 West Sanilac Avenue, Room 105  
Sandusky MI 48471

The Honorable Bob Schneider  
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Roscommon County Board of  
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U.S. Fish and Wildlife Service  
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National Oceanic and Atmosphere  
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Ms. Sara Siekierski  
Refuge Manager  
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Farm Service Agency State Executive  
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U.S. Department of Agriculture  
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1755 S. Mitchell Street  
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Mr. Greyling Brandt  
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Mr. Jefferson Gray  
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Marine Sanctuary  
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Mr. Benjamin Wiese  
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Supervisor, Regulatory Sault Ste. Marie  
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#### State Agencies

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Division Chief, Parks and Recreation  
Division  
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Bay City Customer Service Center (Regions  
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Mr. Bryan Budds  
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New Boston MI 48164-9669

Other Interested Parties

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Alpena MI 49707

Grayling Regional Chamber of Commerce  
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Grayling MI 49738

Legal Department  
Aircraft Owners and Pilots Association  
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Frederick MD 21701

National Business Aviation Association  
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Washington DC 20005

American Clean Power Association  
1501 M St. NW, Suite 900  
Washington DC 20005

---

**From:** Douglas Taylor <[Douglas.Taylor@nhbp-nsn.gov](mailto:Douglas.Taylor@nhbp-nsn.gov)>  
**Sent:** Thursday, June 24, 2021 1:24 PM  
**To:** HARTY, JENNIFER L GS-13 USAF ANG NGB/A4VN <[jennifer.harty@us.af.mil](mailto:jennifer.harty@us.af.mil)>  
**Cc:** KUCHAREK, KRISTI L GS-13 USAF ANGRC NGB/A4 <[kristi.kucharek@us.af.mil](mailto:kristi.kucharek@us.af.mil)>  
**Subject:** [Non-DoD Source] Alpena Special Use Complex Environmental Assessment Interagency and Intergovernmental Coordination for Environmental Planning

Greetings,

Ref: Alpena Special Use Complex Environmental Assessment Interagency and Intergovernmental Coordination for Environmental Planning

Thank you for including the Nottawaseppi Huron Band of the Potawatomi in your consultation process. From the description of your proposed project, it does not appear as if any cultural or religious concerns of the Tribe's will be affected. We therefore have no objection to the project. Of course, if the project scope is significantly changed or inadvertent findings are discovered during the course of the project, please contact us for further consultation.

Very Respectfully  
Douglas R. Taylor

Douglas R. Taylor | [Tribal Historic Preservation Officer \(THPO\)](#)

**Pine Creek Indian Reservation**

**1301 T Drive S, Fulton, MI 49052**

o: 269-704-8347 | c: 269-419-9434 | f: 269-729-5920

[Douglas.Taylor@nhbp-nsn.gov](mailto:Douglas.Taylor@nhbp-nsn.gov) | [www.nhbp-nsn.gov](http://www.nhbp-nsn.gov)



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GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF NATURAL RESOURCES  
LANSING



DANIEL EICHINGER  
DIRECTOR

July 15, 2021

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Dear Ms. Kucharek,

Thank you for the opportunity to comment on the Environmental Assessment (EA) being conducted by the National Guard Bureau (NGB). The Michigan Department of Natural Resources (DNR) has enjoyed a healthy working relationship with the National Guard in the Alpena/Grayling area and have cooperated on projects including wildfire suppression on military property and the quiet air space agreement over the Pigeon River State Forest.

As part of the wildfire program, we incorporate fixed-wing, single-engine aircraft that are both owned and contracted by the DNR to patrol areas outlined in the proposed Alpena CRTC and associated airspace. Typically, our patrols fly between 2500' AGL to 5000' AGL over state owned and private property and fill the role of "lookouts" for the ground resources and may act as "air attack" for fire suppression aircraft. The fire environment can become complex, demanding full attention to the incident which causes some concern knowing we could operate in shared airspace with military aircraft conducting aerobatic maneuvers with sudden and extreme altitude variations.

The primary concern centers around the Grayling West MOA with a floor of 500' AGL. This area is a prime wildfire area consisting of large tracts of Jack Pine which is one of the more volatile wildfire fuels. Not only does the low floor incorporate the normal flight altitudes by DNR patrols, but also the fire suppression aircraft that can consist of multiple fixed and rotor wing aircraft that operate in low visibility environment due to smoke from the wildfire. A higher floor to the proposed Grayling West MOA may mitigate the potential for conflict.

Currently, the DNR, Camp Grayling and Steel Gate have a Memorandum of Understanding (MOU) in place for wildland fire suppression. A possible addition to the MOU may include a "coordination of procedures" to assist in deconflicting DNR and military aircraft operating in the proposed MOA's.

Lastly, there are certain MOA's that allow military aircraft to operate "lights-out". Given the low floor of the proposed Grayling West MOA and proximity to airports and VFR activities, it would be the preference of the DNR that Grayling West MOA is not considered for "lights-out" designation.

If you have additional questions, please contact Mr. Kevin Jacobs, Aviation Manager, Forest Resources Division, at 989-275-5151, extension 2722053, or Mr. Tom Barnes, Acting Assistant Chief, Forest Resources Division, at 989-348-6371, extension 7440; or Department of Natural Resources, Forest Resources Division, Constitution Hall, 525 West Allegan Street, 4<sup>th</sup> Floor, Lansing, MI 48933; or you may contact me.

Sincerely,

A handwritten signature in black ink that reads "Jeff Stampfly". The signature is written in a cursive style with a large, stylized "J" and "S".

Jeff Stampfly, Chief and State Forester  
Forest Resources Division  
517-284-5876

cc: Ms. Shannon Lott, Natural Resources Deputy, DNR  
Mr. Tom Barnes, Acting Assistant Chief, DNR/FRD  
Mr. Kevin Jacobs, Aviation Manager, DNR/FRD



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July 22, 2021

Ms. Kristi Kucharek  
NGB/A4AM – Programming and Planning  
3501 Fetchet Ave  
Joint Base Andrews, MD 20762-5157

**Re: *Solicitation for Comments on the Environmental Assessment on Proposed Modification, Expansion, and Utilization of Airspace, Alpena Special Use Airspace Complex; Alpena, Michigan.***

Dear Ms. Kucharek,

The Aircraft Owners and Pilots Association (AOPA), the world's largest aviation membership association, submits the following comments in response to the solicitation for feedback on the proposed environmental assessment on the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex in Alpena, Michigan. We appreciate being included in this review and for your consideration of our earlier comments of November 30, 2018 and January 6, 2020.

We appreciate the modifications and evolution of the military's proposal that appears responsive to many concerns identified by the general aviation community and makes accommodations in line with the comments we submitted regarding the DOPAA in January 2020.

First, as noted in our previous comments, we understand Steelhead Low South Military Operations Area (MOA) will have a floor altitude of 4,000 feet MSL, which ensures efficient access to Huron County Memorial Airport (BAX). Additionally, the ceilings of all three Steelhead MOAs would now be 5,999 feet, allowing GA aircraft a realistic option to overfly these areas. These reconfigurations of the Steelhead Low MOAs are a vast improvement over the initial concept.

Second, the proposed floor of the new Grayling East MOA is now 10,000 feet, which gives significantly more altitude options to pilots utilizing the V78-609 airway. Again, this is a welcome change from the original proposal, but we still encourage the military to work with the FAA to develop a T-Route in this area that would allow a lower minimum enroute altitude and further mitigate the overlying MOA floor altitude constraint on IFR aircraft transiting this area.

We still have concerns about this proposal, however, as laid out below.

#### **Additional details needed in EIS document**

We look forward to seeing more detail once the environmental assessment is available and whether some of our additional concerns have been addressed. While we are pleased that this proposal includes a legal requirement that the airspace must be activated by NOTAM at least four hours in advance, we still have concerns about the mechanism in which the ANG will disclose and publicize the procedures for



airspace dynamic deactivation. We have heard from our members that there are many instances of the existing airspace being activated and not utilized or cancelled early and not returned for civil use.

We have concerns about the relatively low, and still unexplained, current utilization rate of the airspace, contrasted with the steep increase in the number of sorties being proposed with the new airspace. AOPA will be paying close attention to the utilization of this airspace going forward.

Furthermore, as we noted in our 2018 and 2020 letters, Michigan's economy and the economy of many underlying communities are heavily supported by general aviation and the local airports. These airports account for thousands of jobs and millions of dollars in economic value, and they would be economically harmed and disadvantaged by the creation of certain SUA.

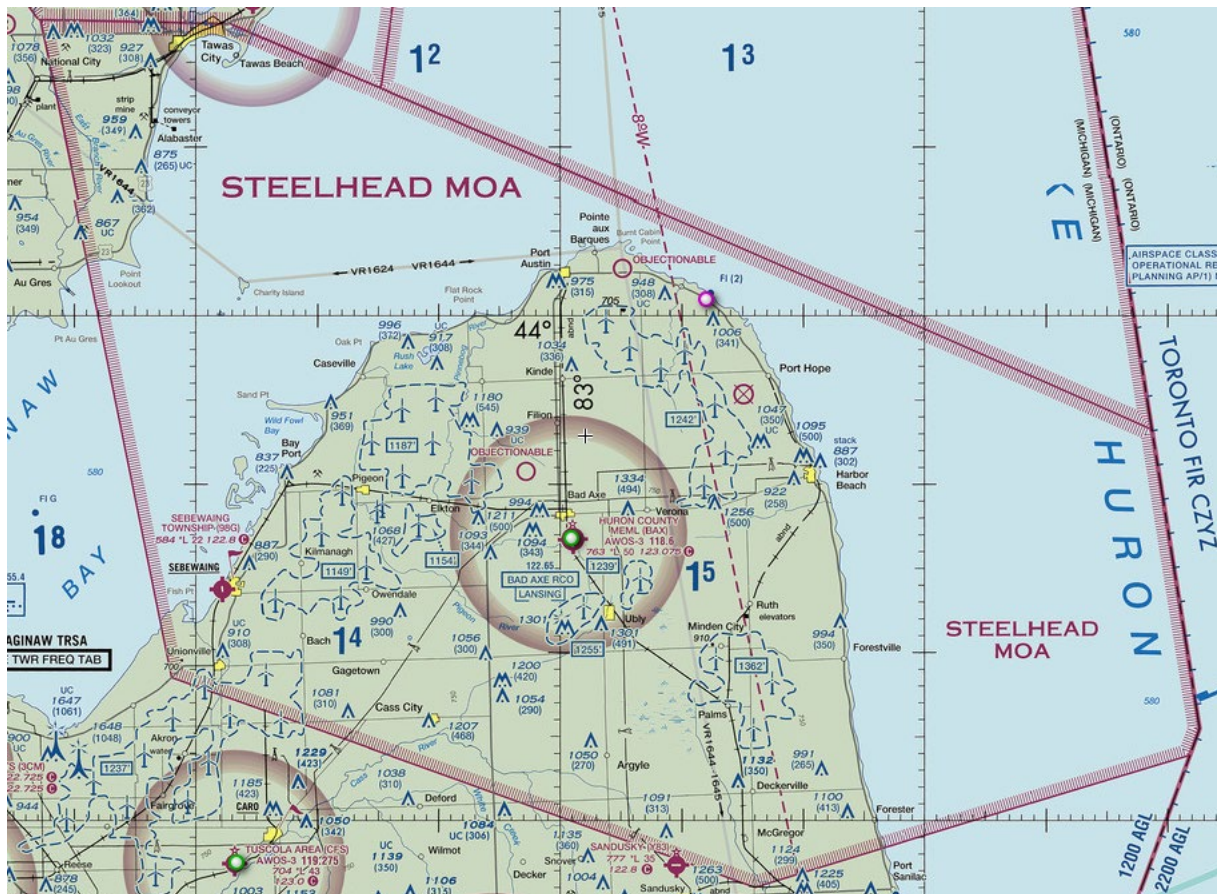
In order to have a full accounting of this concern and conceivable outcome of the new SUA, we believe the proponent must undertake the more involved and comprehensive assessment required by an EIS. We have seen several other SUA actions by the USAF, which are less controversial and impactful as this proposal, involve the preparation of an EIS. AOPA contends it is incumbent upon the proponent to directly address the real concerns expressed by local pilots and airports that indicate the SUA would significantly affect the quality of the human environment.

#### **Important mitigations still needed**

There have been many improvements to this latest proposal for the Alpena SUA Complex, but there remain many issues that could be mitigated, which would lessen the impact of this proposal on civil aviation.

#### **Steelhead Low MOAs**

While we welcome the new proposed ceilings of 5,999 feet AGL, we continue to hear concerns from many members about the Steelhead Low North and Steelhead Low East MOAs 500-foot AGL floor altitude. Pilots indicate there are numerous obstructions, including wind farms, that make flying at low-altitude in this area impractical (see graphic below).



General aviation pilots would not safely be able to fly beneath the MOA and it is questionable whether military pilots would be able fly to 500 feet AGL in such an expansive area proliferated with wind turbines reaching up to about 500 feet AGL. While the lower ceiling allows GA aircraft to overfly these MOAs, the 500-foot floor would lead many pilots to avoid the area entirely, losing the ability to do lakeshore flying and efficiently fly to many airports, thus leading to less visitation.

AOPA's broader 2019 survey<sup>1</sup> on SUA showed most VFR pilots choose not to fly through active MOAs. About two-thirds of pilots indicated that when flying VFR (not on an IFR flight plan) that they had not flown through a MOA when they were aware it was active. This shows most pilots treat active MOAs as Restricted Areas and would route around the airspace, at great cost to the operator and with potentially lost revenue for underlying airports and communities.

Consistent with our 2018 letter on the Steelhead MOA complex, we believe the floor altitude must be higher. The lowest the floor altitude could be in this area is 3,000 feet MSL. This floor altitude would allow VFR aircraft maneuvering space to transit to and from airports without entering active SUA.

There are also concerns with limited communications and radar coverage at low altitudes in this area, with aircraft departing local airports not able to communicate with ATC, or obtain radar service, until they are well above 500 feet AGL.

<sup>1</sup> <https://caa1361.org/wp-content/uploads/2019/03/AOPA-SUA-Survey-2019.pdf>

### **Military aircraft should operate with ADS-B Out unless on truly sensitive missions**

As we have now passed the FAA's January 2, 2020, ADS-B mandate, it is important the military embrace the safety enhancing benefits of this technology. With the mandate now effective, over 100,000 civil aircraft are equipped with a system that can greatly reduce mid-air collisions and allow air traffic to identify aircraft in more areas than they can today with radar. In a remote area like the Alpena SUA Complex where radar coverage may only exist at higher altitudes, ADS-B can improve the safety and efficiency of the airspace for military and general aviation aircraft.

The military should articulate their plans for Alpena SUA Complex resident aircraft to, not only be ADS-B equipped, but also to operate with ADS-B Out turned on at all times, unless operating on missions that are truly sensitive in nature. While FAR 91.225 (f)(1) gives the military discretion in this area, the clear intention of the rule was not to support routine operations.<sup>2</sup> The background to the rule, as referenced in the footnoted Federal Register item, contains several statements by FAA indicating that it was not intended to support routine operations.

### **Requirements for lights-out training**

The existing Pike West, Pike East, and Steelhead MOAs are listed as approved for lights-out training per FAA exemption 7960I, issued August 10, 2017. Lights-out training allows military aircraft to turn off their exterior lights. In this exemption the FAA notes that the use of night vision goggles limits a pilot's ability to perform see-and-avoid; therefore, monitoring activities must be conducted to ensure participating aircraft are alerted to the presence of non-participating aircraft.

AOPA considers lights-out training to be hazardous for non-participating aircraft. First, the mitigations in place for non-participating VFR traffic are one sided. In other words, every strategy has been predicated on the ability of the military pilots to see-and-avoid civilian traffic, and for controllers to de-conflict traffic they may not be talking to. This seems to be the logical focus, as lights-out operations would make it impossible for civilian pilots to meet their obligation to perform see-and-avoid. However, the inability of the general aviation pilot to protect himself or herself is the cornerstone of our objection. It is concerning for a pilot to completely relinquish their responsibility for their safety, and the safety of their passengers, to the pilot of another aircraft, especially one with whom they have no contact (visual or otherwise).

As this proposal would result in a significant increase in SUA in this area that would be used for lights-out training, the military should identify how this monitoring activity will be performed to ensure no increase in risk to general aviation aircraft flying through the airspace VFR at night. Additional justification is needed on why lights-out training could not be limited to a finite area of the complex, such as the preexisting MOAs, instead of the entire expanded complex. Limiting the area where this activity takes place would reduce the extent of the hazard. Regardless, communicating the activities taking place in MOAs, per FAA requirements, is important so that general aviation pilots are aware of any hazards.

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<sup>2</sup> <https://www.federalregister.gov/documents/2019/07/18/2019-15248/revision-to-automatic-dependent-surveillance-broadcast-ads-b-out-equipment-and-use-requirements>

### **GPS interference activity concerning**

The intentional degradation and denial of GPS signals to civil users of the system by the military is highly concerning. There was at least one case in 2019, over July 17 and 18, where jamming centered on Camp Grayling took place with an impact radius of 42 NMs at 50 feet AGL, 78 NMs at 4,000 feet AGL, and 111 NMs at 10,000 feet MSL (CGMI 19-39). This jamming event took place midnight to 8 am local on the leadup to EAA AirVenture at Oshkosh, Wisconsin. EAA AirVenture is the most popular general aviation event in the world and conducting jamming in close proximity, just when there will be lots of US and Canadian pilots making the journey through this airspace, is highly concerning and disruptive. We believe there should be a moratorium of jamming activity by the military in Michigan the week before, during, and the week after the EAA AirVenture event.

This event highlights the importance for the military to articulate and clarify their mitigations in place during GPS jamming activity. The military must also discuss the frequency and extent this activity is expected to take place in Alpena SUA so that the public can adequately understand and comment on the proposal.

### **Conclusion**

We appreciate the opportunity to review this proposal and encourage the military to build on the positive modifications already made to further improve upon this SUA proposal. The feedback from local pilots and airports continue to indicate the proposed SUA would have a significant impact and that more rigorous analysis and documentation is needed via an EIS, versus an Environmental Assessment. We are happy to support this effort and provide further data and input during the process.

Thank you for reviewing our comment on this important issue. Please feel free to contact me at 202-509-9515 if you have any questions.

Sincerely,



Jim McClay  
Director, Airspace, Air Traffic and Security

Congress of the United States  
House of Representatives  
Washington, DC 20515-2201

July 30, 2021

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Dear Ms. Kucharek,

This letter is in response to the National Guard Bureau's announcement related to an Environmental Assessment to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC).

The Michigan National Guard's special use airspace initiatives improve and enhance readiness, capability, and are relevant for not only the Michigan National Guard, but the National Guard as a whole. It is my understanding that Alternative A would advance the capability and capacity of the Michigan Airspace Complex. Among other things, this proposed action would:

- Establish five new Military Operating Areas to further enhance the contiguous nature of the Michigan Guard airspace complex, while simultaneously removing the need for the Michigan Guard to request the Grayling Temporary Military Operating Area during Northern Strike.
- Establish slight modifications of the lateral boundaries of the Pike and Steelhead Military Operating Areas.
- Return the Hersey Military Operating Area back to the FAA.
- Raise the vertical ceiling of R-4201B to match the altitude of R-4201A.
- Establish two new low-level routes between Alpena and the Grayling Range complex.
- Establish up to four new Joint Threat Emitter sites in addition to the three existing sites.

Thank you for your attention to this matter, and please feel free to contact my office if there is anything else I can provide.

Kind Regards,



Jack Bergman  
Member of Congress



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
MICHIGAN STRATEGIC FUND  
STATE HISTORIC PRESERVATION OFFICE

QUENTIN L. MESSER, JR.  
PRESIDENT

August 27, 2021

JENNIFER HARTY  
CULTURAL RESOURCES PROGRAM MANAGER A4VN  
AIR NATIONAL GUARD READINESS CENTER  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS MD 20762

RE: ER96-356 Alpena Special Use Airspace (SUA) Complex Modification, Alpena Combat Readiness Training Center (CRTC), Multiple Counties (NGB)

Dear Ms. Harty:

The State Historic Preservation Officer (SHPO) received your early coordination notification. It appears that you are initiating consultation under the National Environmental Policy Act of 1969 (NEPA).

Although Section 106 of the National Historic Preservation Act of 1966 (NHPA) is a separate authority from NEPA—and is not satisfied simply by complying with NEPA—it is perfectly reasonable for agencies to coordinate studies done and documents prepared under Section 106 with those done under NEPA. ACHP's regulations provide guidance on how the NEPA and Section 106 processes can be coordinated ([Section 800.8\(a\)](#)). They also set forth the manner in which a Federal agency can use the NEPA process and documentation to comply with Section 106 ([Section 800.8\(c\)](#)).

Section 106 requires federal agencies to take into account the effect of their undertakings on historic properties. It is the responsibility of the federal agency, not the SHPO, to fulfill the requirements of Section 106. In some instances, the federal agency may delegate legal responsibility to a state, local, or tribal government. As this is early coordination and not enough information on the proposed undertaking is provided at this time, it is premature for the SHPO to provide meaningful comment. However, once information is available, a section 106 application must be submitted to the SHPO to formalize consultation, utilizing the mandatory application form and instructions for submitting projects for review under Section 106 which may be downloaded from our website at [www.michigan.gov/shposection106](http://www.michigan.gov/shposection106). Once the formal application is received in full by the SHPO, we can proceed with the review.

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

If you have any questions, please contact Brian Grennell, Cultural Resource Management Coordinator, at 517-335-2721 or by email at [GrennellB@michigan.gov](mailto:GrennellB@michigan.gov). **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Brian G. Grennell  
Cultural Resource Management Coordinator

BGG



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**From:** Pruden, Jessica A <[jessica\\_pruden@fws.gov](mailto:jessica_pruden@fws.gov)>  
**Sent:** Monday, September 27, 2021 4:04 PM  
**To:** KUCHAREK, KRISTI L GS-13 USAF ANGRC NGB/A4 <[kristi.kucharek@us.af.mil](mailto:kristi.kucharek@us.af.mil)>  
**Cc:** Tansy, Carrie L <[carrie\\_tansy@fws.gov](mailto:carrie_tansy@fws.gov)>; Mensing, Chris <[chris\\_mensing@fws.gov](mailto:chris_mensing@fws.gov)>; Hicks, Scott <[scott\\_hicks@fws.gov](mailto:scott_hicks@fws.gov)>  
**Subject:** [Non-DoD Source] Re: [EXTERNAL] FW: Alpena Special Use Complex Environmental Assessment Interagency and Intergovernmental Coordination for Environmental Planning

Thank you for the opportunity to comment on the Alpena CRTS SUA. We have the following comments:

Bald Eagle:

Eagles and their nests are protected under the Bald and Golden Eagle Protection Act (Eagle Act). To minimize impacts to bald eagles, we recommend restricting flying near active bald eagle nests during their nesting season. Within the mid- and northern Lower Peninsula of Michigan, the bald eagle nesting season occurs between January and July. For more information on bald eagle protections and recommendations, please see the attached document.

Project Review and Compliance with the Endangered Species Act :

Regarding threatened and endangered species in Michigan, we request that all projects are first entered into our Information for Planning and Consultation (IPaC) website: <https://ecos.fws.gov/ipac/>. The U.S. Fish and Wildlife Service (Service) developed the IPaC tool to help streamline the ESA review process. IPaC can assist users through the section 7 consultation process when a Federal agency authorizes, funds, permits, or carries out an action. Other project proponents without a Federal nexus may also use IPaC to review proposed projects for potential impacts to Federally-listed threatened and endangered species.

The IPAC website has detailed information and instructional videos on the IPaC system; just scroll to "frequently asked questions" for a step –by-step instructions or visit the following websites for detailed instructions on conducting ESA project reviews using IPAC.

<https://www.fws.gov/midwest/EastLansing/te/>

[https://www.fws.gov/midwest/EastLansing/te/pdf/MIFO\\_IPAC\\_instructions\\_v1\\_Jan2021.pdf](https://www.fws.gov/midwest/EastLansing/te/pdf/MIFO_IPAC_instructions_v1_Jan2021.pdf)

In IPaC you will be able to enter basic project information, get an official species list, evaluate potential impacts on resources managed by the USFWS, and follow IPaC's Endangered Species Review process - a streamlined, step-by-step consultation process available for certain project types, agencies, and species.

Once you have entered your project into IPaC, you will be given a consultation code. All future correspondence with us should include the consultation code. Additionally, providing us with a description of the proposed action, including any measures intended to avoid, minimize, or offset effects of the action details will allow for a more thorough response

Consistent with the nature and scope of the proposed action, the description shall provide sufficient detail to assess the effects of the action on listed species and critical habitat, including:

The purpose of the action;

The duration and timing of the action;

The location of the action (this may include maps, drawings, blueprints, or similar schematics of the action);

The specific components of the action and how they will be carried out, and;

Any other available information related to the nature and scope of the proposed action relevant to its effects on listed species or designated critical habitat. A map or description of all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action.

Within IPAC we have developed a new tool, the Michigan All Species Determination Key (MI DKey). Determination keys (Dkeys) are logically structured sets of questions designed to assist users in determining if a project qualifies for a pre-determined consultation outcome based on existing programmatic consultations or internal USFWS standing analyses. Qualifying projects may generate USFWS concurrence letters instantly through IPaC. Dkeys provide consistent and transparent outcomes, and significantly reduce the time to complete consultation for qualifying projects. We have a Michigan Dkey that applies to all of our listed species in MI. I would encourage you to use the Michigan Dkey to complete the section 7 consultation process.



If you have any questions regarding IPaC or the endangered species review process, please contact us at [eastlansing@fws.gov](mailto:eastlansing@fws.gov).

Thank you,

Jess

Jessica Pruden  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
Michigan Ecological Services Field Office  
2651 Coolidge Road, Suite 101  
East Lansing, MI 48823

517-351-8245  
[jessica\\_pruden@fws.gov](mailto:jessica_pruden@fws.gov)

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## **Appendix C**

### **Coastal Zone Consistency Coordination**

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Negative Determination.....	C-4



**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

November 15, 2022

Ms. Kristi Kucharek  
NEPA Program Manager  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Mr. Matt Smar  
Federal Consistency Specialist  
Water Resources Division, Michigan EGLE  
P.O. Box 30458  
Lansing MI 48909-7958  
[SmarM@michigan.gov](mailto:SmarM@michigan.gov)

Dear Mr. Smar

The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to investigate and analyze the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. The Federal Aviation Administration (FAA) is acting as a cooperating agency in preparing the EA. The NGB is proposing to modify and expand the Alpena SUA Complex. Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training. No construction or ground-disturbing activities are proposed for this activity. See details in Attachment 1.

This letter is intended to initiate coordination in accordance with the Federal Coastal Zone Management Act of 1972 (CZMA), as amended. The NGB has determined that the Proposed Action would not adversely affect coastal resources along Lake Huron in Michigan. The NGB will conduct all activities in accordance with applicable federal, state, and local regulations. Proposed airspace modifications and subsequent flight training would be consistent, to the maximum extent practicable, with the enforceable policies of Michigan's Coastal Management Program.

The Draft EA and Draft FONSI are available online for public review at <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request. The NGB is also coordinating with the Michigan State Historic Preservation Officer and federally recognized tribes pursuant to Section 106 of the National Historic Preservation Act; the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act; and federal, state, and local governments and other interested parties.

Please provide comments, concerns, or concurrence within sixty (60) days of receipt of this letter to the NGB, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil), with the subject titled as ATTN: ALPENA SUA EA. Thank you for your assistance.

Sincerely



KRISTI L. KUCHAREK  
NGB/A4AM  
NEPA Program Manager

Attachment:  
Negative Determination

**NEGATIVE DETERMINATION FOR  
MODIFICATION AND ADDITION OF AIRSPACE AT THE  
ALPENA SPECIAL USE AIRSPACE COMPLEX,  
ALPENA COMBAT READINESS TRAINING CENTER, ALPENA, MICHIGAN**

**Introduction**

This document provides the State of Michigan with the National Guard Bureau's (NGB) Negative Determination under Section 307(c)(1) of the federal Coastal Zone Management Act (CZMA) of 1972, as amended, and 15 Code of Federal Regulations Part 930, Subpart C, for the proposed modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The NGB and the Michigan Air National Guard (MIANG) are preparing an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with these proposed airspace changes. The Alpena Combat Readiness Training Center (CRTC) is located at the Alpena County Regional Airport in Alpena, Michigan (see Figure 1). The CRTC schedules and hosts local, regional, and deployed unit training exercises within the existing Alpena SUA Complex. The Alpena SUA Complex is over part of Lake Huron and all or parts of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. To meet this emerging restructuring, the airspace must be of sufficient, contiguous size and altitude to accommodate various low-altitude, overland tactics and standoff weapons employment, as identified in Air National Guard Instruction 10-110, Air National Guard Combat Readiness Training Centers. The Alpena CRTC airspace must also be capable of satisfying the training requirements of fifth-generation fighters, such as the F-22 and F-35, as these assets are programmed for employment the Department of the Air Force (DAF). The proposed modifications and additions to the Alpena SUA Complex are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure.

The operation of aircraft within the proposed SUA would not adversely affect coastal uses or resources, as detailed herein.

**Description of the Proposed Action**

To optimize airspace and address training limitations presented by the existing configuration of the Alpena SUA Complex, the NGB proposes to modify and expand the existing airspace complex. The Proposed Action would include the following:

- Establish five new military operations area (MOAs)
  - Grayling East, 10,000 above mean sea level (MSL) to 17,999 feet MSL
  - Grayling West, 500 feet above ground level (AGL) to 17,999 feet MSL
  - Steelhead Low North, 500 feet AGL to 5,999 feet MSL
  - Steelhead Low South, 4,000 feet MSL to 5,999 feet MSL
  - Steelhead Low East, 500 feet AGL to 5,999 feet MSL

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

- Discontinue the annual request for the Grayling Temporary MOA
- Modify the internal lateral boundaries of three existing MOAs (Pike East, Pike West, and Steelhead)
- Return the Hersey MOA to the National Airspace System
- Raise the vertical ceiling of R-4201B from 9,000 feet to 23,000 feet MSL
- Establish two new military training routes (MTRs; VR-1601 and VR-1602) at 300 feet to 1,500 feet AGL between Alpena CRTC and Grayling Air Gunnery Range

The proposed airspace associated with this Proposed Action is shown in Figure 2.

Numerous Department of Defense Services would use the proposed airspace improvements; however, the 180th Fighter Wing out of Toledo Air National Guard Base and 127th Wing out of Selfridge Air National Guard Base would continue to routinely use the airspace complex. The Proposed Action would not include any near-term changes to the existing fleet mix of aircraft or scheduling of Alpena CRTC; any such changes in aircraft or scheduling would be addressed in separate environmental documentation.

Chaff and flare, defensive countermeasures currently used within the Alpena SUA Complex, would increase by approximately 20 percent. Chaff and flare are currently being used in all MOAs and restricted areas within the Alpena SUA Complex; under the Proposed Action, both would be used across all existing and proposed airspace. Chaff and flare would continue to be deployed at the same altitudes, which is a minimum of 2,000 feet above ground level in most airspace units and 1,000 feet above ground level only in R-4201A/B. If there are seasonal fire restrictions in effect, the minimum altitude of flare release would be no less than 2,000 feet AGL within R-4201A/B.

No construction or ground-disturbing activities would occur under this Proposed Action.

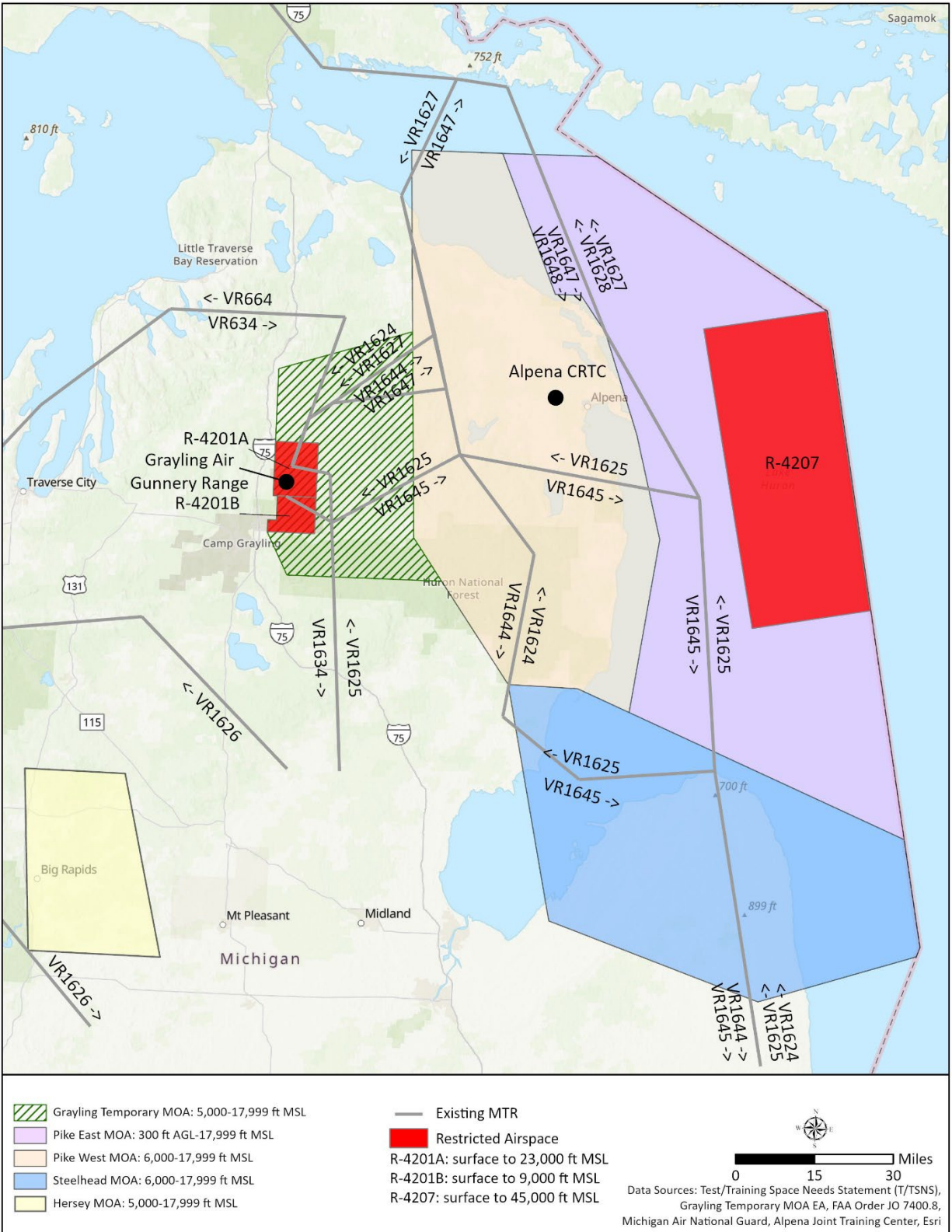
*Measures Incorporated into the Proposed Action*

The following measures would be implemented under the Proposed Action. These measures were developed through previous environmental scoping and review efforts to reduce potential impacts:

- In the Steelhead Low MOAs, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15.
- No F-35 aircraft would be allowed in the Steelhead Low North, South, and East MOAs.
- The shape and altitude of the Steelhead Low South MOA has been designed to enable civil flight operations around Huron County Memorial Airport without entering military airspace.
- The airspace legal description requirement would include that the airspace must be activated by Notice to Airmen (NOTAM) at least four hours in advance.
- The MIANG would enter into a Letter of Agreement (LOA) with the Minneapolis Center and the Cleveland Center to establish procedures for real-time separation and use of the airspace to allow civilian Instrument Flight Rules (IFR) aircraft access through the MOAs.

## Negative Determination for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

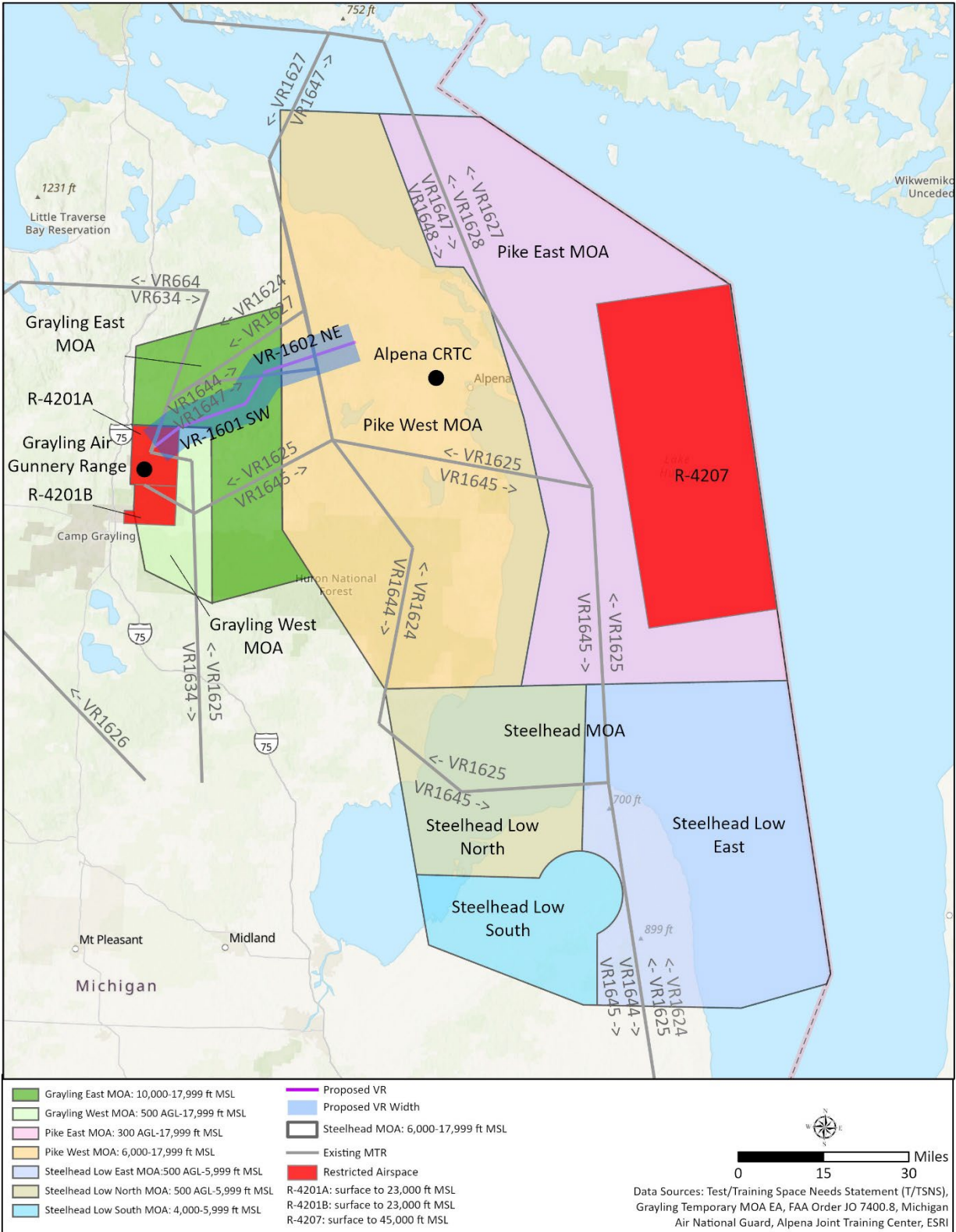
**Figure 1**      **Location of Alpena Combat Readiness Training Center and  
Extent of Existing Alpena Special Use Airspace Complex**





**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

**Figure 2 Proposed Modifications to Alpena Special Use Airspace Complex**



## *Alternatives*

In addition to the Proposed Action, the NGB is evaluating the following alternatives in the EA:

- Alternative B—the Proposed Action without the three Steelhead Low MOAs
- Alternative C—the Proposed Action without the Grayling East and Grayling West MOAs
- Alternative D—the No Action Alternative, which does not meet the purpose and need for the Proposed Action but provides a baseline against which the Proposed Action and alternatives can be evaluated, as required in 32 Code of Federal Regulations 989.8

The Proposed Action is the only alternative presented in detail in this Negative Determination. The Proposed Action encompasses the potential effects of Alternative B and Alternative C, so this determination would still be valid if one of those alternatives were ultimately selected.

### **Background on Michigan’s Coastal Zone Program**

The Coastal Zone Management Act of 1972 established national policy to preserve, protect, develop, restore, or enhance resources in the coastal zone, including the Great Lakes. Under Section 307 of the Coastal Zone Management Act, federal agencies have an obligation to implement actions within the coastal zone that are compatible, to the maximum extent practicable, with the enforceable policies of a state’s federally approved coastal management program.

Michigan’s coastal zone extends a minimum of 1,000 feet from the ordinary high-water mark of Lakes Michigan, Superior, Erie, and Huron and their connecting channels; all waters and bottomlands of Michigan’s Great Lakes and connecting channels; and islands in those waters. The boundary extends further inland in some locations to encompass coastal lakes, river mouths, and bays; floodplains; wetlands; dune areas; urban areas; and public park, recreation, and natural areas.

The Michigan Coastal Management Program has five areas of concentration and provides policy-based standards to avoid impacts to littoral processes, beaches, dunes, and bluffs from human development and uses (NOAA and MDNR, 1978):

- Natural hazard to development—includes erosion and flood-prone areas
- Sensitive to alteration or disturbance—includes ecologically sensitive areas (wetlands), natural areas, sand dunes, and islands
- Fulfilling recreational or cultural needs—includes areas recognized for recreational, historic, or archaeological values
- Natural economic potential—includes water transportation, mineral and energy, prime industrial, and agricultural areas
- Intensive or conflicting use—these encompass coastal lakes, river mouths, bays, and urban areas

As a federal agency, the NGB is required to determine whether its proposed activities would affect the coastal zone. This takes the form of a consistency determination, a negative determination, or a determination that no further action is necessary. The Proposed Action would not adversely affect coastal uses or resources, as described in the following text.

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

**Analysis of Enforceable Policies**

Some portions of airspace-related activities would occur over Michigan's coastal zone (i.e., proposed Steelhead Low North, East, and South MOAs are over portions of the coastal zone in Iosco, Arenac, Tuscola, Huron, and Sanilac Counties as well as the existing Pike East and Pike West MOAs over portions of Presque Isle, Alpena, Alcona, and Iosco Counties). The remaining airspace components (i.e., R-4201B, proposed Grayling East and Grayling West, and MTRs, which are primarily in Montmorency, Otsego, Crawford, and Oscoda Counties) are outside Michigan's coastal zone.

Proposed noise levels associated with aircraft sorties at lower altitudes were modeled at 40 A-weighted decibels (dBA) or less under the Steelhead Low MOAs and Pike West MOA, which are primarily over land. Proposed noise was modeled at 45 dBA under Pike East MOA, which is over Lake Huron. An increase in noise levels from 35 dBA to 40 or 45 dBA is not considered a significant noise impact, nor would this increase adversely affect existing land uses.<sup>1</sup>

Table 1 summarizes all enforceable policies of Michigan's Coastal Management Program, and describes if any portions of the Proposed Action would pertain to those policies. Airspace-related changes would not conflict with the enforceable policies of Michigan's Coastal Management Program.

**Conclusion**

The Proposed Action would be consistent, to the maximum extent practicable, with the enforceable policies of Michigan's Coastal Management Program. The Proposed Action would not adversely affect coastal land uses.

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<sup>1</sup> Noise levels were modeled in Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) and Day-Night Average Sound Level (DNL) using MRNMap. Ldnmr and DNL are the DOD- and FAA-accepted metrics for estimating noise levels associated with aircraft operations.

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

**Table 1 Enforceable Policies of Michigan’s Coastal Management Program**

<b>MCMP State Statutes and Associated Administrative Rules</b>	<b>Relevance to Proposed Action</b>
Part 31, Water Resources Protection, of NREPA	The Proposed Action would not involve construction. There would be no effects on or alterations of designated floodplains or watercourses. The Proposed Action does not involve oceangoing or nonoceangoing vessels, nor permitted discharges into water bodies.
Part 35, Use of Water in Mining Low-Grade Iron Ore, of NREPA	The Proposed Action would not involve operations or excavations associated with ore mining.
Part 41, Sewerage Systems, of NREPA	The Proposed Action would not involve the collection, conveyance, transport, treatment, or other handling of domestic or industrial liquid wastes by municipal sewer systems or by municipal treatment facilities.
Part 55, Air Pollution Control, of NREPA	No air sources requiring an operating permit are anticipated. Refer to air quality analysis in the Draft EA for a detailed analysis of potential air emissions from aircraft operations within the airspace. Emissions would be <i>de minimis</i> .
Part 91, Soil Erosion and Sedimentation Control, of NREPA	The Proposed Action would not involve land-disturbing activities. There would be no impacts on soil or sediment.
Part 95, Watercraft Pollution Control, of NREPA	The Proposed Action would not involve the use of watercraft.
Part 115, Solid Waste Management, of NREPA	The Proposed Action would not involve the collection, transfer, process, or disposal of solid waste or the construction or expansion of waste disposal areas.
Part 117, Septage Waste Servicers, of NREPA	The Proposed Action would not involve septage waste servicing.
Part 121, Liquid Industrial By-Products, of NREPA	The Proposed Action would not involve the generation or handling of liquid industrial by-products.
Part 301, Inland Lakes and Streams, of NREPA	The Proposed Action would not involve construction activities. There would be no dredging, construction, reconfiguration, or alterations of any inland lakes or streams.
Part 303, Wetlands Protection, of NREPA	The Proposed Action would not involve construction activities. There would be no dredge or fill or other direct or indirect impacts on wetlands.
Part 305, Natural Rivers, of NREPA	The proposed Alpena SUA Complex encompasses the airspace above several designated natural rivers, including the Au Sable River and Pigeon River (MDNR, 2022a). However, the Proposed Action would not affect these rivers’ values, including free-flowing conditions or their fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic, and recreational values and uses.

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

<b>MCMP State Statutes and Associated Administrative Rules</b>	<b>Relevance to Proposed Action</b>
Part 309, Inland Lake Improvements, of NREPA	No in-water modifications are proposed.
Part 323, Shorelands Protection and Management, of NREPA	The proposed Alpena SUA Complex encompasses the airspace above several designated sensitive environmental areas along the Lake Huron shoreline within Alpena, Alcona, Arenac, Tuscola, and Huron Counties (EGLE, 2001). Designated high-risk shoreline erosion areas are also below the proposed airspace complex in Iosco, Huron, and Sanilac Counties (EGLE, 2022). However, the Proposed Action would not involve construction or shoreline modifications or otherwise affect these shoreline protection areas.
Part 325, Great Lakes Submerged Lands, of NREPA	The Proposed Action would not involve marinas or submerged/filled-in bottomlands.
Part 339, Control of Certain State Lands, of NREPA	The Proposed Action would not involve state land or land held in trust by the state.
Part 351, Wilderness and Natural Areas, of NREPA	The Proposed Action would not involve state land or land held in trust by the state, nor state waters. State-held natural areas are present below the airspace, such as the Pigeon River Area, Besser Natural Area, and Thompson’s Harbor (MDNR, 2022b). However, the Proposed Action would not remove vegetation, construct roadways or easements, or similar actions within these areas.
Part 353, Sand Dunes Protection and Management, of NREPA	The Proposed Action would not involve construction activities. The proposed airspace is not above any designated critical dune areas (MDEQ, 2003).
Part 365, Endangered Species Protection, of NREPA	The Proposed Action would involve no ground-based activity. Wildlife, including special-status federal- and state-listed species, would not be affected by minor increases in low-level sorties. The NGB informally consulted with U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act. The Service concurred (September 2, 2022) with NGB’s determination that this project is <i>not likely to adversely affect</i> northern long-eared bat ( <i>Myotis septentrionalis</i> ). The Service’s Information for Planning and Consultation (IPaC) letter (July 5, 2022) addressed <i>no effect</i> or <i>not likely to adversely affect</i> determinations for all other listed species potentially within the project area. The NGB coordinated with the Michigan Department of Natural Resources during scoping and continues to coordinate with the Department through the public review process associated with the EA.
Part 615, Supervisor of Wells, of NREPA	The Proposed Action does not involve exploration or development of oil and gas resources.

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

<b>MCMP State Statutes and Associated Administrative Rules</b>	<b>Relevance to Proposed Action</b>
Part 625, Mineral Wells, of NREPA	The Proposed Action does not involve drilling, development, production, operation, or plugging of wells.
Part 631, Ferrous Mineral Mining, of NREPA	The Proposed Action would not involve operations or excavations associated with mineral mining.
Part 637, Sand Dune Mining, of NREPA	The Proposed Action would not involve operations or excavations associated with sand dune mining.
Part 761, Aboriginal Records and Antiquities, of NREPA	Part 761 leaves the state the exclusive right and privilege of any Aboriginal records, antiquities, or abandoned property on state-owned or state-controlled lands, or on the state-owned bottomlands the Great Lakes. The Proposed Action would not involve any ground disturbance. No direct or indirect effects on cultural resources are anticipated under the Proposed Action. The NGB is consulting, pursuant to Section 106 of the National Historic Preservation Act, with the Michigan State Historic Preservation Officer.
Part 793, Harbors, Channels, and Other Navigational Facilities, of NREPA	The Proposed Action would not involve construction or alteration of any harbors, channels, or other navigational facilities.
Part 811, Off-Road Recreation Vehicles, of NREPA	The Proposed Action would not involve the use of any off-road recreation vehicles.
Trailer Coach Parks Act, Public Act 243 of 1959, as amended	The Proposed Action would not involve trailer coach parks.
Land Division Act, Public Act 288 of 1967, as amended	The Proposed Action would not involve land division or subdivision.
Local Historic Districts Act, Public Act 169 of 1970, as amended	The proposed Alpena SUA Complex encompasses the airspace above historic districts. However, the Proposed Action would not demolish or alter any of these resources. Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB (Committee on Hearing, Bioacoustics, and Biomechanics, 1977). Even low-altitude flyovers of heavy aircraft do not reach the potential for damage (Sutherland et al., 1990). The maximum sound levels across the airspace, particularly those within the proposed low-level airspace, would be less than noise levels at which vibrations could damage structures.  The NGB is consulting, pursuant to Section 106 of the National Historic Preservation Act, with the Michigan State Historic Preservation Officer.

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

<b>MCMP State Statutes and Associated Administrative Rules</b>	<b>Relevance to Proposed Action</b>
Condominium Act, Public Act 59 of 1978, as amended	The Proposed Action would not involve the construction of condominiums.
Part 125, Campgrounds, Swimming Areas, and Swimmers' Itch, of the Public Health Code, Public Act 368 of 1978, as amended	The Proposed Action would not involve the construction of campgrounds or swimming areas.
Michigan Zoning Enabling Act, Public Act 110 of 2006, as amended	The Proposed Action does not involve changes in zoning or rezoning.

(EGLE, 2021)

Key: MCMP = Michigan Coastal Management Program; NGB = National Guard Bureau; NREPA = Natural Resources and Environmental Protection Act (Public Act 451 of 1994, as amended).

**Negative Determination for Modification and Addition of Airspace  
at the Alpena Special Use Airspace Complex**

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## **Appendix D**

### **U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) Materials**

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## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Michigan Ecological Services Field Office  
2651 Coolidge Road Suite 101  
East Lansing, MI 48823-6360  
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To:

July 05, 2022

Project Code: 2022-0060108

Project Name: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

### **Official Species List**

The attached species list identifies any Federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the IPaC website (<https://ipac.ecosphere.fws.gov/>) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

### **Consultation requirements and next steps**

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize Federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-Federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in

making determinations for listed species for some projects. In many cases, the determination key will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit [https://www.fws.gov/midwest/EastLansing/te/pdf/MIFO\\_IPAC\\_instructions\\_v1\\_Jan2021.pdf](https://www.fws.gov/midwest/EastLansing/te/pdf/MIFO_IPAC_instructions_v1_Jan2021.pdf). Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: <http://www.fws.gov/midwest/endangered/section7/s7process/index.html>. If you evaluate the details of your project and conclude “no effect,” document your findings, and your listed species review is complete; you do not need our concurrence on “no effect” determinations. If you cannot conclude “no effect,” you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to [EastLansing@fws.gov](mailto:EastLansing@fws.gov). Please include a copy of this official species list with your request.

For all **wind energy projects** and **projects that include installing communications towers that use guy wires**, please contact this field office directly for assistance, even if no Federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

### **Migratory Birds**

Please see the “Migratory Birds” section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at <https://www.fws.gov/midwest/eagle/permits/index.html> to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/administrative-orders/executive-orders.php>.

We appreciate your consideration of threatened and endangered species during your project planning. Please include a copy of this letter with any request for consultation or correspondence

about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Coastal Barriers
- Wetlands

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Michigan Ecological Services Field Office**

2651 Coolidge Road Suite 101

East Lansing, MI 48823-6360

(517) 351-2555

## Project Summary

Project Code: 2022-0060108

Event Code: None

Project Name: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Project Type: Military Operations

Project Description: The National Guard Bureau (NGB) and the Michigan Air National Guard (MIANG) are preparing an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex located at the Alpena Combat Readiness Training Center in Alpena, Michigan.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.5932381,-83.47963692062287,14z>



Counties: Michigan

## Endangered Species Act Species

There is a total of 15 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6982.pdf">https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6982.pdf</a>	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6983.pdf">https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6983.pdf</a>	Threatened

## Birds

NAME	STATUS
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)</p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Endangered
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>There is <b>proposed</b> critical habitat for this species. The location of the critical habitat is not available.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Only actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30.</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a></p>	Threatened

## Reptiles

NAME	STATUS
<p>Eastern Massasauga (=rattlesnake) <i>Sistrurus catenatus</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ For all Projects: Project is within Tier1 Habitat</li> <li>▪ For all projects: Project is within Tier2 Habitat</li> <li>▪ For all Projects: Project is within EMR Range</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/2202">https://ecos.fws.gov/ecp/species/2202</a></p> <p>General project design guidelines:  <a href="https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAJ/documents/generated/5280.pdf">https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAJ/documents/generated/5280.pdf</a></p>	Threatened

## Clams

NAME	STATUS
<p>Northern Riffleshell <i>Epioblasma rangiana</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/527">https://ecos.fws.gov/ecp/species/527</a></p>	Endangered



## Insects

NAME	STATUS
Hine's Emerald Dragonfly <i>Somatochlora hineana</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7877">https://ecos.fws.gov/ecp/species/7877</a>	Endangered
Hungerford's Crawling Water Beetle <i>Brychius hungerfordi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6123">https://ecos.fws.gov/ecp/species/6123</a>	Endangered
Karner Blue Butterfly <i>Lycaeides melissa samuelis</i> There is <b>proposed</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/6656">https://ecos.fws.gov/ecp/species/6656</a>	Endangered
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Flowering Plants

NAME	STATUS
Dwarf Lake Iris <i>Iris lacustris</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/598">https://ecos.fws.gov/ecp/species/598</a>	Threatened
Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/601">https://ecos.fws.gov/ecp/species/601</a>	Threatened
Houghton's Goldenrod <i>Solidago houghtonii</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5219">https://ecos.fws.gov/ecp/species/5219</a>	Threatened
Michigan Monkey-flower <i>Mimulus michiganensis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5295">https://ecos.fws.gov/ecp/species/5295</a>	Endangered
Pitcher's Thistle <i>Cirsium pitcheri</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8153">https://ecos.fws.gov/ecp/species/8153</a>	Threatened

## Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Hine's Emerald Dragonfly <i>Somatochlora hineana</i> <a href="https://ecos.fws.gov/ecp/species/7877#crithab">https://ecos.fws.gov/ecp/species/7877#crithab</a>	Final

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> <a href="https://ecos.fws.gov/ecp/species/6039#crithab">https://ecos.fws.gov/ecp/species/6039#crithab</a>	Final

## USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

The following FWS National Wildlife Refuge Lands and Fish Hatcheries lie fully or partially within your project area:

FACILITY NAME	ACRES
FARM SERVICE AGENCY INTEREST OF MI <a href="https://www.fws.gov/refuges/profiles/index.cfm?id=31520">https://www.fws.gov/refuges/profiles/index.cfm?id=31520</a>	1,080.194
KIRTLANDS WARBLER WILDLIFE MANAGEMENT AREA <a href="https://www.fws.gov/refuges/profiles/index.cfm?id=31510">https://www.fws.gov/refuges/profiles/index.cfm?id=31510</a>	2,832.477

## Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\) list](#) or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Breeds Dec 1 to Aug 31

NAME	BREEDING SEASON
<b>Black Tern <i>Chlidonias niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/3093">https://ecos.fws.gov/ecp/species/3093</a>	Breeds May 15 to Aug 20
<b>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10
<b>Blue-winged Warbler <i>Vermivora pinus</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
<b>Bobolink <i>Dolichonyx oryzivorus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
<b>Canada Warbler <i>Cardellina canadensis</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
<b>Cerulean Warbler <i>Dendroica cerulea</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/2974">https://ecos.fws.gov/ecp/species/2974</a>	Breeds Apr 20 to Jul 20
<b>Common Tern <i>Sterna hirundo hirundo</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Aug 31
<b>Connecticut Warbler <i>Oporornis agilis</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 15 to Aug 10
<b>Eastern Whip-poor-will <i>Antrostomus vociferus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
<b>Evening Grosbeak <i>Coccothraustes vespertinus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
<b>Golden Eagle <i>Aquila chrysaetos</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1680">https://ecos.fws.gov/ecp/species/1680</a>	Breeds Jan 1 to Aug 31

NAME	BREEDING SEASON
<p><b>Golden-winged Warbler</b> <i>Vermivora chrysoptera</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/8745">https://ecos.fws.gov/ecp/species/8745</a></p>	Breeds May 1 to Jul 20
<p><b>Henslow's Sparrow</b> <i>Ammodramus henslowii</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3941">https://ecos.fws.gov/ecp/species/3941</a></p>	Breeds May 1 to Aug 31
<p><b>Lesser Yellowlegs</b> <i>Tringa flavipes</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a></p>	Breeds elsewhere
<p><b>Long-eared Owl</b> <i>asio otus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3631">https://ecos.fws.gov/ecp/species/3631</a></p>	Breeds Mar 1 to Jul 15
<p><b>Marbled Godwit</b> <i>Limosa fedoa</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9481">https://ecos.fws.gov/ecp/species/9481</a></p>	Breeds May 1 to Jul 31
<p><b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3914">https://ecos.fws.gov/ecp/species/3914</a></p>	Breeds May 20 to Aug 31
<p><b>Prairie Warbler</b> <i>Dendroica discolor</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Jul 31
<p><b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Sep 10
<p><b>Ruddy Turnstone</b> <i>Arenaria interpres morinella</i>            This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds elsewhere
<p><b>Rusty Blackbird</b> <i>Euphagus carolinus</i>            This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds elsewhere
<p><b>Short-billed Dowitcher</b> <i>Limnodromus griseus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a></p>	Breeds elsewhere

NAME	BREEDING SEASON
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31
Yellow Rail <i>Coturnicops noveboracensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9476">https://ecos.fws.gov/ecp/species/9476</a>	Breeds May 15 to Sep 10

## Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort (|)**

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

**No Data (-)**

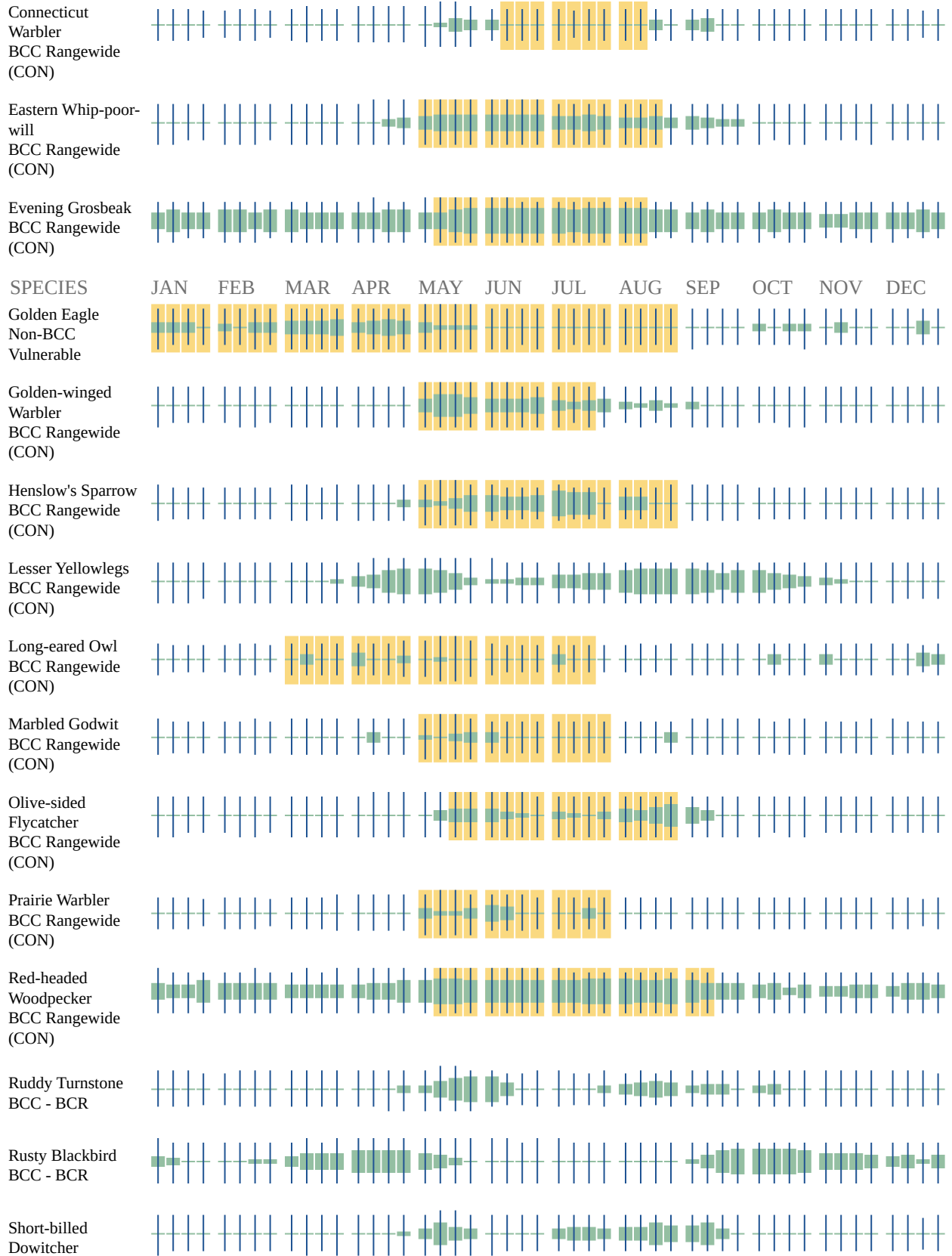
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**

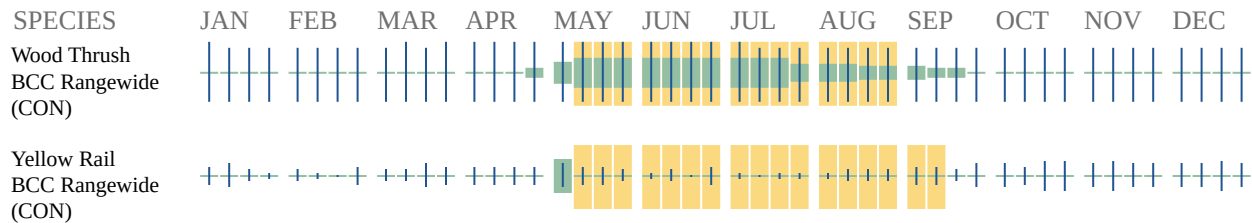
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







BCC Rangewide  
(CON)



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## Migratory Birds FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical](#)

[Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Coastal Barriers

Projects within the [John H. Chafee Coastal Barrier Resources System](#) (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local [Ecological Services Field Office](#) or visit the [CBRA Consultations website](#). The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

## System Unit (SU)

*Most new federal expenditures and financial assistance, including federal flood insurance, are prohibited within System Units. **Federally-funded projects within System Units require consultation with the Service.** Consultation is not required for projects using private, state, or local funds.*

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
MI-05	Huron City	SU	11/16/1990	11/16/1990
MI-06	Alaska Bay	SU	11/16/1990	11/16/1990
MI-07	Pointe aux Barques	SU	11/16/1990	11/16/1990
MI-08	Charity Island	SU	11/16/1990	11/16/1990
MI-13	Squaw Bay	SU	11/16/1990	11/16/1990
MI-14	Whitefish Bay	SU	11/16/1990	11/16/1990
MI-17	Swan Lake	SU	11/16/1990	11/16/1990

## Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

Due to your project's size, the list below may be incomplete, or the acreages reported may be inaccurate. For a full list, please contact the local U.S. Fish and Wildlife office or visit <https://www.fws.gov/wetlands/data/mapper.HTML>

### FRESHWATER EMERGENT WETLAND

- [Palustrine](#)

### RIVERINE

- [Riverine](#)

## **IPaC User Contact Information**

Agency: Juniper Environmental, LLC  
Name: Jessica Householder  
Address: 1 Alby Street  
City: Alton  
State: IL  
Zip: 62002  
Email: jessica.householder@juniperenv.com  
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## **Lead Agency Contact Information**

Lead Agency: Federal Aviation Administration



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Michigan Ecological Services Field Office  
2651 Coolidge Road Suite 101  
East Lansing, MI 48823-6360  
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To:

July 05, 2022

Project code: 2022-0060108

Project Name: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Subject: Consistency letter for 'Modification and Addition of Airspace at the Alpena Special Use Airspace Complex' for specified federally threatened and endangered species and designated critical habitat that may occur in your proposed project area consistent with the Michigan Determination Key for project review and guidance for federally listed species (Michigan Dkey).

Dear Jessica Householder:

The U.S. Fish and Wildlife Service (Service) received on **July 05, 2022** your effect determination(s) for the 'Modification and Addition of Airspace at the Alpena Special Use Airspace Complex' (the Action) using the Michigan DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers and the assistance of the Service's Michigan DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Dwarf Lake Iris ( <i>Iris lacustris</i> )	Threatened	NLAA
Eastern Massasauga (=rattlesnake) ( <i>Sistrurus catenatus</i> )	Threatened	NLAA
Eastern Prairie Fringed Orchid ( <i>Platanthera leucophaea</i> )	Threatened	NLAA
Hine's Emerald Dragonfly ( <i>Somatochlora hineana</i> )	Endangered	NLAA
Houghton's Goldenrod ( <i>Solidago houghtonii</i> )	Threatened	No effect
Hungerford's Crawling Water Beetle ( <i>Brychius hungerfordi</i> )	Endangered	No effect
Indiana Bat ( <i>Myotis sodalis</i> )	Endangered	No effect
Karner Blue Butterfly ( <i>Lycaeides melissa samuelis</i> )	Endangered	No effect
Michigan Monkey-flower ( <i>Mimulus michiganensis</i> )	Endangered	No effect
Monarch Butterfly ( <i>Danaus plexippus</i> )	Candidate	No effect



Northern Long-eared Bat ( <i>Myotis septentrionalis</i> )	Threatened	May affect
Northern Riffleshell ( <i>Epioblasma rangiana</i> )	Endangered	No effect
Piping Plover ( <i>Charadrius melodus</i> )	Endangered	NLAA
Pitcher's Thistle ( <i>Cirsium pitcheri</i> )	Threatened	No effect
Red Knot ( <i>Calidris canutus rufa</i> )	Threatened	NLAA

<b>Critical Habitat</b>	<b>Listing Status</b>	<b>Determination</b>
Hine's Emerald Dragonfly ( <i>Somatochlora hineana</i> )	Final	NLAA
Piping Plover ( <i>Charadrius melodus</i> )	Final	No effect

**Northern Long-eared Bat:** Your project is in the vicinity of a known northern long-eared bat (NLEB) hibernaculum. Please contact our office so that we can gather additional information about your project to ensure a NLEB hibernaculum will not be impacted as a result of your project. **You will need to contact the Michigan Ecological Services Field Office to complete your review for NLEB.**

**Please carefully review this letter. Your Endangered Species Act requirements are not complete.**

For non-Federal representatives: Please note that when a project requires consultation under section 7 of the Act, the Service must consult directly with the Federal action agency unless that agency formally designates a non-Federal representative (50 CFR 402.08). Non-Federal representatives may prepare analyses or conduct informal consultations; however, the ultimate responsibility for section 7 compliance under the Act remains with the Federal agency. Please include the Federal action agency in additional correspondence regarding this project.

Your project is in the vicinity of a National Wildlife Refuge (NWR), <https://fws.gov/visit-us/refuges>. The intent of this letter is limited to assisting you in evaluating the effects of your action on Federally listed species in Michigan; other FWS programs may have additional input on your project. We recommend you contact the NWR near your project to determine whether additional FWS coordination is needed on your project.

#### **Freshwater Mussels:**

Based on your answers to the Michigan DKey, the Action will have "No Effect" on Federally listed mussels. **However, state-listed mussels may occur in your Action area. Contact the Michigan Department of Natural Resources to determine effects to state-listed mussels.**

Freshwater mussels are one of the most critically imperiled groups of organisms in the world. In North America, 65% of the remaining 300 species are vulnerable to extinction (Haag and Williams 2014). Implementing measures to conserve and restore freshwater mussel populations directly improves water quality in lakes, rivers, and streams throughout Michigan. An adult freshwater mussel filters anywhere from 1 to 38 gallons of water per day (Baker and Levinton 2003, Barnhart pers. comm. 2019). A 2015 survey found that in some areas mussels can reduce the bacterial populations by more than 85% (Othman et al. 2015 in Vaughn 2017). Mussels are also considered to be ecosystem engineers, stabilizing substrate and providing habitat for other aquatic organisms (Vaughn 2017). In addition to ecosystem services, mussels play an important role in the food web, contributing critical nutrients to both terrestrial and aquatic habitats, including those that support sport fish (Vaughn 2017). Taking proactive measures to conserve

and restore freshwater mussels will improve water quality, which has the potential to positively impact human health and recreation in the State of Michigan.

**Bats of Conservation Concern:**

Implementing protective measures for bats, including both federally listed and non-listed species, indirectly helps to protect Michigan's agriculture and forests. Bats are significant predators of nocturnal insects, including many crop and forest pests. For example, Whitaker (1995) estimated that a single colony of 150 big brown bats (*Eptesicus fuscus*) would eat nearly 1.3 million pest insects each year. Boyles et al. (2011) noted the "loss of bats in North America could lead to agricultural losses estimated at more than \$3.7 billion/year, and Maine and Boyles (2015) estimated that the suppression of herbivory by insectivorous bats is worth >1 billion USD globally on corn alone. In captive trials, northern long-eared bats were found to significantly reduce the egg-laying activity of mosquitoes, suggesting bats may also play an important role in controlling insect-borne disease (Reiskind and Wund 2009). Mosquitoes have also been found to be a consistent component of the diet of Indiana bats and are eaten most heavily during pregnancy (6.6%; Kurta and Whitaker 1998). Taking proactive steps to help protect bats may be very valuable to agricultural and forest product yields and pest management costs in and around a project area. Such conservation measures include limiting tree clearing during the bat active season (April through October varies by location) and/or the non-volant period (June through July), when young bats are unable to fly, and minimizing the extent of impacts to forests, wetlands, and riparian habitats.

**Bald and Golden Eagles:**

Bald eagles, golden eagles, and their nests are protected under the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (Eagle Act). The Eagle Act prohibits, except when authorized by an Eagle Act permit, the "taking" of bald and golden eagles and defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Eagle Act's implementing regulations define disturb as "...to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

If the Action may impact bald or golden eagles, additional coordination with the Service under the Eagle Act may be required. For more information on eagles and conducting activities in the vicinity of an eagle nest, please visit <https://www.fws.gov/library/collections/all-about-eagles>. In addition, the Service developed the National Bald Eagle Management Guidelines (May 2007) in order to assist landowners in avoiding the disturbance of bald eagles. The full Guidelines are available at <https://www.fws.gov/media/national-bald-eagle-management-guidelines-0>.

If you have further questions regarding potential impacts to eagles, please contact Chris Mensing, [Chris\\_Mensing@fws.gov](mailto:Chris_Mensing@fws.gov) or 517-351-2555.

**Coastal Barrier Resources Act**

This project is within a unit designated pursuant to the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). CBRA prohibits new federal expenditures or financial assistance within the System Units of the John H. Chafee Coastal Barrier Resources System (CBRS) including, but

not limited to: shoreline stabilization; dredging; construction or purchase of roads, structures, and facilities; loans; grants; and flood insurance. **CBRA imposes no restrictions on actions and projects within the CBRS that are carried out with state, local, or private funding, and does not prohibit the issuance of federal permits.**

Federal agencies, after consultation with the U.S. Fish and Wildlife Service (Service), may make Federal expenditures and financial assistance available within System Units for activities that meet one of the CBRA's exceptions (16 U.S.C. 3505). Any response from the Service to a CBRA consultation request is in the form of an opinion only. The Service has not been granted veto power. More information is available at <https://www.fws.gov/service/coastal-barrier-resources-act-project-consultation>.

### **Monarch butterfly and other pollinators**

In December 2020, after an extensive status assessment of the monarch butterfly, we determined that listing the monarch under the Endangered Species Act is warranted but precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants. Therefore, the Service added the monarch butterfly to the candidate list. The Service will review its status each year until we are able to begin developing a proposal to list the monarch.

The Endangered Species Act does not establish protections or consultation requirements for candidate species. Some Federal and State agencies may have policy requirements to consider candidate species in planning. We encourage implementing measures that will remove or reduce threats to these species and possibly make listing unnecessary.

For all projects, we recommend the following best management practices (BMPs) to benefit monarch and other pollinators.

#### Monarch and Pollinator BMP Recommendations

Consider monarch and other pollinators in your project planning when possible. Many pollinators are declining, including species that pollinate key agricultural crops and help maintain natural plant communities. Planting a diverse group of native plant species will help support the nutritional needs of Michigan's pollinators. We recommend a mix of flowering trees, shrubs, and herbaceous plants so that something is always blooming and pollen is available during the active periods of the pollinators, roughly early spring through fall (mid-March to mid-October). To benefit a wide variety of pollinators, choose a wide range of flowers with diverse colors, heights, structure, and flower shape. It is important to provide host plants for any known butterfly species at your site, including native milkweed for Monarch butterfly. Incorporating a water source (e.g., ephemeral pool or low area) and basking areas (rocks or bare ground) will provide additional resources for pollinators.

Many pollinators need a safe place to build their nests and overwinter. During spring and summer, leave some areas unmowed or minimize the impacts from mowing (e.g., decrease frequency, increase vegetation height). In fall, leave areas unraked and leave plant stems standing. Leave patches of bare soil for ground nesting pollinators.

Avoid or limit pesticide use. Pesticides can kill more than the target pest. Some pesticide residues can kill pollinators for several days after the pesticide is applied. Pesticides can also kill natural predators, which can lead to even worse pest problems.

Planting native wildflowers can also reduce the need to mow and water, improve bank stabilization by reducing erosion, and improve groundwater recharge and water quality.

Resources:

<https://www.fws.gov/initiative/monarchs>

<https://www.fws.gov/library/collections/pollinators>

**Coordination with the Service is not complete if additional coordination is advised above for any species.** Please email our office at [MIFO\\_DKey@fws.gov](mailto:MIFO_DKey@fws.gov) and attach a copy of this letter, so we can discuss methods to avoid or minimize potential adverse effects to those species.

### **Bat References**

Boyles, J.G., P.M. Cryan, G.F. McCracken, T.H. Kunz. 2011. Economic Importance of Bats in Agriculture. *Science* 332(1):41-42.

Kurta, A. and J.O. Whitaker. 1998. Diet of the Endangered Indiana Bat (*Myotis sodalis*) on the Northern Edge of Its Range. *The American Midland Naturalist* 140(2):280-286.

Reiskind, M.H. and M.A. Wund. 2009. Experimental assessment of the impacts of northern long-eared bats on ovipositing *Culex* (Diptera: Culicidae) mosquitoes. *Journal of Medical Entomology* 46(5):1037-1044.

Whitaker, Jr., J.O. 1995. Food of the big brown bat *Eptesicus fuscus* from maternity colonies in Indiana and Illinois. *American Midland Naturalist* 134(2):346-360.

### **Mussel References**

Baker, S.M. and J. Levinton. 2003. Selective feeding by three native North American freshwater mussels implies food competition with zebra mussels. *Hydrobiologia* 505(1):97-105.

Haag, W. R. and J.D. Williams, 2014. Biodiversity on the brink: an assessment of conservation strategies for North American freshwater mussels. *Hydrobiologia* 735:45-60.

Morowski, D., L. James and D. Hunter. 2009. Freshwater mussels in the Clinton River, southeastern Michigan: an assessment of community status. *Michigan Academician* XXXIX: 131-148.

Othman, F., M.S. Islam, E.N. Sharifah, F. Shahrom-Harrison and A. Hassan. 2015. Biological control of streptococcal infection in Nile tilapia *Oreochromis niloticus* (Linnaeus, 1758) using filter-feeding bivalve mussel *Pilsbryconcha exilis* (Lea, 1838). *Journal of Applied Ichthyology* 31: 724-728.

Vaughn, C.C. 2017. Ecosystem services provided by freshwater mussels. *Hydrobiologia* DOI: 10.1007/s10750-017-3139-x.

1.The Group 3 is a specific list of stream segments within known counties that contain habitat likely to be occupied by listed mussels (see Michigan Freshwater Mussel Survey Protocol and Relocation Procedures for additional information).

**Summary of conservation measures for your project** You agreed to the following conservation measures to avoid adverse effects to listed species and our concurrence is only valid if the measures are fully implemented. These must be included as permit conditions if a permit is required and/or included in any contract language.

### **Eastern massasauga**

Materials used for erosion control and site restoration must be wildlife-friendly. Do not use erosion control products containing plastic mesh netting or other similar material that could entangle eastern massasauga rattlesnake (EMR). Several products for soil erosion and control exist that do not contain plastic netting including net-less erosion control blankets (for example, made of excelsior), loose mulch, hydraulic mulch, soil binders, unreinforced silt fences, and straw bales. Others are made from natural fibers (such as jute) and loosely woven together in a manner that allows wildlife to wiggle free.

To increase human safety and awareness of EMR, those implementing the project must first review the EMR factsheet (available at <https://www.fws.gov/media/eastern-massasauga-rattlesnake-fact-sheet>), and watch MDNR's "60-Second Snakes: The Eastern Massasauga Rattlesnake" video (available at [https://youtu.be/~PFnXe\\_e02w](https://youtu.be/~PFnXe_e02w)).

During project implementation, report sightings of any federally listed species, including EMR, to the Service within 24 hours

Do not impact more than 0.5 acres of suitable EMR habitat .

The project will not result in permanent loss of more than one acre of wetland or conversion of more than 10 acres of EMR upland habitat (uplands associated with high quality wetland habitat) to other land uses.

The project will not result in a permanent barrier to snake movement, such as a new road or widening of an existing road, changing the road substrate from dirt to pavement, new trail or canal or other permanent barrier.

Minimize vehicle activity in known/presumed occupied EMR habitat to the extent possible. During EMR active season, speed limits at facilities and access roads (i.e., 2-track and gravel) in occupied habitat should be <15 MPH, to the extent practicable.

At the conclusion of the action, revegetate all disturbed areas with appropriate plant species (i.e., native species or other suitable non-invasive species present on-site prior to disturbance), and monitor all restoration plantings for establishment (and implement supplemental planting as necessary to ensure restorations are of equal or better-quality habitat than previous condition).

Avoid spread of invasive species into EMR habitat by following best practices. This includes inspecting and cleaning equipment and vehicles between work sites as needed to avoid the spread of invasive plant materials. If your project needs an EGLE permit, follow EGLE's standard decontamination best practices.

### **Mussels**

Avoid any unauthorized direct impacts (e.g., stream/road crossing projects, new storm water

outfall discharge, or other in-stream work) or indirect impacts (e.g., vegetation removal in riparian zone, construction, discharge, cut and fill, horizontal directional drilling) to a stream or river.

**Rufa red knot**

Avoid permanent modification of beaches, dunes, mudflats, peat banks, sandbars, shoals, or other red knot habitats during the red knot migration windows (May 15 through June 15 in the spring OR July 1 through September 30 in the fall). In addition, the project will not result in an increase in human disturbance or predation during the red knot migration windows within suitable habitat during the migration window.

**Listed plants**

Avoid indirect effects to listed plants by not altering the habitat or resources of a listed plant, and avoiding all direct impacts such as prescribed fire, herbicide application, trampling, increased herbivory, cutting/clearing, crushing by a vehicle, etc.

**Hine's emerald dragonfly**

Avoid ground disturbance within 500 meters of a calcareous wetland, sedge meadow, or marsh suitable habitat.

**Action Description**

You provided to IPaC the following name and description for the subject Action.

**1. Name**

Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

**2. Description**

The following description was provided for the project 'Modification and Addition of Airspace at the Alpena Special Use Airspace Complex':

The National Guard Bureau (NGB) and the Michigan Air National Guard (MIANG) are preparing an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex located at the Alpena Combat Readiness Training Center in Alpena, Michigan.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.5932381,-83.47963692062287,14z>



## Qualification Interview

1. Are there any possible effects to any listed species or to designated critical habitat from your project or effects from any other actions or projects subsequently made possible by your project?

Select "Yes" even if the expected effects to the species or critical habitat are expected to be 1) extremely unlikely (discountable), 2) can't meaningfully be measured, detected, or evaluated (insignificant), or 3) wholly beneficial.

Select "No" to confirm that the project details and supporting information allow you to conclude that listed species and their habitats will not be exposed to any effects (including discountable, insignificant, or beneficial effects) and therefore, you have made a "no effect" determination for all species. If you are unsure, select YES to answer additional questions about your project.

*Yes*

2. This determination key is intended to assist the user in the evaluating the effects of their actions on Federally listed species in Michigan. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, purposeful take for scientific purposes or to enhance the survival of a species, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Click yes to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

*Yes*

3. Is the action the approval of a long-term (i.e., in effect greater than 10 years) permit, plan, or other action? (e.g., a new or re-issued hydropower license, a land management plan, or other kinds of documents that provide direction for projects or actions that may be conducted over a long term (>10 years) without the need for additional section 7 consultation).

*No*

4. Is the action being funded, authorized, or carried out by a Federal agency?

*Yes*

5. Does the project intersect a NWR?

**Automatically answered**

*Yes*

6. Does the action involve the installation or operation of wind turbines?

*No*



7. Are there at least 30 days prior to your action occurring? Endangered species consultation must be completed before taking any action that may have effects to listed species. The Service also needs 30 days to review projects before we can verify conclusions in some dkey output letters. For example, if you have already started some components of the project on the ground (e.g., removed vegetation) before completing this key, answer “no” to this question. The only exception is if you have a Michigan Field Office pre-approved emergence survey (i.e., if you have conducted pre-approved emergence surveys for listed bats before tree removal, you can still answer yes to this question).

*Yes*

8. Does the action involve constructing a new communication tower or modifying an existing communications tower?

*No*

9. Does the activity involve aerial or other large-scale application of any chemical (including insecticide, herbicide, etc.)?

*No*

10. Does your project include water withdrawal (ground or surface water) greater than 10,000 gallons/day?

*No*

11. Will your action permanently affect hydrology?

*No*

12. Will your action temporarily affect hydrology?

*No*

13. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new storm-water outfall discharge, dams, other in-stream work, etc.)?

*No*

14. Does your project have the potential to indirectly impact the stream/river or the riparian zone (e.g., cut and fill, horizontal directional drilling, hydrostatic testing, construction, vegetation removal, discharge, etc.)?

*No*

15. Will your action disturb the ground or existing vegetation? This includes any off road vehicle access, soil compaction, digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application, vegetation management (including removal or maintenance using equipment or chemicals), cultivation, development, etc.

*No*

16. Is the action a utility-scale solar development project?

*No*

17. [Hidden semantic] Does the action intersect the MOBU AOI?

**Automatically answered**

Yes

18. Have you determined that this project will have no effect on the monarch?

Yes

19. [Hidden Semantic] Does the action intersect the Eastern massasauga rattlesnake area of influence?

**Automatically answered**

Yes

20. Will your action impact less than 0.5 acres of [suitable Eastern massasauga rattlesnake habitat](#)?

Yes

21. Does your action involve prescribed fire?

No

22. Will this action occur entirely in the Eastern massasauga rattlesnake inactive season (October 16 through April 14)?

No

23. Will this action occur entirely in the Eastern massasauga rattlesnake active season (April 15 through October 15)?

No

24. Will the action result in permanent loss of more than one acre of wetland or conversion of more than 10 acres of uplands of potential Eastern massasauga rattlesnake habitat (uplands associated with high quality wetland habitat) to other land uses?

No

25. Will you watch MDNR's "[60-Second Snakes: The Eastern Massasauga Rattlesnake \(EMR\)](#)" video, review the [EMR factsheet](#) or call 517-351-2555 to increase human safety and awareness of EMR?

Yes

26. Will all action personnel report any Eastern massasauga rattlesnake observations, or observation of any other listed threatened or endangered species, during action implementation to the Service within 24 hours?

Yes

27. Will your action create a new road, alter an existing road, or convert the surface of an existing road from a non-paved to a paved surface?

No

28. Will your action result in a new or increased permanent barrier to snake movement? For example, widening an existing road or trail, new linear features such as trails, fences, walls, canals, or other permanent barriers have the potential to fragment habitat and alter movement and dispersal.

*No*

29. For site access, will you minimize vehicle speeds on roads through suitable eastern massasauga rattlesnake habitat? To do this, can you follow posted speed limits, and minimize speeds at facilities and access roads (e.g., less than 15mph on two-track roads), when possible, during the active season?

If no vehicle activity will occur in eastern massasauga rattlesnake habitat, select YES.

*Yes*

30. Will vehicles or equipment be used off of existing access roads?

*No*

31. At the conclusion of the action, will you revegetate all disturbed areas with appropriate plant species (i.e., native species or other suitable non-invasive species present on site prior to disturbance), as appropriate?

*Yes*

32. Will you monitor all restoration plantings for proper establishment and implement supplemental plantings as necessary to ensure restorations are of equal to or better habitat quality than previous conditions?

*Yes*

33. Will you avoid the spread of invasive species into suitable Eastern massasauga rattlesnake (EMR) habitat by following best practices such as inspecting and cleaning equipment and vehicles for invasive plant materials and seeds before entering EMR habitat areas?

*Yes*

34. Does the action involve grading, fill, digging, trenching, or other earth moving activity?

*No*

35. Are you removing or maintaining vegetation (e.g., cutting brush, mowing, applying herbicides, etc)?

*No*

36. [Semantic] Does the action area intersect the northern riffelshell area of influence?

**Automatically answered**

*Yes*

37. [Hidden Semantic] Does the action intersect the Karner blue butterfly area of influence?

**Automatically answered**

*Yes*

38. Will the action occur in oak savanna, oak or pine barrens, openings within oak forest, old fields in association with oak forest, or openings or rights-of-way with abundant native grasses and wildflowers?  
*No*
39. [Hidden Semantic] Does the action area intersect the piping plover area of influence?  
**Automatically answered**  
*Yes*
40. Will the action occur in suitable piping plover habitat?  
**Note:** Piping plover habitat consists of Great Lakes islands and mainland shorelines that support, or have the potential to support, open, sparsely vegetated sandy habitats, such as sand spits or sand beaches, that are associated with wide, unforested systems of dunes and inter-dune wetlands.  
*No*
41. Will the action occur during the piping plover migration season (April 1 through May 1 in spring OR August 15 through September 15 in the fall)?  
*Yes*
42. [Hidden Semantic] Does the action area intersect piping plover critical habitat?  
**Automatically answered**  
*Yes*
43. Are the [physical and biological features](#) essential to the conservation of the piping plover present in the action area?  
*No*
44. [Hidden Semantic] Does the action area intersect the rufa red knot area of influence?  
**Automatically answered**  
*Yes*
45. Will the action occur during the red knot migration windows (May 15-June 15 or July 1-September 30?)  
*Yes*
46. Will the action modify beaches, dunes, mudflats, peat banks, sandbars, shoals, or other red knot habitats? For example, the following actions may modify red knot habitat: groins, jetties, sea walls, revetments, bulkheads, rip-rap, beach nourishment, nearshore dredging, dredge spoil disposal, sand mining/borrowing, beach bulldozing, sandbagging, sand fencing, vegetation planting/alteration/removal, deliberate or possible introduction of non-native vegetation, beach raking/mechanized grooming, boardwalks, aquaculture development.  
*No*

47. Will the action result in increased human disturbance or predation? For example, is the action likely to indirectly increase access or use of red knot habitats by humans and/or predators at times of year that the birds are typically present (e.g., commercial/residential development, beach access structures, boardwalks, pavilions, bridges/roads/ferries/trails, marinas, posts or other avian predator perches, structures or habitat features likely to encourage predator nesting/denning, trash cans or other predator attractants, feral cat colonies, policy changes likely to increase human use).

*No*

48. [Hidden Semantic] Does the action area intersect the area of influence for dwarf lake iris?

**Automatically answered**

*Yes*

49. Does eastern prairie fringed orchid occur in the action area? If YES, email your survey report to MIFO\_Dkey@fws.gov with "Survey Report" in subject line before continuing with the next step of this key.

*No*

50. Will the action indirectly alter the habitat or resources of dwarf lake iris? For example, could your action result in a change in canopy cover, microclimate, humidity, increase in invasive species, hydrologic alterations, etc.? If unsure, select yes.

*No*

51. Could the action directly harm dwarf lake iris? For example, prescribed fire, herbicide application, trampling, increased herbivory, cutting/clearing, cultivation, crushing by vehicle, reduce to possession, etc.

*No*

52. [Hidden Semantic] Does the action area intersect the area of influence for Eastern prairie fringed orchid?

**Automatically answered**

*Yes*

53. Did you conduct a survey to determine if Eastern prairie fringed orchid occurs in the action area?

*No*

54. Will the action indirectly alter the habitat or resources of eastern prairie fringed orchid? For example, could your action result in a change in canopy cover, microclimate, humidity, increase in invasive species, hydrologic alterations, etc.? If unsure, select yes.

*No*

55. Could the action directly harm eastern prairie fringed orchid? For example, prescribed fire, herbicide application, trampling, increased herbivory, cutting/clearing, cultivation, crushing by vehicle, reduce to possession, etc.

*No*

56. [Hidden Semantic] Does the action area intersect the area of influence for Houghton's goldenrod?  
**Automatically answered**  
*Yes*
57. [Hidden Semantic] Does the action intersect the area of influence for Michigan monkey-flower?  
**Automatically answered**  
*Yes*
58. [Hidden Semantic] Does the action area intersect the area of influence for Pitcher's thistle?  
**Automatically answered**  
*Yes*
59. Does the action area include Great Lakes shoreline sand dunes?  
*No*
60. [Hidden Semantic] Does the action area intersect the Hine's emerald dragonfly area of influence?  
**Automatically answered**  
*Yes*
61. Does the action occur in or within 500 meters of a calcareous wetland, fen, sedge meadow, or marsh suitable for Hine's emerald dragonfly? For more information on Hine's emerald dragonfly habitat, see this [link](#).  
*No*
62. [Hidden Semantic] Does this action intersect Hine's emerald dragonfly critical habitat?  
**Automatically answered**  
*Yes*
63. Does the action include construction or modification of a road or trail?  
*No*
64. Does the action occur in or within 500 meters of a calcareous wetland, fen, sedge meadow, or marsh suitable for Hine's emerald dragonfly? For more information on Hine's emerald dragonfly habitat, see this [link](#).  
*No*
65. [Hidden Semantic] Does the action intersect Hungerford's crawling water beetle area of influence?  
**Automatically answered**  
*Yes*
66. Does the action occur within or adjacent to (i.e., within 100m) a stream or river?  
*No*
67. [Hidden Semantic] Does the action area intersect the Indiana bat area of influence?  
**Automatically answered**  
*Yes*

68. The project has the potential to affect Indiana bat. Does the action area contain any known or potential bat hibernacula (natural caves, abandoned mines, or underground quarries)?

*No*

69. Has a presence/absence bat survey or field-based habitat assessment following the Service's Range-wide [Indiana Bat Summer Survey Guidelines](#) been conducted within the action area?

*No*

70. Does the action involve removal/modification of a human structure (barn, house or other building) known to contain roosting Indiana bats?

*No*

71. Does the action include removal/modification of an existing bridge or culvert?

*No*

72. Does the action include herbicide application?

*No*

73. Does the action include tree cutting/trimming, prescribed fire, and/or pesticide (e.g., insecticide, rodenticide) application?

*No*

74. [Hidden Semantic] Does the action area intersect the Indiana bat AOI?

**Automatically answered**

*Yes*

75. [Hidden Semantic] Does this project intersect the northern long-eared bat area of influence?

**Automatically answered**

*Yes*

76. Is the project action area located within 0.25 miles of a known northern long-eared bat hibernaculum?

**Automatically answered**

*Yes*

## Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0



**IPaC User Contact Information**

Agency: Juniper Environmental, LLC  
Name: Jessica Householder  
Address: 1 Alby Street  
City: Alton  
State: IL  
Zip: 62002  
Email: jessica.householder@juniperenv.com  
Phone: 2176637655

**Lead Agency Contact Information**

Lead Agency: Federal Aviation Administration



**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

August 3, 2022

Ms. Kristi Kucharek  
NEPA Program Manager  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Ms. Carrie Tansy  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
Region 3 – Midwest  
East Lansing Ecological Field Office  
2651 Coolidge Road, Suite 101  
East Lansing MI 48823

Re: USFWS Project Code: 2022-0060108

Dear Ms. Tansy:

We are requesting concurrence from the U.S. Fish and Wildlife Service that the proposed modification and addition of airspace at the Alpena Special Use Airspace (SUA) is *not likely to adversely affect* the northern long-eared bat (NLEB). The proposed project is located over all or parts of Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties, Michigan.

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) to investigate and analyze the modification, expansion, and utilization of the Alpena SUA Complex, located at the Alpena Combat Readiness Training Center (CRTC), Alpena, Michigan. Pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 United States Code 4321 et seq.), Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations Part 1500 et seq., as revised in July 2020), and the U.S. Air Force's Environmental Impact Analysis Process (32 Code of Federal Regulations Part 989), the EA considers the potential consequences of the proposed action to human health and the natural environment. The Federal Aviation Administration (FAA) is acting as a cooperating agency in preparing the EA.

The purpose of this Proposed Action is to modify and establish airspace that supports current and future military training and readiness requirements. This would contribute to the overall provision for an integrated, year-round, realistic training environment. The need for the action is to provide airspace of sufficient contiguous size and altitude to accommodate tactics, techniques, and procedures that include low-altitude flight and high-altitude stand-off weapons employment and to support Air National Guard Instruction 10-110.

The Proposed Action would include the following:

- Establish five new Military Operations Areas (MOAs)
  - Grayling East, 10,000 above mean sea level (MSL) to 17,999 feet MSL
  - Grayling West, 500 feet above ground level (AGL) to 17,999 feet MSL
  - Steelhead Low North, 500 feet AGL to 5,999 feet MSL
  - Steelhead Low South, 4,000 feet MSL to 5,999 feet MSL
  - Steelhead Low East, 500 feet AGL to 5,999 feet MSL
- Discontinue the annual request for the Grayling Temporary MOA
- Modify the internal lateral boundaries of three existing MOAs: Pike East, Pike West, and Steelhead
- Return Hersey MOA to the National Airspace System
- Raise the vertical ceiling of the existing R-4102B from 9,000 feet to 23,000 feet MSL
- Establish two new Visual Flight Rules Military Training Routes (VR-1601 and VR-1602) between Alpena CRTC and Grayling Air Gunnery Range

Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet MSL for training.

In addition to the Proposed Action, the NGB is evaluating the following alternatives in the EA:

- Alternative B—the Proposed Action without the three Steelhead Low MOAs
- Alternative C—the Proposed Action without the Grayling East and Grayling West MOAs
- Alternative D—the No Action Alternative, which does not meet the purpose and need for the Proposed Action but provides a baseline against which the Proposed Action and alternatives can be evaluated, as required in 32 Code of Federal Regulations 989.8

Previously, environmental review was initiated for proposed changes in the Alpena SUA Complex, but since consultation was last initiated with USFWS, modifications have been made to the Proposed Action. The scope of this project has been reduced, and the four Joint Threat Emitter (JTE) sites on the ground (Calcite, Atlanta, Hillman, and Oscoda) were removed from the Proposed Action. As revised, the Proposed Action does not include ground disturbance or tree or vegetation removal.

The Information for Consultation and Planning (IPaC) database was accessed on July 5, 2022, and a determination of “May Affect” was generated for the NLEB by the IPaC due to the presence of a known NLEB hibernaculum in the vicinity of the action area. Based on the June 2022 Michigan NLEB Project Review Guide, there is one NLEB hibernaculum located in the northeastern portion of Alpena County (T32NR9E) under the Pike West MOA. None of the other MOAs are located above a known NLEB roost or hibernaculum.

The floor of the Pike West MOA airspace utilized over the Alpena hibernaculum is 6,000 feet above MSL, with vertical airspace usage of the Pike West MOA ranging from 6,000–17,999 feet above MSL. Under the Proposed Action, the southern border of this airspace would be straightened, aligned with the air traffic control assigned airspace (ATCAA) boundaries above, and shifted slightly north in accordance with the Steelhead MOA. No new SUA would be created laterally or vertically in Pike West MOA; only internal lateral boundaries would change. Utilization within Pike West MOA would increase under the Proposed Action by approximately 32 percent; however, with a floor of 6,000 feet above MSL, this increase would be above the altitude at which the NLEB would normally be found.<sup>1</sup> No change in noise levels, as modeled, would occur.<sup>2</sup> Therefore, increased utilization would be discountable.

Project actions would not occur within 0.25 mile (1,320 feet) of a known NLEB hibernaculum or 150 feet of a known maternity roost tree. The Proposed Action may affect but is not anticipated to cause prohibited take and is therefore not likely to adversely affect the NLEB.

The NGB respectfully requests your concurrence with a determination of *not likely to adversely affect* the NLEB for the Proposed Action. Please provide any information or specific comments your agency may have regarding the locations of natural resources and potential impacts or concerns regarding impacts to natural resources, ecological, social, cultural, and archaeological resources.

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<sup>1</sup> NLEB primarily forage nocturnally approximately 3 to 10 feet above the ground (U.S. Fish and Wildlife Service, *Species Status Assessment Report for the Northern long-eared bat (Myotis septentrionalis)*, Version 1.1, March 22, 2022). *Myotis* spp. are clutter-adapted, and NLEB typically forage by gleaning prey at lower altitudes where vegetation is denser and more structurally complex (P.A. Faure, J.H. Fullard, and J.W. Dawson, “The gleaning attacks of the northern long-eared bat, *Myotis septentrionalis*, are relatively inaudible to moths,” *Journal of Experimental Biology* 178: 173–189).

<sup>2</sup> Noise levels were modeled in Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) and Day-Night Average Sound Level (DNL) using MRNMap. Ldnmr and DNL are the DOD- and FAA-accepted metrics for estimating noise levels associated with aircraft operations.

Please provide any comments, concerns, or relevant background or supporting information within thirty (30) days of receipt of this letter to National Guard Bureau, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil), with the subject titled as ATTN: ALPENA SUA DRAFT EA. Thank you for your assistance.

Sincerely



KRISTI L. KUCHARAK  
NGB/A4AM  
NEPA Program Manager



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

2651 Coolidge Road, Suite 101  
East Lansing, Michigan 48823-6360



IN REPLY REFER TO:

September 2, 2022

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

RE: Endangered Species Act Section 7 Consultation for the Michigan Determination key project Modification and Addition of Airspace at the Alpena Special Use Airspace Complex; ECOSPHERE Project 2022-0060108

Dear Ms. Kucharek:

Thank you for your request for informal consultation for the Alpena Special Use Airspace (SUA) pursuant to section 7 of the Endangered Species Act, as amended (ESA) (16 U.S.C. § 1536), and the ESA's implementing regulations (50 CFR 402.13). Our review is based on your IPaC-generated "May Affect" letter dated July 5, 2022, and your request dated August 3, 2022.

The National Guard Bureau proposes to modify and establish airspace that supports current and future military training and readiness requirements. Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet MSL for training. The proposed action does not include ground disturbance or tree or vegetation removal.

Your request addresses potential effects from the proposed project on the northern long-eared bat. We concur with your determination of threatened and endangered species that may be present and affected within the action area. The July 5, 2022, IPaC-generated letter addressed determinations for all other listed species that may be present in the action area.

### **Northern long-eared bat** (*Myotis septentrionalis*; NLEB)

You determined that this project is *not likely to adversely affect* NLEB. We concur with this determination for the following reasons:

- Changes in airspace are greater than 5,999 feet above mean sea level which is well above the altitude at which NLEB would normally be found. No change in noise level is expected, and no disturbance to hibernacula or roosting habitat will occur.

Based on this information, we expect any potential effects from this project on NLEB to be discountable.

### Conclusion

This concludes the consultation process required by section 7 of the ESA. When the National Guard Bureau maintains discretionary involvement or control over the project, reinitiation of

consultation is required (50 CFR 402.16(a)) under certain conditions: (1) if new information reveals effects of the project that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) if the project is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (3) if a new species is listed or critical habitat designated that may be affected by the project.

We appreciate the opportunity to cooperate with the National Guard Bureau in conserving threatened and endangered species. If you have any questions regarding these comments, please contact Carrie Tansy, of this office, at 517-351-8375, or [carrie\\_tansy@fws.gov](mailto:carrie_tansy@fws.gov).

Sincerely,

**SCOTT**  
**HICKS**

Digitally signed  
by SCOTT HICKS  
Date: 2022.09.02  
15:02:27 -04'00'

Scott Hicks  
Field Supervisor



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Michigan Ecological Services Field Office  
2651 Coolidge Road Suite 101  
East Lansing, MI 48823-6360  
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To:

April 11, 2023

Project Code: 2022-0060108

Project Name: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

### **Official Species List**

The attached species list identifies any Federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat if present within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement section 7 of the Endangered Species Act), the accuracy of this species list should be verified after 90 days. You may verify the list by visiting the IPaC website (<https://ipac.ecosphere.fws.gov/>) at regular intervals during project planning and implementation. To update an Official Species List in IPaC: from the My Projects page, find the project, expand the row, and click Project Home. In the What's Next box on the Project Home page, there is a Request Updated List button to update your species list. Be sure to select an "official" species list for all projects.

### **Consultation requirements and next steps**

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize Federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-Federal representative) must consult with the Fish and Wildlife Service if they determine their project may affect listed species or critical habitat.

There are two approaches to evaluating the effects of a project on listed species.

Approach 1. Use the All-species Michigan determination key in IPaC. This tool can assist you in



making determinations for listed species for some projects. In many cases, the determination key will provide an automated concurrence that completes all or significant parts of the consultation process. Therefore, we strongly recommend screening your project with the **All-Species Michigan Determination Key (Dkey)**. For additional information on using IPaC and available Determination Keys, visit <https://www.fws.gov/media/mifo-ipac-instructions> (and click on the attachment). Please carefully review your Dkey output letter to determine whether additional steps are needed to complete the consultation process.

Approach 2. Evaluate the effects to listed species on your own without utilizing a determination key. Once you obtain your official species list, you are not required to continue in IPaC, although in most cases using a determination key should expedite your review. If the project is a Federal action, you should review our section 7 step-by-step instructions before making your determinations: <https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance>. If you evaluate the details of your project and conclude “no effect,” document your findings, and your listed species review is complete; you do not need our concurrence on “no effect” determinations. If you cannot conclude “no effect,” you should coordinate/consult with the Michigan Ecological Services Field Office. The preferred method for submitting your project description and effects determination (if concurrence is needed) is electronically to [EastLansing@fws.gov](mailto:EastLansing@fws.gov). Please include a copy of this official species list with your request.

For all **wind energy projects** and **projects that include installing communications towers that use guy wires**, please contact this field office directly for assistance, even if no Federally listed plants, animals or critical habitat are present within your proposed project area or may be affected by your proposed project.

### **Migratory Birds**

Please see the “Migratory Birds” section below for important information regarding incorporating migratory birds into your project planning. Our Migratory Bird Program has developed recommendations, best practices, and other tools to help project proponents voluntarily reduce impacts to birds and their habitats. The Bald and Golden Eagle Protection Act prohibits the take and disturbance of eagles without a permit. If your project is near an eagle nest or winter roost area, see our Eagle Permits website at <https://www.fws.gov/program/eagle-management/eagle-permits> to help you avoid impacting eagles or determine if a permit may be necessary.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your consideration of threatened and endangered species during your project

planning. Please include a copy of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Coastal Barriers
- Wetlands

## OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Michigan Ecological Services Field Office**

2651 Coolidge Road Suite 101

East Lansing, MI 48823-6360

(517) 351-2555

## PROJECT SUMMARY

Project Code: 2022-0060108

Project Name: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Project Type: Military Operations

Project Description: The National Guard Bureau (NGB) and the Michigan Air National Guard (MIANG) are preparing an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex located at the Alpena Combat Readiness Training Center in Alpena, Michigan.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.59445065,-83.48021326877426,14z>



Counties: Michigan

## ENDANGERED SPECIES ACT SPECIES

There is a total of 16 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6982.pdf">https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6982.pdf</a>	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6983.pdf">https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/6983.pdf</a>	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

**BIRDS**

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.) There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a>	Endangered
Red Knot <i>Calidris canutus rufa</i> There is <b>proposed</b> critical habitat for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> <li>▪ Only actions that occur along coastal areas during the Red Knot migratory window of MAY 1 - SEPTEMBER 30.</li> </ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a>	Threatened
Whooping Crane <i>Grus americana</i> Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/758">https://ecos.fws.gov/ecp/species/758</a>	Experimental Population, Non-Essential

**REPTILES**

NAME	STATUS
Eastern Massasauga (=rattlesnake) <i>Sistrurus catenatus</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> <li>▪ For all Projects: Project is within Tier1 Habitat</li> <li>▪ For all projects: Project is within Tier2 Habitat</li> <li>▪ For all Projects: Project is within EMR Range</li> </ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/2202">https://ecos.fws.gov/ecp/species/2202</a> General project design guidelines: <a href="https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/5280.pdf">https://ipac.ecosphere.fws.gov/project/I3YWUJGNCJFENMEBIHDIZTJEAI/documents/generated/5280.pdf</a>	Threatened

**CLAMS**

NAME	STATUS
Northern Riffleshell <i>Epioblasma rangiana</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/527">https://ecos.fws.gov/ecp/species/527</a>	Endangered

## INSECTS

NAME	STATUS
Hine's Emerald Dragonfly <i>Somatochlora hineana</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7877">https://ecos.fws.gov/ecp/species/7877</a>	Endangered
Hungerford's Crawling Water Beetle <i>Brychius hungerfordi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6123">https://ecos.fws.gov/ecp/species/6123</a>	Endangered
Karner Blue Butterfly <i>Lycaeides melissa samuelis</i> There is <b>proposed</b> critical habitat for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6656">https://ecos.fws.gov/ecp/species/6656</a>	Endangered
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## FLOWERING PLANTS

NAME	STATUS
Dwarf Lake Iris <i>Iris lacustris</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/598">https://ecos.fws.gov/ecp/species/598</a>	Threatened
Eastern Prairie Fringed Orchid <i>Platanthera leucophaea</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/601">https://ecos.fws.gov/ecp/species/601</a>	Threatened
Houghton's Goldenrod <i>Solidago houghtonii</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5219">https://ecos.fws.gov/ecp/species/5219</a>	Threatened
Pitcher's Thistle <i>Cirsium pitcheri</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8153">https://ecos.fws.gov/ecp/species/8153</a>	Threatened

## CRITICAL HABITATS

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Hine's Emerald Dragonfly <i>Somatochlora hineana</i> <a href="https://ecos.fws.gov/ecp/species/7877#crithab">https://ecos.fws.gov/ecp/species/7877#crithab</a>	Final
Piping Plover <i>Charadrius melodus</i> <a href="https://ecos.fws.gov/ecp/species/6039#crithab">https://ecos.fws.gov/ecp/species/6039#crithab</a>	Final

## USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

The following FWS National Wildlife Refuge Lands and Fish Hatcheries lie fully or partially within your project area:

FACILITY NAME	ACRES
KIRTLANDS WARBLER WILDLIFE MANAGEMENT AREA <a href="https://www.fws.gov/refuges/profiles/index.cfm?id=31510">https://www.fws.gov/refuges/profiles/index.cfm?id=31510</a>	2,830.797
MICHIGAN ISLANDS NATIONAL WILDLIFE REFUGE <a href="https://www.fws.gov/refuges/profiles/index.cfm?id=31520">https://www.fws.gov/refuges/profiles/index.cfm?id=31520</a>	1,496.492



## MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

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1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\) list](#) or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover <i>Pluvialis dominica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31
Belted Kingfisher <i>Megasceryle alcyon</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Jul 25

NAME	BREEDING SEASON
<b>Black Tern <i>Chlidonias niger</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/3093">https://ecos.fws.gov/ecp/species/3093</a>	Breeds May 15 to Aug 20
<b>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10
<b>Blue-winged Warbler <i>Vermivora pinus</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
<b>Bobolink <i>Dolichonyx oryzivorus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
<b>Canada Warbler <i>Cardellina canadensis</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
<b>Cerulean Warbler <i>Dendroica cerulea</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/2974">https://ecos.fws.gov/ecp/species/2974</a>	Breeds Apr 20 to Jul 20
<b>Chimney Swift <i>Chaetura pelagica</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
<b>Common Tern <i>Sterna hirundo hirundo</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Aug 31
<b>Connecticut Warbler <i>Oporornis agilis</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 15 to Aug 10
<b>Eastern Meadowlark <i>Sturnella magna</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 31
<b>Eastern Whip-poor-will <i>Antrostomus vociferus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
<b>Evening Grosbeak <i>Coccothraustes vespertinus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10

NAME	BREEDING SEASON
<p><b>Golden Eagle</b> <i>Aquila chrysaetos</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.  <a href="https://ecos.fws.gov/ecp/species/1680">https://ecos.fws.gov/ecp/species/1680</a></p>	Breeds Jan 1 to Aug 31
<p><b>Golden-winged Warbler</b> <i>Vermivora chrysoptera</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/8745">https://ecos.fws.gov/ecp/species/8745</a></p>	Breeds May 1 to Jul 20
<p><b>Henslow's Sparrow</b> <i>Ammodramus henslowii</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3941">https://ecos.fws.gov/ecp/species/3941</a></p>	Breeds May 1 to Aug 31
<p><b>Kirtland's Warbler</b> <i>Setophaga kirtlandii</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/8078">https://ecos.fws.gov/ecp/species/8078</a></p>	Breeds May 25 to Jul 31
<p><b>Lesser Yellowlegs</b> <i>Tringa flavipes</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a></p>	Breeds elsewhere
<p><b>Long-eared Owl</b> <i>asio otus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3631">https://ecos.fws.gov/ecp/species/3631</a></p>	Breeds Mar 1 to Jul 15
<p><b>Marbled Godwit</b> <i>Limosa fedoa</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9481">https://ecos.fws.gov/ecp/species/9481</a></p>	Breeds May 1 to Jul 31
<p><b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3914">https://ecos.fws.gov/ecp/species/3914</a></p>	Breeds May 20 to Aug 31
<p><b>Prairie Warbler</b> <i>Dendroica discolor</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Jul 31
<p><b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Sep 10

NAME	BREEDING SEASON
<b>Ruddy Turnstone</b> <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Rusty Blackbird</b> <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Short-billed Dowitcher</b> <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
<b>Upland Sandpiper</b> <i>Bartramia longicauda</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9294">https://ecos.fws.gov/ecp/species/9294</a>	Breeds May 1 to Aug 31
<b>Wood Thrush</b> <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31
<b>Yellow Rail</b> <i>Coturnicops noveboracensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9476">https://ecos.fws.gov/ecp/species/9476</a>	Breeds May 15 to Sep 10

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee

was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

**Breeding Season (■)**

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort (|)**

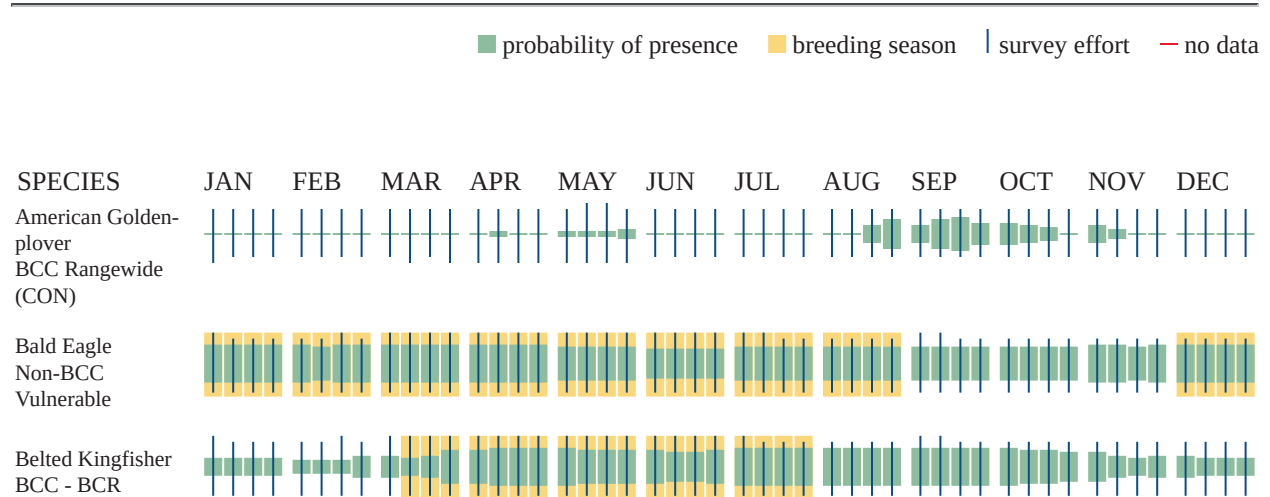
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

**No Data (-)**

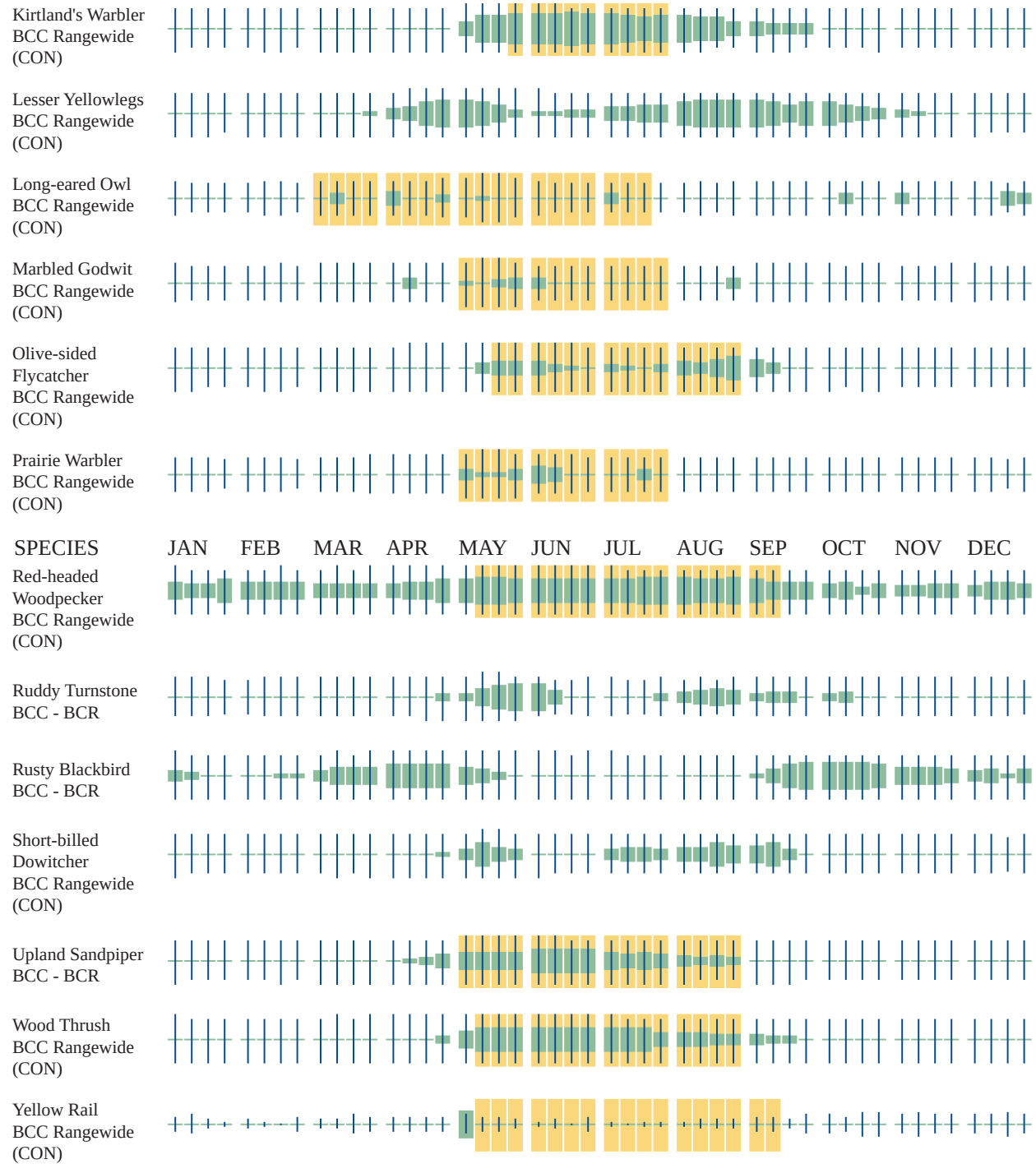
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>

- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## MIGRATORY BIRDS FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look



at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be

aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## COASTAL BARRIERS

Projects within the [John H. Chafee Coastal Barrier Resources System](#) (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local [Ecological Services Field Office](#) or visit the [CBRA Consultations website](#). The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

## SYSTEM UNIT (SU)

*Most new Federal expenditures and financial assistance, including Federal flood insurance, are prohibited within System Units. **Federally-funded projects within System Units require consultation with the Service.** Consultation is not required for projects using private, state, or local funds.*

UNIT	NAME	TYPE	SYSTEM UNIT ESTABLISHMENT DATE	FLOOD INSURANCE PROHIBITION DATE
MI-05	Huron City	SU	11/16/1990	11/16/1990
MI-06	Alaska Bay	SU	11/16/1990	11/16/1990
MI-07	Pointe aux Barques	SU	11/16/1990	11/16/1990
MI-08	Charity Island	SU	11/16/1990	11/16/1990
MI-13	Squaw Bay	SU	11/16/1990	11/16/1990
MI-14	Whitefish Bay	SU	11/16/1990	11/16/1990
MI-17	Swan Lake	SU	11/16/1990	11/16/1990

**PLEASE NOTE:** *If this project is Federally funded by the U.S. Fish and Wildlife Service through the [Great Lakes Restoration Initiative \(GLRI\)](#), there may be a [programmatic GLRI CBRA consultation](#) that applies. Please contact the lead Ecological Services Field Office shown on the letterhead for more information.*

## WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

Due to your project's size, the list below may be incomplete, or the acreages reported may be inaccurate. For a full list, please contact the local U.S. Fish and Wildlife office or visit <https://www.fws.gov/wetlands/data/mapper.HTML>

### FRESHWATER EMERGENT WETLAND

- [Palustrine](#)

### RIVERINE

- [Riverine](#)

**IPAC USER CONTACT INFORMATION**

Agency: Juniper Environmental  
Name: Jason Sweet  
Address: 21409 S Phoenix Dr  
City: Peculiar  
State: MO  
Zip: 64078  
Email: jason.sweet@juniperenv.com  
Phone: 8165109850

**LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Army Corps of Engineers  
Name: Shelly Davis  
Email: shelly.davis@usace.army.mil



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Michigan Ecological Services Field Office  
2651 Coolidge Road Suite 101  
East Lansing, MI 48823-6360  
Phone: (517) 351-2555 Fax: (517) 351-1443

In Reply Refer To:

April 11, 2023

Project code: 2022-0060108

Project Name: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Federal Nexus: yes

Federal Action Agency (if applicable): Army Corps of Engineers

**Subject:** Technical assistance for 'Modification and Addition of Airspace at the Alpena Special Use Airspace Complex'

Dear Jason Sweet:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on April 11, 2023, for 'Modification and Addition of Airspace at the Alpena Special Use Airspace Complex' (here forward, Project). This project has been assigned Project Code 2022-0060108 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

### **Ensuring Accurate Determinations When Using IPaC**

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. **Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.**

### **Determination for the Northern Long-Eared Bat**

Based on your IPaC submission and the standing analysis for the Dkey, your project has reached the determination of "May Affect" the northern long-eared bat.

### **Next Steps**

Your action may qualify for the Interim Consultation Framework for the northern long-eared bat. To determine if it qualifies, review the Interim Consultation Framework posted here <https://www.fws.gov/library/collections/interim-consultation-framework-northern-long-eared-bat>. If you determine it meets the requirements of the Interim Consultation Framework, follow the procedures outlined there to complete section 7 consultation.

If your project does **not** meet the requirements of the Interim Consultation Framework, please contact the Michigan Ecological Services Field Office for further coordination on this project. Further consultation or coordination with the Service is necessary for those species or designated critical habitats with a determination of “May Affect”.

### **Other Species and Critical Habitat that May be Present in the Action Area**

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Dwarf Lake Iris *Iris lacustris* Threatened
- Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* Threatened
- Eastern Prairie Fringed Orchid *Platanthera leucophaea* Threatened
- Hine's Emerald Dragonfly *Somatochlora hineana* Endangered
- Houghton's Goldenrod *Solidago houghtonii* Threatened
- Hungerford's Crawling Water Beetle *Brychius hungerfordi* Endangered
- Indiana Bat *Myotis sodalis* Endangered
- Karner Blue Butterfly *Lycaeides melissa samuelis* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate
- Northern Riffleshell *Epioblasma rangiana* Endangered
- Piping Plover *Charadrius melodus* Endangered
- Pitcher's Thistle *Cirsium pitcheri* Threatened
- Red Knot *Calidris canutus rufa* Threatened
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

#### Critical Habitats:

- Hine's Emerald Dragonfly *Somatochlora hineana* Endangered
- Piping Plover *Charadrius melodus* Endangered

You may coordinate with our Office to determine whether the Action may cause prohibited take of the species listed above.

## Action Description

You provided to IPaC the following name and description for the subject Action.

### 1. Name

Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

### 2. Description

The following description was provided for the project 'Modification and Addition of Airspace at the Alpena Special Use Airspace Complex':

The National Guard Bureau (NGB) and the Michigan Air National Guard (MIANG) are preparing an Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex located at the Alpena Combat Readiness Training Center in Alpena, Michigan.

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.59445065,-83.48021326877426,14z>





## DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect” for the Endangered northern long-eared bat (*Myotis septentrionalis*).

## QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

**Note:** Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

*No*

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

*No*

3. Does any component of the action involve construction or operation of wind turbines?

**Note:** For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

*No*

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

*Yes*

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

*No*

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

**Note:** This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

*Yes*

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

*No*

8. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the [effects of any activities](#) that would not occur but for the proposed action.

If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

**Note:** Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of [Effects of the Action](#) can be found here: <https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions>

*No*

9. Have you contacted the appropriate agency to determine if your action is near any known northern long-eared bat hibernacula?

**Note:** A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat hibernacula is available [here](#). Location information for northern long-eared bat hibernacula is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

*No*

10. Will the proposed action result in the cutting or other means of knocking down, bringing down, or trimming of any trees suitable for northern long-eared bat roosting?

**Note:** Suitable northern long-eared bat roost trees are live trees and/or snags  $\geq 3$  inches dbh that have exfoliating bark, cracks, crevices, and/or cavities.

*No*

## **PROJECT QUESTIONNAIRE**

Will all project activities be completed by April 1, 2024?

Yes

**IPAC USER CONTACT INFORMATION**

Agency: Juniper Environmental  
Name: Jason Sweet  
Address: 21409 S Phoenix Dr  
City: Peculiar  
State: MO  
Zip: 64078  
Email: jason.sweet@juniperenv.com  
Phone: 8165109850

**LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Army Corps of Engineers  
Name: Shelly Davis  
Email: shelly.davis@usace.army.mil

**From:** Pruden, Jessica A <jessica\_pruden@fws.gov>  
**Sent:** Wednesday, May 17, 2023 2:08:12 PM  
**To:** Jason Sweet <jason.sweet@juniperenv.com>  
**Cc:** Wong, Jennifer (Jenny) <jennifer\_wong@fws.gov>; MIFO DKey, FW3 <MIFO\_DKey@fws.gov>; Pruden, Jessica A <jessica\_pruden@fws.gov>  
**Subject:** Fw: IPaC delivered Determination Key letter for project: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Jason,

Thank you for using the northern long eared bat rangewide determination key for the Modification and Addition of Airspace at the Alpena Special Use Airspace Complex Project.

We noticed you recieved a "may affect" determination for northern long eared bat. Given the proposed action that is modification of air space, we do not think that is the appropriate determination. Given previous information we have received on the proposed action and specifically elevation information for flights, we recommend a determination of "no effect". The Service does not provide concurrence for no effect determinations, please just document that within your files.

Thank you for your coordination and please let us know if you have any further questions,  
Jessica Pruden

Jessica Pruden  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
Michigan Ecological Services Field Office  
2651 Coolidge Road, Suite 101  
East Lansing, MI 48823  
517-351-8245  
[jessica\\_pruden@fws.gov](mailto:jessica_pruden@fws.gov)

## **Appendix E**

### **Section 106 Consultation**

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**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

November 15, 2022

Ms. Jennifer L. Harty  
Cultural Resources Program Manager  
National Guard Bureau (NGB/A4VN)  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762

Ms. Martha MacFarlane-Faes  
Deputy State Historic Preservation Officer  
Michigan State Historic Preservation Office  
300 North Washington Square  
Lansing MI 48913

SHPO Reference # ER96-356

Dear Ms. MacFarlane-Faes

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your office under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800). Enclosed is the Application for SHPO Section 106 Consultation, with attachments.

Pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321 et seq.), the NGB is preparing an Environmental Assessment (EA) for a proposed undertaking that will analyze potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or parts of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Enclosure). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The Area of Potential Effect (APE) covers the areas below the Military Operations Areas (MOAs) to the National Airspace System, which includes all or a portion of the counties listed above. The Federal Aviation Administration is acting as a cooperating agency.



### ***Historic Resources within the Area of Potential Effect***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects to the Proposed Alpena Special Use Airspace Complex***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet MSL).

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB.<sup>1</sup> Even low-altitude flyovers of heavy aircraft do not reach the potential for damage.<sup>2</sup>

Vibrations to historic structures under the Grayling West and East MOA would not be a concern as the maximum sound level (Lmax) values at various points of interest under the Grayling West and East MOAs would be lower than noise levels at which vibrations could damage structures. Therefore, there would be no adverse effects on historic properties from the establishment of Grayling West and East MOAs of the Proposed Action.

#### **Pike East/West MOAs**

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise

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<sup>1</sup> Committee on Hearing, Bioacoustics, and Biomechanics. (1977, September 21). *Guidelines for Preparing Environmental Impact Statements on Noise*. Washington, DC: National Academy of Sciences.

<sup>2</sup> Sutherland, L. C., Brown, R., & Goerner, D. (1990, May). *Evaluation of Potential Damage to Unconventional Structures by Sonic Booms*, HSD-TR-90-021. Wyle Laboratories.

levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

#### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects regarding the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

#### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

#### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

#### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking. In accordance with § 800.3(c)4, we are offering your office the opportunity to comment on our proposed undertaking and determination of effects. The Draft EA and Draft FONSI are available online for public review at <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request.

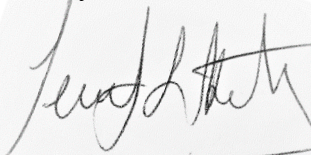
### ***Additional Documentation***

The original undertaking for the Proposed Action included four different archaeological and architectural APEs. Archaeological and architectural surveys were undertaken to identify all historic properties within these APEs. The undertaking has since been modified, removing all actions on the ground, thereby, removing each of these four APEs from consultation. The findings associated with the archaeological and architectural surveys of these APEs are presented in *Alpena Special Use Airspace Complex Joint Threat Emitters Archaeology Survey, Iosco, Montmorency, and Presque Isle Counties, Michigan* (MIANG, 2022); and a Michigan SHPO Architectural Properties Identification Form for the WLC Radio Station in Calcite, Michigan. These findings were sent electronically for the SHPO files on August 22, 2022, although this work is no longer part of this Section 106 consultation.

### ***Conclusion***

In order for the NGB to address any concerns in a timely manner, please respond within 30 calendar days. Please provide any comments to Jennifer Harty, Cultural Resources Program Manager, 3501 Fetchet Avenue, Joint Base Andrews MD 20762-5157 or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with the subject titled as ATTN: Alpena SUA Complex EA (please note that email is the preferred method of communication). Thank you for your assistance and we look forward to working with you on this undertaking.

Sincerely,



JENNIFER L. HARTY GS-13, DAF  
Cultural Resources Program Manager

Enclosure:

Application for SHPO Section 106 Consultation, with attachments



# APPLICATION FOR SHPO SECTION 106 CONSULTATION

Submit one application for each project for which comment is requested. Consult the *Instructions for the Application for SHPO Section 106 Consultation Form* when completing this application.

Mail form, all attachments, and check list to: Michigan State Historic Preservation Office, 300 North Washington Square, Lansing, MI 48913

## I. GENERAL INFORMATION

- New submittal
- More information relating to SHPO ER# 96-356
- Submitted under a Programmatic Agreement (PA)  
PA Name/Date: *PA name/date, if applicable*

- a. **Project Name:** Modification and Addition of Airspace at the Alpena Special Use Airspace Complex
- b. **Project Municipality:** Alpena, Michigan
- c. **Project Address (if applicable):** n/a
- d. **County:** Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola.

## II. FEDERAL AGENCY INVOLVEMENT AND RESPONSE CONTACT INFORMATION

- a. **Federal Agency:** National Guard Bureau (NGB)  
**Contact Name:** Jennifer Harty  
**Contact Address:** 3501 Fetchet Avenue **City:** Joint Base Andrews **State:** Maryland **Zip:** 20762  
**Email:** [jennifer.harty@us.af.mil](mailto:jennifer.harty@us.af.mil)  
**Specify the federal agency involvement in the project:** NGB is the lead agency proposing to modify and expand airspace.
- b. **If HUD is the Federal Agency:** 24 CFR Part 50  or Part 58   
**Responsible Entity (RE):** *Name of the entity that is acting as the Responsible Entity*  
**Contact Name:** *RE Contact name*  
**Contact Address:** *RE mailing address* **City:** *RE city* **State:** *RE State* **Zip:** *RE zip code*  
**RE Email:** *RE contact's email* **Phone:** *RE contact's phone #*
- c. **State Agency Contact (if applicable):** *Name of state agency*  
**Contact Name:** *Name of state agency contact*  
**Contact Address:** *State agency contact's mailing address* **City:** *State contact's city* **Zip:** *State contact's zip code*  
**Email:** *State contact's email* **Phone:** *State contact's phone #*
- d. **Applicant (if different than federal agency):** *Name of Applicant's agency/firm*  
**Contact Name:** *Applicant contact's name*  
**Contact Address:** *Applicant contact's mailing address* **City:** *Applicant's city* **State:** *Applicant contact's state*  
**Zip:** *Applicant contact's zip code*  
**Email:** *Applicant contact's email* **Phone:** *Applicant contact's phone #*
- e. **Consulting Firm (if applicable):** Marstel-Day, LLC  
**Contact Name:** Kristie Baynard  
**Contact Address:** 10708 Ballantraye Drive, Suite 208 **City:** Fredericksburg **State:** Virginia **Zip:** 22407  
**Email:** [kbaynard@marstel-day.com](mailto:kbaynard@marstel-day.com) **Phone:** 540-360-5345



# APPLICATION FOR SHPO SECTION 106 CONSULTATION

## IV. PROJECT INFORMATION

### a. Project Location and Area of Potential Effect (APE)

i. **Maps.** Please indicate all maps that will be submitted as attachments to this form.

- Street map, clearly displaying the direct and indirect APE boundaries
- Site map
- USGS topographic map Name(s) of topo map(s): [Name\(s\) of topo map\(s\)](#)
- Aerial map
- Map of photographs
- Other: [Identify type\(s\) of map\(s\)](#)

ii. **Site Photographs**

iii. **Describe the APE:**

The Military Operations Areas APEs are the areas below the MOAs to the National Airspace System, which includes all or a portion of the counties listed above. See attached maps for location of the MOA APEs.

iv. **Describe the steps taken to define the boundaries of the APE:**

MOA APE Boundaries

The boundaries of the APEs under the MOAs are defined as the areas confined to the revised existing MOAs, or new MOAs to the airspace.

### b. Project Work Description

The project is to modify and establish airspace that supports military training and readiness requirements. This would contribute to the overall provision for an integrated, year-round, realistic training environment that encompasses airspace, facilities, and equipment. The project includes:

- establishing five new Military Operations Areas (MOAs) to the National Airspace System: Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East. The definition of MOA is below.
- discontinuing the annual request for the Grayling Temporary MOA
- modifying the internal lateral boundaries of three existing MOAs: Pike East, Pike West, and Steelhead
- returning Hersey MOA to the National Airspace System
- raising the vertical ceiling of an existing R-4102B from 9,000 feet above mean sea level (MSL) to 23,000 feet above MSL to match the existing height of R-4102A
- establishing two new visual flight rules military training routes (VR; VR-1601 and VR-1602) between Alpena Combat Readiness Training Center (CRTC) and Grayling Air Gunnery Range

MOAs are defined airspace areas established below 17,999 feet above MSL to segregate high-performance military aircraft conducting training activities from nonparticipating civil and military air traffic operating under Instrument Flight Rules (IFR). Nonparticipating military and civilian aircraft flying under Visual Flight Rules (VFR) can operate in MOAs without approval from the military scheduling or controlling agency; however, extreme caution is advised when such aircraft transit active MOAs, to ensure flight safety.

## V. IDENTIFICATION OF HISTORIC PROPERTIES

### a. Scope of Effort Applied

i. **List sources consulted for information on historic properties in the project area** (including but not limited to SHPO office and/or other locations of inventory data).

SHPO; National Register of Historic Places

ii. Provide documentation of previously identified sites as attachments.



# APPLICATION FOR SHPO SECTION 106 CONSULTATION

- iii. **Provide a map** showing the relationship between the previously identified properties and sites, your project footprint and project APE.
- iv. Have you reviewed existing site information at the SHPO:  Yes  No
- v. Have you reviewed information from non-SHPO sources:  Yes  No

## b. Identification Results

### i. Above-ground Properties

- A. Attach the appropriate Michigan SHPO Architectural Identification Form for each resource or site 50 years of age or older in the APE. Refer to the *Instructions for the Application for SHPO Section 106 Consultation Form* for guidance on this.
- B. **Provide the name and qualifications of the person who made recommendations of eligibility for the above-ground identification forms.**  
**Name** Kristie Baynard **Agency/Consulting Firm:** Marstel-Day, LLC  
 Is the individual a 36CFR Part 61 Qualified Historian or Architectural Historian  Yes  No  
 Are their credentials currently on file with the SHPO?  Yes  No  
*If NO* attach this individual's qualifications form and resume.

### ii. Archaeology (complete this section if the project involves temporary or permanent ground disturbance) Submit the following information using attachments, as necessary.

- A. **Attach Archaeological Sensitivity Map.**
- B. **Summary of previously reported archaeological sites and surveys:**  
No ground disturbance would occur associated with the proposed MOA airspace changes.
- C. **Town/Range/Section or Private Claim numbers:** [town/range/section or private claim #s](#)
- D. **Width(s), length(s), and depth(s) of proposed ground disturbance(s):**
- E. **Will work potentially impact previously undisturbed soils?**  Yes  No  
*If YES, summarize new ground disturbance:*  
[Summary of new ground disturbance](#)
- F. **Summarize past and present land use:**
- G. **Potential to adversely affect significant archaeological resources:**  
 Low  Moderate  High  
**For moderate and high potential, is fieldwork recommended?**  Yes  No  
**Briefly justify the recommendation:**
- H. **Has fieldwork already been conducted?**  Yes  No  
**If YES:**  
 Previously surveyed; refer to A. and B. above.  
 Newly surveyed; attach report copies and provide full report reference here:
- I. **Provide the name and qualifications of the person who provided the information for the Archaeology section:**  
**Name:** Paula Bienenfeld **Agency/Firm:** Marstel-Day, LLC  
 Is the person a 36CFR Part 61 Qualified Archaeologist?  Yes  No  
 Are their credentials currently on file with the SHPO?  Yes  No  
*If NO, attach this individual's qualifications form and resume.*

*Archaeological site locations are legally protected.  
This application may not be made public without first redacting sensitive archaeological information.*



## APPLICATION FOR SHPO SECTION 106 CONSULTATION

### VI. IDENTIFICATION OF CONSULTING PARTIES

- a. **Provide a list of all consulting parties**, including Native American tribes, local governments, applicants for federal assistance/permits/licenses, parties with a demonstrated interest in the undertaking, and public comment:  
See Attachment
- b. **Provide a summary of consultation with consultation parties:**  
Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is a process used to implement scoping and interagency review requirements. During the IICEP process, the NGB notifies relevant federal, state, and local agencies and provides at least 30 days to make known their environmental concerns regarding the specific Proposed Action. Consultation letters will also be sent to federally recognized tribes with an interest in the project areas to provide notification of the action and to initiate government-to-government consultation in accordance with Section 106 of the NHPA.

NGB and the Michigan Air National Guard (MIANG) initiated IICEP coordination on June 17, 2021. IICEP responses were received from the Nottawaseppi Huron Band of the Potawatomi (June 24, 2021), Michigan Department of Natural Resources (MDNR; July 15, 2021), the Aircraft Owners and Pilots Association (July 22, 2021), U.S. Representative Jack Bergman (July 30, 2021), and U.S. Fish and Wildlife Service (USFWS; September 27, 2021). Mr. Brian G. Grennell, Cultural Resource Management Coordinator, Michigan SHPO also replied on August 27, 2021.

The NGB and the MIANG will be initiating Section 106 consultation with those in the list of consulting parties concurrently with Section 106 consultation with the SHPO.

- c. **Provide summaries of public comment and the method by which that comment was sought:**  
Public comments have not been sought yet. Initial consultation with the list of consulting parties is being conducted concurrently with this SHPO consultation. In addition, the public draft of the Environmental Assessment has not been released yet.

### VII. DETERMINATION OF EFFECT

**Guidance for applying the Criteria of Adverse Effect can be found in *the Instructions for the Application for SHPO Section 106 Consultation Form*.**

- a. **Basis for determination of effect:**

#### Airspace Changes

Brief discussion below on each of the airspace changes and additions. See attachment for more details.

1. Grayling East/West MOAs

Noise levels were modeled in Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) and Day-Night Average Sound Level (DNL) using MRNMap. Ldnmr and DNL are the DOD and FAA accepted metrics for estimating noise levels associated with aircraft operations. Operational noise levels would be at 45 A-weighted decibels (45 dBA, in Ldnmr and DNL), which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

The highest increases in maximum noise levels (i.e., the “Lmax” noise metric, which is an instantaneous, single-event noise level that passes very quickly as an aircraft is immediately overhead) are estimated at 24 dBA, with a proposed Lmax of 110 dBA at a modeled point under the Grayling West MOA. This is lower than noise levels at which vibrations could damage structures (i.e., 130 decibels). The NGB is using the following references to analyze vibration effects of noise on historic structures:



## APPLICATION FOR SHPO SECTION 106 CONSULTATION

- Committee on Hearing, Bioacoustics, and Biomechanics. (1977, September 21). *Guidelines for Preparing Environmental Impact Statements on Noise*. Washington, DC: National Academy of Sciences.
- Sutherland, L. C., Brown, R., & Goerner, D. (1990, May). *Evaluation of Potential Damage to Unconventional Structures by Sonic Booms, HSD-TR-90-021*. Wyle Laboratories.

### 2. Pike East/West MOAs

Operational noise levels would be at 45 A-weighted decibels (45 dBA, in Ldnmr and DNL), which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource. Pike East MOA is almost entirely over Lake Huron. Modeled maximum noise levels at two points of interest under the Pike West MOA showed no increases in noise levels. Therefore, vibrations from noise levels would have no effects on cultural resources.

### 3. Steelhead Low MOAs

Operational noise levels would average to 40 dBA in Ldnmr and DNL, which is not an increase over existing conditions sufficient to cause adverse effects on cultural resources.

The highest increases in maximum noise levels (i.e., the “Lmax” noise metric) are estimated at 29 dBA, with a proposed Lmax of 115 dBA at several modeled points under the Steelhead Low MOA. Sanilac Petroglyphs Historic State Park, under the Steelhead Low South MOA, was modeled with an Lmax of 91 dBA. These are lower than noise levels at which vibrations could damage structures (i.e., 130 decibels).

### 4. R-4201A/R-4201B

For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. In R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. The Lmax noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no additional impacts on historic properties would occur from vibration.

### 5. VR-1601/VR-1602

Operational noise levels would be low at approximately 35 dBA Ldnmr and DNL, so there would be no adverse effects on cultural resources.

The Lmax at modeled points under these proposed visual flight rules military training routes would not change substantially over the existing conditions. At one modeled point, under VR-1601/VR-1602 and the Grayling West MOA, the proposed Lmax would increase by 2 dBA to 88 dBA, which is lower than noise levels at which vibrations could damage structures (i.e., 130 decibels).

#### b. Determination of effect

No historic properties will be affected or

Historic properties will be affected and the project will (check one):

have **No Adverse Effect** on historic properties within the APE.

have an **Adverse Effect** on one or more historic properties in the APE and the federal agency, or federally authorized representative, will consult with the SHPO and other parties to resolve the adverse effect under 800.6.

**More Information Needed:** We are initiating early consultation. A determination of effect will be submitted to the SHPO at a later date, pending results of survey.





## APPLICATION FOR SHPO SECTION 106 CONSULTATION

Federally Authorized Signature:  Date: 8/11/2022

Type or Print Name: Jennifer L. Harty

Title: Cultural Resources Program Manager, NGB/A4VN



## APPLICATION FOR SHPO SECTION 106 CONSULTATION

### ATTACHMENT CHECKLIST

#### Identify any materials submitted as attachments to the form:

- Additional federal, state, local government, applicant, consultant contacts
- Maps of project location – *Attachment 1*
  - Number of maps attached: 1
- Site Photographs
  - Map of photographs
- Plans and specifications
- Other information pertinent to the work description: [Identify the type of materials attached](#)
- Documentation of previously identified historic properties
- Architectural Properties Identification Forms
- Map showing the relationship between the previously identified properties, your project footprint, and project APE – Attachment 5
- Above-ground qualified person's qualification form and resume
- Archaeological sensitivity map
- Survey report
- Archaeologist qualifications and resume
- Other: List of all consulting parties (*Attachment 2*)



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
MICHIGAN STRATEGIC FUND  
STATE HISTORIC PRESERVATION OFFICE

QUENTIN L. MESSER, JR.  
PRESIDENT

January 4, 2023

JENNIFER HARTY  
NATIONAL GUARD BUREAU  
3501 FETCHET AVE.  
JOINT BASE ANDREWS, MARYLAND 20762

RE: ER23-175 Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties (NGB)

Dear Ms. Harty:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-referenced undertaking. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that the proposed undertaking will have **no adverse effect** [36 CFR § 800.5(b)] on the Sanilac Petroglyphs (20SL1), which is a Michigan State Park and is listed in the National Register of Historic Places **provided the following conditions are met:**

- The Sanilac Petroglyphs site continues to be an important locale for traditional cultural practices for the Saginaw Chippewa Indian Tribe of Michigan (SCIT). In consultation with the SCIT Tribal Historic Preservation Officer (THPO), Marcella Hadden, the proposed change in airspace would have auditory impacts to traditional uses of the site for the SCIT and other Federally recognized tribes. Therefore, we recommend that either:
  - The APE be adjusted to omit the airspace over the Sanilac Petroglyphs, or
  - Proposed actions in the airspace over Sanilac Petroglyphs be restricted to the cold months of the year (November through March), when they would not impact traditional cultural use.

If you concur, the accompanying form must be signed by an agency official with legal authority to act on behalf of the agency [36 CFR § 800.2(a)]. Please return the signed original to us. Please note that the Section 106 review process will not be complete and FHWA's responsibility to comply with 36 CFR § 800.4, "Identification of historic properties," and 36 CFR § 800.5, "Assessment of adverse effects," will not be fulfilled until we have received this letter with the original signature of the agency official. **If the agency official disagrees with this condition, then consultation with this office shall be reopened per 36 CFR § 800.5(a).**

We remind you that federal agency officials or their delegated authorities are required to involve the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties per 36 CFR § 800.2(d). The National Historic Preservation Act also requires that federal agencies consult with any Indian tribe and/or Tribal Historic Preservation Officer (THPO) that attach religious and cultural significance to historic properties that may be affected by the agency's undertaking per 36 CFR § 800.2(c)(2)(ii).

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. **If the scope of work changes in any way, please notify this office immediately. In the unlikely event that human remains, or**

STATE HISTORIC PRESERVATION OFFICE

E-13

300 North Washington Square | Lansing, MI 48913 | 888.522.0103

**archaeological material are encountered during construction activities related to the above-cited undertaking, work must be halted, and the Michigan SHPO and other appropriate authorities must be contacted immediately.**

If you have any questions, please contact Scott Slagor, Cultural Resource Protection Manager, at 517-285-5120 or by email at [slagors2@michigan.gov](mailto:slagors2@michigan.gov). For questions regarding archaeological concerns, please contact Senior Archaeologist, Sarah Surface-Evans, [surfaceevans1@michigan.gov](mailto:surfaceevans1@michigan.gov), (517) 282-7959. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

A handwritten signature in blue ink that reads "Martha MacFarlane Faes". The signature is written in a cursive style with a long horizontal flourish at the end.

Martha MacFarlane Faes  
Deputy State Historic Preservation Officer

MMF:SES:SSE



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
MICHIGAN STRATEGIC FUND  
STATE HISTORIC PRESERVATION OFFICE

QUENTIN L. MESSER, JR.  
PRESIDENT

January 4, 2023

JENNIFER HARTY  
NATIONAL GUARD BUREAU  
3501 FETCHET AVE.  
JOINT BASE ANDREWS, MARYLAND 20762

RE: ACCEPTANCE LETTER

ER23-175 Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties (NGB)

We have received comments from the State Historic Preservation Office (SHPO) regarding the above-cited undertaking at the location noted above. We intend to follow the conditions as specified by the SHPO.

I concur: \_\_\_\_\_

Date: \_\_\_\_\_

Printed name and title of agency official: \_\_\_\_\_





**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

30 October 2023

Kristi Kucharek  
DAF NEPA Program Manager  
NGB/A4AM Plans and Requirements  
Air National Guard Readiness Center  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762-5157

Ms. Martha L. MacFarlane-Faes  
Deputy State Historic Preservation Officer  
Michigan State Historic Preservation Office  
300 North Washington Square  
Lansing MI 48913

SHPO Reference # ER23-175

Dear Ms. MacFarlane-Faes,

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to provide a response to correspondence received from your office under Section 106 of the National Historic Preservation Act of 1966 (NHPA), and its implementing regulations (36 CFR §800).

Pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321 et seq.), the NGB is preparing an Environmental Assessment (EA) for a proposed undertaking that will analyze potential effects to human health and the natural environment, including historic and traditional cultural properties. The purpose of the undertaking is to modify the Alpena Combat Readiness Training Center's (CRTC) Special Use Airspace (SUA) supporting military readiness requirements that would contribute to the overall provision of an integrated, year-round, realistic training environment. The proposed modifications are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure. The Alpena SUA Complex overlies part of Lake Huron and all or parts of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola.

On 15 November 2022, a letter was sent to your office to initiate consultation, pursuant to Section 106 of the NHPA. On 4 January 2023, your office responded to that letter, stating that the Proposed Action would have no adverse effect on the Sanilac Petroglyphs (20SL1), provided

that the Area of Potential Effect be adjusted to omit the airspace over the petroglyphs, or that the use of the airspace over the Sanilac Petroglyphs be restricted during certain times of the year to avoid impacting the traditional cultural use of the site. These consultation letters are included as **Attachments 1 and 2**.

To fulfill our Section 106 responsibilities, the NGB held a series of consultation meetings in June 2023 to engage with federally recognized Tribes that have interest or concerns regarding the modification and addition of the Alpena SUA. Please be aware, however, that NGB/ANG consultation is conducted on a government-to-government basis between the Federal government and Tribal governments and is not subject to oversight by the state. The Federal government has a responsibility to maintain confidentiality on issues discussed during consultation and cannot disclose information to the state unless requested to do so by the Tribes. A limited level consultation brief is included as a Memorandum for Record in **Attachment 3**.

The NGB will include a three-nautical-mile-radius buffer around the Sanilac Petroglyph site in the proposed Steelhead Low South Military Operations Area (4,000 feet above mean sea level). In addition, the site will be avoided during certain times of the year based on information provided during ANG's consultation efforts with federally recognized Tribal governments. With the implementation of the three-nautical-mile-radius buffer around the Sanilac Petroglyph site, as well as the avoidance of the site during certain times of the year, the NGB has determined there would be No Adverse Effects on historic properties under the Alpena SUA Complex for the proposed undertaking.

In order for the NGB to address any concerns in a timely manner, please respond within 30 calendar days of receipt of this letter. Please provide any comments to Kristi Kucharek, NEPA Program Manager, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157 or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with the subject titled as ATTN: Alpena SUA Complex EA. Thank you for your assistance with this undertaking.

Sincerely



Kristi L. Kucharek, GS-13  
DAF NEPA Program Manager

Attachments:

1. Section 106 letter to SHPO (15 November 2022)
2. SHPO response letter (4 January 2023)
3. Post Tribal Consultation Brief: Alpena Special Use Airspace Complex Virtual Consultation Meeting (30 October 2023)



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
MICHIGAN STRATEGIC FUND  
STATE HISTORIC PRESERVATION OFFICE

QUENTIN L. MESSER, JR.  
PRESIDENT

November 7, 2023

KRISTI KUCHARÉK  
NATIONAL GUARD BUREAU  
3501 FETCHET AVE.  
JOINT BASE ANDREWS, MARYLAND 20762

RE: ER23-175 Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties (NGB)

Dear Ms. Kucharek:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, the State Historic Preservation Officer (SHPO) concurs with the determination of NGB that the effects of the proposed undertaking do not meet the criteria of adverse effect [36 CFR § 800.5(a)(1)]. Therefore, the project will have **no adverse effect** [36 CFR § 800.5(b)] on the Sanilac Petroglyphs (20SL1) because of the plan to create a the three-nautical-mile-radius buffer around the site and provision to avoid the site during times of the year determined through consultation with federally recognized Tribal governments.

This letter evidences NGB's compliance with 36 CFR § 800.4 "Identification of historic properties" and 36 CFR § 800.5 "Assessment of adverse effects," and the fulfillment of NGB's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.5(c) "Consulting party review." **If the scope of work changes in any way, please notify this office immediately. In the unlikely event that human remains, or archaeological material are encountered during construction activities related to the above-cited undertaking, work must be halted, and the Michigan SHPO and other appropriate authorities must be contacted immediately.**

We remind you that federal agency officials or their delegated authorities are required to involve the public in a manner that reflects the nature and complexity of the undertaking and its effects on historic properties per 36 CFR § 800.2(d). The National Historic Preservation Act also requires that federal agencies consult with any Indian tribe and/or Tribal Historic Preservation Officer (THPO) that attach religious and cultural significance to historic properties that may be affected by the agency's undertakings per 36 CFR § 800.2(c)(2)(ii).

Finally, the State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. Thank you for this opportunity to review and comment, and for your cooperation.





If you have any questions, please contact Scott Slagor, Cultural Resource Protection Manager, at 517-285-5120 or by email at slagors2@michigan.gov. For questions regarding archaeological resources, please contact Dr. Sarah Surface-Evans, Senior Archaeologist at 517-282-7959 or by email at surfaceevans1@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. M. Schumaker', with a long horizontal flourish extending to the right.

Ryan M. Schumaker  
State Historic Preservation Officer

RMS:SES:SSE

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## Appendix F

### Government-to-Government Consultation

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**MICHIGAN AIR NATIONAL GUARD**  
**HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER**  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Whitney Gravelle  
President  
Bay Mills Chippewa Indian Community  
12140 W. Lakeshore Drive  
Rt. 1, Box 313  
Brimley MI 49715

Dear President Gravelle

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB.<sup>1</sup> Even low-altitude flyovers of heavy aircraft do not reach the potential for damage.<sup>2</sup>

Vibrations to historic structures under the Grayling West and East MOA would not be a concern as the maximum sound level (Lmax) values at various points of interest under the Grayling West and East MOAs would be lower than noise levels at which vibrations could damage structures. Therefore, there would be no adverse effects on historic properties from the establishment of Grayling West and East MOAs of the Proposed Action.

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### Pike East/West MOAs

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

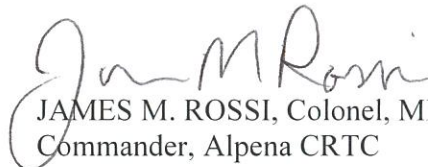
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The Draft EA and Draft FONSI are available online for public review at <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request.

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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

Attachment:

Location Map of the Proposed Modifications to the Alpena SUA Complex





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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Paula Carrick  
THPO  
Bay Mills Chippewa Indian Community  
12485 W. Lakeshore Drive  
Armella Parker Elder Bldg  
Brimley MI 49715

Dear Ms. Carrick

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

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### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

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Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

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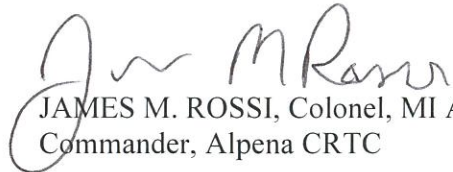
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable David Arroyo  
Chairman  
Grand Traverse Bay Band of Ottawa and Chippewa Indians  
2605 N.W. Bayshore Drive  
Peshawbestown MI 49682

Dear Chairman Arroyo

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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Sammie McClellan-Dyal  
Cultural Department Manager  
Grand Traverse Bay Band of Ottawa and Chippewa Indians  
2605 N.W. Bayshore Drive  
Peshawbestown MI 49682

Dear Ms. McClellan-Dyal

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### ***Determination of Effects***

#### **Grayling West/East MOAs**

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The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

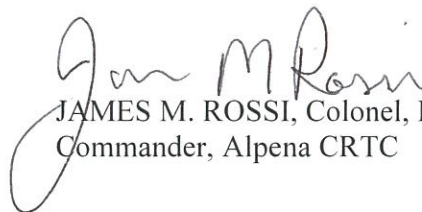
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JAMES M. ROSSI, Colonel, MI ANG  
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5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Kenneth Meshigaud  
Chairperson  
Hannahville Indian Community  
N-14911 Hannahville B-1 Road  
Wilson MI 49896-9728

Dear Chairperson Meshigaud

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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. Earl Meshigaud  
THPO  
Hannahville Indian Community  
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Wilson MI 49896-9728

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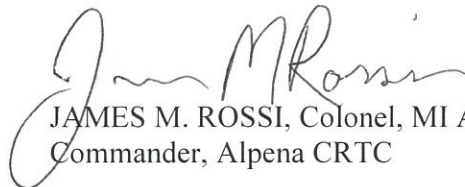
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Colonel James M. Rossi  
Commander, Alpena CRTC  
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Keweenaw Bay Indian Community  
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### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.


As part of our consultation efforts, we respectfully request your assistance in identifying:

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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

Attachment:

Location Map of the Proposed Modifications to the Alpena SUA Complex





**MICHIGAN AIR NATIONAL GUARD**  
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. Alden Connor  
THPO  
Keweenaw Bay Indian Community  
16429 Beartown Road  
Baraga MI 49908

Dear Mr. Connor

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB.<sup>1</sup> Even low-altitude flyovers of heavy aircraft do not reach the potential for damage.<sup>2</sup>

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### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

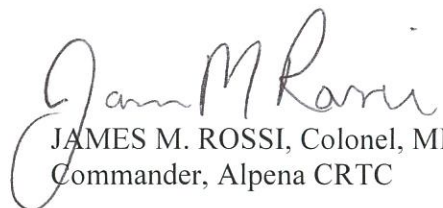
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
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The Honorable John Johnson  
President  
Lac du Flambeau Band of Lake Superior Chippewa Indians of the Lac du Flambeau Reservation  
of Wisconsin  
P.O. Box 67  
Lac du Flambeau WI 54538

Dear President Johnson

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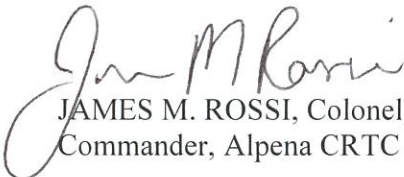
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THPO  
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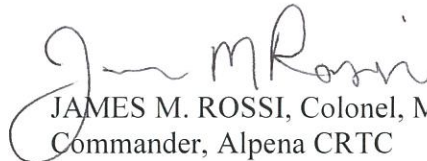
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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

Attachment:

Location Map of the Proposed Modifications to the Alpena SUA Complex



**MICHIGAN AIR NATIONAL GUARD**  
**HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER**  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable James Williams Jr.  
Chairman  
Lac Vieux Desert Band of Lake Superior Chippewa Indians  
23968 East Pow Wow Trail  
P.O. Box 249  
Watersmeet MI 49969

Dear Chairman Williams

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

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### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

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Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB.<sup>1</sup> Even low-altitude flyovers of heavy aircraft do not reach the potential for damage.<sup>2</sup>

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### Pike East/West MOAs

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

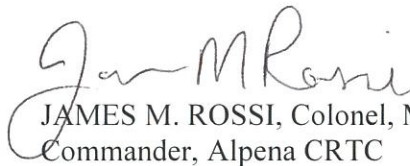
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Alina Shively  
THPO  
Lac Vieux Desert Band of Lake Superior Chippewa Indians  
P.O. Box 249  
Watersmeet MI 49969

Dear Ms. Shively

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Larry Romanelli  
Ogema  
Little River Band of Ottawa Indians, Michigan  
2608 Government Center Drive  
Manistee MI 49660

Dear Ogema Romanelli

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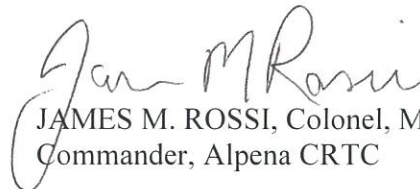
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Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. Jay Sam  
THPO  
Little River Band of Ottawa Indians, Michigan  
2608 Government Center Drive  
Manistee MI 49660

Dear Mr. Sam

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

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Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

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Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

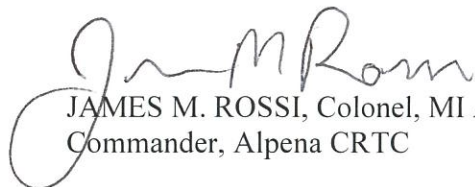
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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

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ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Regina Gasco-Bentley  
Chairperson  
Little Traverse Bay Bands of Odawa Indians  
7500 Odawa Circle  
Harbor Springs MI 49740

Dear Chairperson Gasco-Bentley

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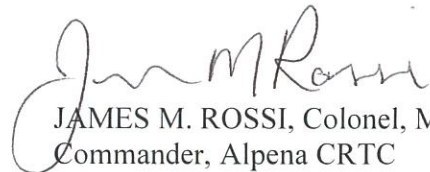
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Melissa Wiatrolik  
THPO  
Little Traverse Bay Bands of Odawa Indians  
7500 Odawa Circle  
Harbor Springs MI 49740

Dear Ms. Wiatrolik

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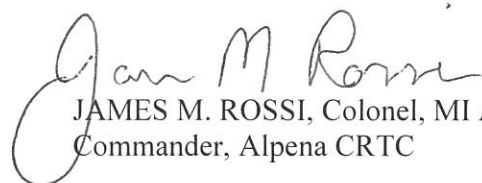
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Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
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The Honorable Bob Peters  
Chairman  
Match-e-be-nash-she-wish Band of Potawatomi Indians of Michigan (Gun Lake)  
2872 Mission Drive  
Shelbyville MI 49344

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### Pike East/West MOAs

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.


As part of our consultation efforts, we respectfully request your assistance in identifying:

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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

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**MICHIGAN AIR NATIONAL GUARD**  
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Lakota Hobia  
THPO  
Match-e-be-nash-she-wish Band of Potawatomi Indians of Michigan (Gun Lake)  
2872 Mission Drive  
Shelbyville MI 49344

Dear Ms. Hobia

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### Grayling West/East MOAs

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The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

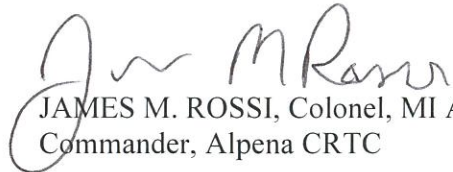
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Ronald Corn Sr.  
Chairman  
Menominee Indian Tribe of Wisconsin  
P.O. Box 910  
Keshena WI 54135

Dear Chairman Corn

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. David Grignon  
THPO  
Menominee Indian Tribe of Wisconsin  
P.O. Box 910  
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The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

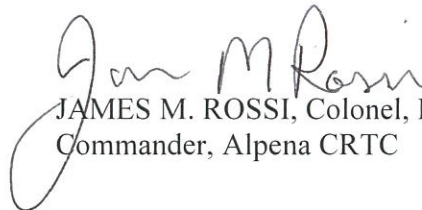
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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

Attachment:

Location Map of the Proposed Modifications to the Alpena SUA Complex



**MICHIGAN AIR NATIONAL GUARD**  
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Douglas Lankford  
Chief  
Miami Tribe of Oklahoma  
P.O. Box 1326  
Miami OK 74355

Dear Chief Lankford

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### Grayling West/East MOAs

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Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

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Vibrations to historic structures under the Grayling West and East MOA would not be a concern as the maximum sound level (Lmax) values at various points of interest under the Grayling West and East MOAs would be lower than noise levels at which vibrations could damage structures. Therefore, there would be no adverse effects on historic properties from the establishment of Grayling West and East MOAs of the Proposed Action.

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### Pike East/West MOAs

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Diane Hunter  
THPO  
Miami Tribe of Oklahoma  
P.O. Box 1326  
Miami OK 74355

Dear Ms. Hunter

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

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### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

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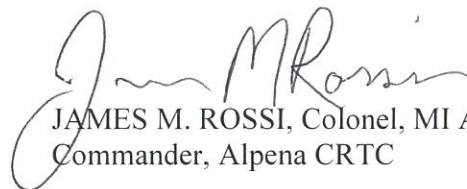
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Jamie Stuck  
Chairperson  
Nottawaseppi Huron Band of the Potawatomi Indians  
1485 Mno-Bmadzewen Way  
Fulton MI 49052

Dear Chairperson Stuck

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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. Douglas Taylor  
THPO  
Nottawaseppi Huron Band of the Potawatomi Indians  
Pine Creek Indian Reservation  
1301 T Drive S  
Fulton MI 49052

Dear Mr. Taylor

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

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Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

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Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

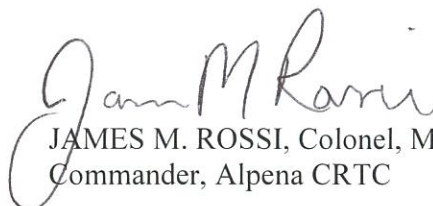
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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

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Location Map of the Proposed Modifications to the Alpena SUA Complex



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5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Rebecca Richards  
Chair  
Pokagon Band of Potawatomi Indians  
58620 Sink Road  
P.O. Box 180  
Dowagiac MI 49047

Dear Chair Richards

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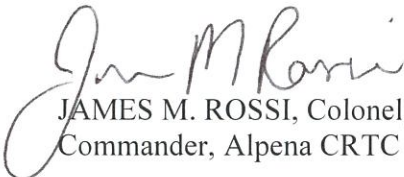
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. Matthew Bussler  
THPO  
Pokagon Band of Potawatomi Indians  
P.O. Box 180  
Dowagiac MI 49047

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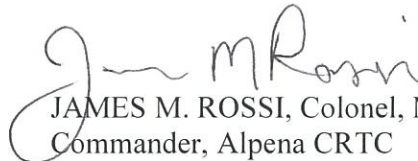
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Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Darrell Seki Sr.  
Chairman  
Red Lake Band of Chippewa Indians, Minnesota  
P.O. Box 550  
Red Lake MN 56671

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### Pike East/West MOAs

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

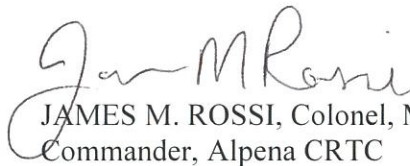
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The Draft EA and Draft FONSI are available online for public review at <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request.

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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

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Location Map of the Proposed Modifications to the Alpena SUA Complex





**MICHIGAN AIR NATIONAL GUARD**  
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Mr. Kade Ferris  
THPO  
Red Lake Band of Chippewa Indians, Minnesota  
P.O. Box 274  
Red Lake MN 56671

Dear Mr. Ferris

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB.<sup>1</sup> Even low-altitude flyovers of heavy aircraft do not reach the potential for damage.<sup>2</sup>

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### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

### Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

As part of our consultation efforts, we respectfully request your assistance in identifying:

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Sincerely

  
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Theresa Jackson  
Chief  
Saginaw Chippewa Indian Tribe of Michigan  
7070 E. Broadway Road  
Mount Pleasant MI 48858

Dear Chief Jackson

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

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No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

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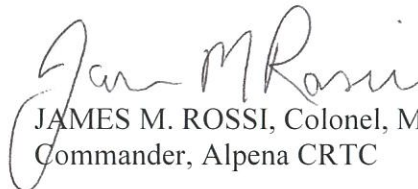
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November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Marcella Hadden  
THPO  
Saginaw Chippewa Indian Tribe of Michigan  
6650 E. Broadway Road  
Ziibiwing Center of Anishinabe Culture & Lifeways  
Mount Pleasant MI 48858

Dear Ms. Hadden

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Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

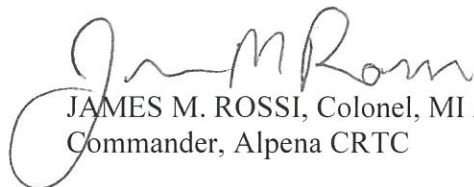
As part of our consultation efforts, we respectfully request your assistance in identifying:

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- historic properties in the APE of which we may not be aware; and/or
- your Tribe's interest in continuing consultation.

The Draft EA and Draft FONSI are available online for public review at <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request.

If you request additional consultation, the NGB will work with your office to adopt procedures that will meet your Tribe's needs and requirements for continued consultation. In order for the NGB to address your concerns in a timely manner for both the Tribe and the proposed undertaking, please respond to this letter within 30 calendar days. Please provide comments to Jennifer Harty, Cultural Resources Program Manager (A4), 3501 Fetchet Avenue, Joint Base Andrew, MD 20762-5157 or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with the subject titled as ATTN: Alpena SUA EA (please note that email is the preferred method of communication). Thank you for your assistance.

Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

Attachment:

Location Map of the Proposed Modifications to the Alpena SUA Complex



**MICHIGAN AIR NATIONAL GUARD**  
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

The Honorable Austin Lowes  
Vice-Chairman  
Sault Ste. Marie Tribe of Chippewa Indians  
523 Ashmun Street  
Sault Ste. Marie MI 49783

Dear Vice-Chairman Lowes

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

The purpose of the Proposed Action is to modify and expand Alpena CRTC's existing SUA Complex to support current and future military readiness training requirements and provide an integrated, year-round, realistic training environment. The NGB seeks to modify airspace to meet the current and evolving training requirements and contribute to the most efficient use of the airspace structure. The NGB is the lead federal agency and is currently preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental effects associated with the proposed federal action alternatives. The Federal Aviation Administration is acting as a cooperating agency.

### ***Historic Resources within the Area of Potential Effect (APE)***

No ground disturbance would occur under the Proposed Action or alternatives. As a result, no archaeological sites would be affected. Hundreds of above-ground historic properties are located below the Alpena SUA Complex and the proposed modified airspace. However, due to the scale of the APE, a table of historic properties was not developed.

### ***Determination of Effects***

#### **Grayling West/East MOAs**

Sorties within the Grayling West MOA could be flown at 500 feet above ground level (AGL), which is lower than the floor of the Grayling Temporary MOA (which is typically around 5,000 feet above mean sea level [MSL]).

Noise metrics used in this analysis include Day-Night Average Sound Level (DNL) and Onset-Adjusted Monthly Day-Night Average Sound Level (Ldnmr) measured in A-weighted decibels (dBA). The operational noise level would be 45 dBA Ldnmr and DNL. Noise impacts under the Grayling West and East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to the feel of cultural resources. Most of the operational noise levels are at or below 45 dBA Ldnmr and DNL, which is within the range of the existing ambient noise level and would not be intrusive to the feel of an historic resource.

Prior analyses on the effects of noise-generated vibrations due to aircraft flyovers conclude that damage from noise depends on the sound pressure levels and the building components. In general, damage is only possible for sounds lasting longer than one second at greater than an unweighted sound level of 130 dB.<sup>1</sup> Even low-altitude flyovers of heavy aircraft do not reach the potential for damage.<sup>2</sup>

Vibrations to historic structures under the Grayling West and East MOA would not be a concern as the maximum sound level (Lmax) values at various points of interest under the Grayling West and East MOAs would be lower than noise levels at which vibrations could damage structures. Therefore, there would be no adverse effects on historic properties from the establishment of Grayling West and East MOAs of the Proposed Action.

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### Pike East/West MOAs

Under the Proposed Action, only lateral boundaries would be realigned, and there would be no changes to the floors or ceilings of the MOAs in this area. Noise levels would increase within the Pike East MOA (from 35 dBA to 45 dBA, Ldnmr and DNL), but this would not be intrusive to the feel of historic resources that are present. There would be no change in noise levels within the Pike West MOA. Therefore, there would be no adverse effects on historic properties under the Pike East and West MOAs as a result of the proposed airspace changes.

### Steelhead MOA and Steelhead Low North/South/East MOAs

Under the Proposed Action, three new MOAs—Steelhead Low North, South, and East—would be established for low-altitude training, and there would be modifications to the lateral boundaries of the Steelhead MOA. Portions of the flights within Steelhead Low North and Steelhead Low East would be at 500 feet AGL; however, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline between May 15 and September 15. Areas underneath the three proposed Steelhead Low MOAs would be exposed to higher single-event noise levels. However, given that there would be about four sorties per day in each Steelhead Low MOA, the average noise level would be approximately 40 dBA Ldnmr and DNL. Noise impacts under the Steelhead Low North/South/East MOAs would be minimal and would not represent an increase over existing conditions sufficient to cause adverse effects to cultural resources. Similar to the effects in the Grayling West/East MOAs, the average noise level would be low, and single-event noise levels would be short in duration. As a result, there would be no adverse effects to the historic feel of historic properties from increased noise levels or to the structural integrity of historic properties due to noise-generated vibrations. Therefore, there would be no adverse effects on historic properties under the Steelhead MOA and the proposed Steelhead Low North/South/East MOAs.

### R-4201A/B

Under the Proposed Action, the ceiling of R-4201B would be raised to 23,000 feet MSL. For R-4201A, the noise level would increase by 1 dBA, from 62 dBA to 63 dBA Ldnmr. For R-4201B, the noise level would increase from 45 dBA to 57 dBA Ldnmr. Ambient noise levels would be below 65 dBA. Therefore, there would be no adverse effects on historic properties under R-4201A/B. Existing single-event noise levels would not increase under the Proposed Action and would remain below 130 dBA; therefore, no impacts on historic properties would be anticipated from noise-generated vibrations.

### VR-1601/VR-1602

The noise levels would be low (approximately 35 dBA Ldnmr and DNL), so there would be no adverse effects on historic properties.

Airspace Conclusion

The NGB has determined there will be No Adverse Effects to historic properties under the Alpena SUA Complex for the proposed undertaking.

Prior to finalizing our effects determination, we would like to solicit input regarding Tribal resources that may be present within the APE. In accordance with Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; EO 12372, Intergovernmental Review of Federal Programs; and Section 106 of the National Historic Preservation Act (36 CFR Parts 800.2, 800.3, and 800.4), the NGB would like to invite you to consult on the proposed undertakings.

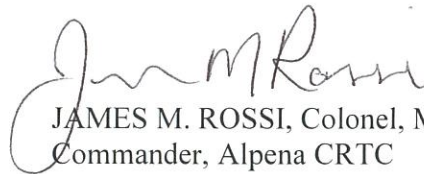
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JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

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HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER  
5884 A STREET  
ALPENA, MI 49707-8125

November 15, 2022

Colonel James M. Rossi  
Commander, Alpena CRTC  
5884 A. Street  
Alpena, MI 49707-8125

Ms. Marie Richards  
Cultural Repatriation Specialist  
Sault Ste. Marie Tribe of Chippewa Indians  
531 Ashmun Street  
Sault Ste. Marie MI 49783

Dear Ms. Richards

The National Guard Bureau (NGB) at Joint Base Andrews, Maryland, would like to initiate consultation with your tribe under Section 106 of the National Historic Preservation Act (NHPA; 54 USC 306108), and its implementing regulations (36 CFR 800).

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to analyze the potential effects to the human and natural environment, including historic and traditional cultural properties associated with the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The Alpena SUA Complex overlies part of Lake Huron and all or part of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola (see Attachment). Overall, the existing Alpena SUA Complex has a total area of 11,042 square nautical miles, and the proposed Alpena SUA Complex would have a total area of 12,675 square nautical miles. The Proposed Action would provide an additional 1,633 square nautical miles of airspace below 17,999 feet above mean sea level (MSL) for training.

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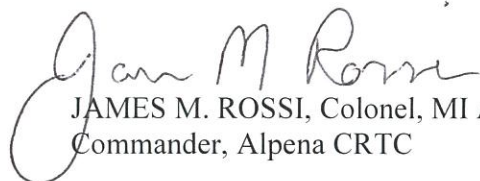
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Sincerely

  
JAMES M. ROSSI, Colonel, MI ANG  
Commander, Alpena CRTC

Attachment:

Location Map of the Proposed Modifications to the Alpena SUA Complex

**From:** [Douglas Taylor](#)  
**To:** [Mary Young](#)  
**Subject:** RE: Alpena SUA EA/Section 106  
**Date:** Friday, December 2, 2022 12:24:12 PM  
**Attachments:** [image001.png](#)

---

*External E-mail - do not click links or open attachments unless you recognize the sender*

Greetings,

Ref: Alpena SUA EA/Section 106

Thank you for including the Nottawaseppi Huron Band of the Potawatomi (NHBP) in your consultation process. From the description of your proposed project, it does not appear as if any cultural or religious concerns of the Tribe's will be affected. We therefore have no objection to the project. Of course, if the project scope is significantly changed or inadvertent findings are discovered during the course of the project, please contact us for further consultation.

Very Respectfully  
Douglas R. Taylor

Douglas R. Taylor | Tribal Historic Preservation Officer (THPO) & NAGPRA Representative

**Pine Creek Indian Reservation**

**1301 T Drive S, Fulton, MI 49052**

o: 269-704-8347 | c: 269-419-9434 | f: 269-729-5920

[Douglas.Taylor@nhbp-nsn.gov](mailto:Douglas.Taylor@nhbp-nsn.gov) | [www.nhbp-nsn.gov](http://www.nhbp-nsn.gov)



*Please consider the environment before printing this email. This message has been prepared on resources owned by the Nottawaseppi Huron Band of the Potawatomi located in the State of Michigan. It is subject to the Electronic Communications Policy of Nottawaseppi Huron Band of the Potawatomi. This communication may contain confidential (including "protected health information" as defined by HIPAA) or legally privileged information intended for the sole use of the designated recipient(s). If you are not the intended recipient, please notify the sender immediately by reply e-mail and delete all copies of this communication and attachments without reading or saving them. If you are not the named addressee you are notified that disclosing, disseminating, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited*



## Miami Tribe of Oklahoma

3410 P St. NW, Miami, OK 74354 • P.O. Box 1326, Miami, OK 74355  
Ph: (918) 541-1300 • Fax: (918) 542-7260  
www.miamination.com



Via email: myoung@marstel-day.com

December 13, 2022

Mary Young  
Marstel-Day, LLC  
5884 A. Street  
Alpena, MI 490707-8125

Re: Alpena SUA EA/Section 106– Comments of the Miami Tribe of Oklahoma

Dear Ms. Young:

Aya, kikwehsitoole – I show you respect. The Miami Tribe of Oklahoma, a federally recognized Indian tribe with a Constitution ratified in 1939 under the Oklahoma Indian Welfare Act of 1936, respectfully submits the following comments regarding the Alpena SUA EA/ Section 106.

The Miami Tribe has been provided with more information and we have concerns about the environmental impacts of the project. We request further consultation with the National Guard and involved tribes.

The Miami Tribe requests to continue to serve as a consulting party to the proposed project. In my capacity as Tribal Historic Preservation Officer, I am the point of contact for consultation. I can be reached at 918-541-8966 or by email at thpo@miamination.com.

Respectfully,

Diane Hunter  
Tribal Historic Preservation Officer



## Chippewa Ottawa Resource Authority

179 W. Three Mile Road  
Sault Ste. Marie, MI 49783  
Ph: 906-632-0043  
Fax: 906-632-1141

December 13, 2022

National Guard Bureau  
35-1 Fetchet Avenue  
Joint Base Andrews, MD 20762-5157

ATTN: Kristi Kucharek

Dear Ms. Kucharek:

I am writing on behalf of the Chippewa Ottawa Resource Authority (CORA), which is an inter-tribal natural resource management and regulatory body established by its member Tribes which reserved the rights to hunt, fish, trap and gather on the lands and in the waters ceded to the United States in the Treaty of March 28, 1836 (7 State. 491). Those Tribes are: Bay Mills Indian Community; Grand Traverse Band of Ottawa and Chippewa Indians; Little River Band of Ottawa Indians; Little Traverse Bay Bands of Odawa Indians; and the Sault Ste. Marie Tribe of Chippewa Indians.

The existence of these rights has been upheld through decisions of the Michigan Supreme Court in *People v. LeBlanc*, 399 Mich. 31, 248 NW2d 199 (1976) and of the federal court in *United States v. Michigan*, 471 F. Supp. 192 (W.D. MI 1979); *aff'd* 623 F.2d 448 (6<sup>th</sup> Cir. 1980). Most recently, the right to hunt, fish and gather on the inland portions of the ceded territory was ratified by a Consent Decree entered by the U.S. District Court for the Western District in *United States v. Michigan*, ECF 179 (Nov. 2, 2007).

This legal history appears to be unknown to the Michigan Air National Guard (MIANG), as there was no effort of which CORA and its member Tribes are aware that ensured that the Tribes were aware of the plan to expand the size of the Special Use Airspace Complex at Alpena by an additional 1,633 nautical square miles. This information was not shared in a timely manner with anyone, and it was brought to CORA's attention for the first time during its monthly meeting of December 8, 2022. CORA and its member tribes have had insufficient time to carefully review the preliminary EA, and have had even less time to formulate appropriate comment on the contents, which are due December 13, 2022.

Letter to Kristi Kucharek – National Guard Bureau  
December 13, 2022  
Alpena SUA EA

It is well known and understood by both federal and state agencies and departments that a proposed activity that might have an impact on treaty reserved rights requires direct and substantive consultation with the affected Tribes. The draft EA includes each of the Tribes on p. 82 as federally recognized Indian Tribes in Michigan; it does not recognize their right to ensure that their treaty reserved rights are not adversely impacted by the proposed governmental action through meaningful consultation.

It is for this extremely important reason that you are requested to immediately provide to CORA and its member Tribes additional time to consult with MIANG representatives on the proposed Special Use Airspace Extension.

Your immediate attention is required on this very important matter.

Sincerely,



Beverly Carrick  
Interim Executive Director





# Chippewa Ottawa Resource Authority

179 W. Three Mile Road  
Sault Ste. Marie, MI 49783  
Ph: 906-632-0043  
Fax: 906-632-1141

January 13, 2023

Ms. Kristi Kucharek  
National Guard Bureau  
3501 Fetchet Avenue  
Joint Base Andrews, MD 20762-5157

**RE: ALPENA SUA EA**

Dear Ms, Kucharek:

Please find as an attachment to this email, a public comment prepared on behalf of the Chippewa Ottawa Resource Authority (CORA). Our authority serves as an inter-tribal natural resource management and regulatory body established by its member Tribes which reserved the rights to hunt, fish, trap and gather on the lands and in the waters ceded to the United States in the Treaty of Washington on March 28<sup>th</sup> 1836. Those Tribes represented under this authority are; Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians and the Sault Ste Marie Tribe of Chippewa Indians.

We would like to acknowledge that in response to our previous request for time and opportunity to consult with the NGB regarding the proposed reconfiguration of the Alpena-SUA, that your agency has provided an extension to the public comment period. As part of our public comment, CORA has outlined numerous areas of concern pertaining to the EA for the proposed action.

Therefore, and pursuant to the baseline standards of the Memorandum on Uniform Standards for Tribal Consultation, we respectfully request that prior to any further action or entry of record of the finding of no significant impact (FONSI), that CORA and the five member tribes listed above, are provided opportunity for meaningful consultation regarding our concerns that may have an impact upon the environmental condition or preservation of treaty ceded lands and waters within the 1836 Territories.

Respectfully,

Beverly Carrick  
Interim Executive Director

Attachment

On behalf of the Chippewa Ottawa Resource Authority (CORA), the following public comment is being submitted to address areas of concern when there are proposed projects where federal Jurisdiction or a federal nexus of approval authority exists, and whereby such proposals for action may impact the environment, human condition or other Natural resources. The submitting of this comment is further in accordance with allowable EA preparations and review process requirements of the National Environmental Protection Act (NEPA).

This comment letter will comprise CORA's responses/comments to various sections of the EA in the same order as to that of the numerical sections identified within the published Draft EA. The absence of comment or reference to any sections of the Draft EA does not represent the opinion of CORA being in favor or not in-favor of any such section. This public comment will conclude with a summation.

### **1.7 Interagency and Intergovernmental Coordination for Environmental Planning and Public Involvement Process**

It is stated within the draft EA that the process for reconfiguration of this SUA began in 2018 and that preparations for the EA continued thereafter until its publication in November 2022. As this proposal is subject to NEPA regulations, agencies preparing an EA shall involve the public, state, tribal, and local governments, relevant agencies, and any applicants, to the extent practicable in preparing environmental assessments.<sup>1</sup>

It is noted that within appendix B and E there are references to letters that were destined for tribes regarding this proposed action. It is assumed those samples in Appendix B, dated June 18<sup>th</sup> 2021 sent on behalf of Colonel James Rossi, were used as means to notify tribes of this proposed action and requested tribes to offer information or comments but did not otherwise offer an opportunity to engage in consultation. The samples in Appendix E, dated Nov 15<sup>th</sup> 2022, also sent on behalf of Colonel James Rossi, are assumed to be used as a means of meeting the requirements of section 106 of the NHPA and did include an offer of opportunity for consultation. CORA did not gain notification of this proposed action until December 8<sup>th</sup> 2022. As a result, CORA had immediately requested via email, an opportunity to consult with MIANG/NGB as to the proposed SUA reconfiguration and use. This email was sent to the recipient personnel identified by NGB on 12/13/2022.<sup>2</sup> In response to the email request for consultation, NGB has alternatively extended the public comment period an additional 30-days to conclude on 1/14/2023. NGB had further stated within its response that is was unaware of the CORA Authority and had inadvertently not listed CORA on its tribal mailing lists.<sup>2</sup>

---

<sup>1</sup> 40 CFR § 1501.5(e)

<sup>2</sup> CORA email sent 12/13/2022 to: [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)

<sup>3</sup> NGB response email received 12/15/2022 from: [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)

**1.7 IICEP cont.**

As a result of NGB not being aware of CORA as an authority acting on behalf of its member tribes, CORA had not received proper notification as to this proposal. Notwithstanding subsequent NGB coordination with respect to Section 106 requirements to offer tribes an opportunity for consultation on these matters, CORA acting on behalf of its five member tribes, would request that prior to any further action on this proposal or the recording of a decision that is finding of no significant impact (FONSI), that an offer of opportunity to partake in consultation regarding the concerns outlined in the body of this public comment be provided. This request is being made pursuant to the baseline standards of the Memorandum on Uniform Standards for Tribal Consultation and consideration of NEPA requirements under 40 CFR § 1501.5(e).

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### 4.3 Air Quality

In this section the NAAQS standards for criteria pollutants and “attainment” of quality standards are used as the basis for concluding that there will be no significant impact to the air quality in the Alpena SUA (studied areas below 3000’ AGL default mixing height). What is of concern is that when considering a conclusion that there will not be any significant impact to air quality in the SUA as a result of this proposal is that NGB is using a method of calculating the presence of criteria pollutants in low airspace MOA’s that includes using the assumption that these pollutants will be mixed within the entire volume of air present in a given MOA up to 3000’ AGL. It is further stated in this EA that pollutants that are released above the mixing height typically will not disperse downward and thus will have little or no effect on ground-level concentrations of pollutants. As this has been stated, it can be assumed that NGB is not considering pollutants emitted above 3000’ AGL when calculating total criteria pollutants introduced to the air in studied areas, nor is accounting for pollutants emitted below the mixing height that may collect at lower levels within the study areas resulting in ground level air quality to become degraded. These metrics do not appear to support a conclusive means of determining real time ground level air quality in the proposed low airspace use areas as defined and tested in this section. Those areas are defined as; Proposed Grayling West MOA, R-4201A/B, proposed VRs, Pike East MOA, proposed Steelhead Low North MOA, and proposed Steelhead Low East MOA.

As an example, within the sorties proposed for the new VR-1601 and VR-1602 alone,<sup>1</sup> there are 234 proposed sorties in this airspace, at elevations AGL as low as 300’, occurring daily between the hours of 0700-2200, and in an area approximately 6-miles wide and 35 miles long. This proposed flight activity will emit criteria pollutants in this confined area at minimal elevations that would lead to an overall increase in criteria pollutants being introduced within this low level airspace. These repetitive sorties in low level airspaces will likely lead to higher concentrations of criteria pollutants present in the air at ground level. Although this may be intermittent, by including the entire airspace up to 3000’ AGL when determining the overall presence of criteria pollutants or otherwise averaging pollutant presence into the entire space, does not support the real time ground level air quality that actually exists. The same assumptions would apply to the remaining low use airspaces identified in this proposal.

In Table 2-3 of this EA, it is also suggested that the increase in sorties in this SUA would not be considered as “additive” across airspace as these missions may use more than one MOA per flight at differing AGL’s. This is suggesting that the increase in sorties does not equate to an increase of low airspace pollutants being introduced as these missions are held in more than one airspace. This same table also indicates the proposed airtime hours per MOA. However, it is not mentioned that the total time spent in the air for all proposed sorties held in the entire SUA goes from 3,656 hrs to 4,884 hrs which is an increase of 33.6%.<sup>1</sup> This would imply that criteria pollutant introductions into the entire SUA would also increase by 33.6%, just as other GHG’s would increase, noise level incidents would increase, fuel usage would increase and so on. Although not definitively established, the overall increase in pollutants from increased flight emissions may further be amplified by the introduction of differing pollutants entering the low use airspace by way of a proposed 20 percent increase in the use of Chaff and Flare deployments that are typically released below mixing height.

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<sup>1</sup> Alpena SUA EA- Table 2-3

### 4.3 Air Quality cont.

Recent studies as to the impact aviation emissions have upon air quality and their effect upon climate changes have been undertaken by agencies such as the International Civil Aviation Organization (ICAO) and others<sup>1</sup>. These studies have suggested that aviation emissions worldwide account for 2.5% of global CO<sup>2</sup> emissions and as much as a combined 3.5% of the total of the world's Radiative Forcing ie, (a measure of climate change).<sup>1</sup>

Under table 2-3 of the EA, the proposed hours needed to support the planned sorties increases from 3,656 to 4,884 hours of flight. This represents a 33.6% increase in flight time for this one SUA alone. When considering the premise of impact to climate change being attributed to aircraft emissions and then coupling this with the current administrations ambitious pledge to reduce GHG emissions 50% by the year 2030, there seems to be a disconnect in establishing these long term goals. This disconnect is further exacerbated by the administration having subjected all federal agencies to develop policies and procedures to reduce their respective carbon emissions. Although it is understood that the military has covered exceptions to many of these requirements, it should be noted that the Department of the Air Force has released its Climate Action Plan as of October 4<sup>th</sup> 2022. The USAF Climate Action Plan<sup>1</sup> defines future USAF policy as to "enhancing climate change mitigation". One of the initiatives outlined in this announcement was to "make Climate Informed Decisions" aimed in-part at "incorporating climate considerations into Department requirements, acquisition, logistics, supply chain processes and war-gaming".

As to section 4.3, CORA supports Alternative D: No Action

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<sup>1</sup> International Civil Aviation Organization(ICAO)-1999  
Sausen and Schumann-2000

<sup>2</sup> USAF Climate Action Plan/ Secretary of the Air Force Public Affairs Oct 5<sup>th</sup>, 2022

#### 4.4 Noise

In evaluating the impact of noise being introduced into the Alpena SUA reconfigured airspaces, NGB has Utilized the noise factoring metric of Onset Adjusted Monthly Day-Night Average Sound Level (Ldnmr) which is consistent with FAA measuring of airspace activities. Notwithstanding the process results from using this measurement and how it was applied to reach the finding of no significant impact, the main concern is with the increase of sorties by hours. Many of these sorties will be flown in low level airspace, some of which will be carried out over wild and scenic areas and public lands that are not typically subjected to low level noise disturbances such as low flying jets.

Of further concern is the process of "averaging" noise instances over 24hr periods within such large regions does not draw focus to the areas of potential effect (APE). As a result, this averaging effect creates EA findings that are artificially able to show that the increase in measured decibels does not trigger an impact of significance by use of the applied standards for a given region, as opposed to a focused area or APE, that will be subjected to direct impact from increased noise levels.

A finding of no significant impact should not be reached for noise impact (or any other environmental condition that is evaluated) by merely averaging out the impact to a focal point within a given area among the other un-effected areas in the same region of study. This method is not supportive of a true finding of no significant impact if what is being measured moves from a status of low effect in a pre-action condition and then following the proposed action, the measured standard is moved all the way to a status that may reach the upper or maximum ranges of acceptability, attainment, etc., for the given condition being measured.

In other words, when quantifying results of environmental impacts for any given condition such as noise, air quality, water quality etc., findings of no significant impact should not be arrived at if the measured changes due to the impacts of a proposed action create an effect that places the ambient or pre-action condition of such measured condition from a status of low or no impact, acceptable, attained, within standard, etc., to a post action measured condition resulting in a change in status that moves the measured condition towards the upper or maximum ranges of acceptable, attained, within standard or to a maximum contaminant level (MCL) etc.

The method of determining impacts of noise incidents in the low use airspaces of this SUA may in fact be doing just that. By arriving at a finding of no significant impact by way of averaging these increased high noise events into larger airspaces is not supportive of the actual impact to focal areas of a given APE. Instead it merely supports that the proposed actions would not cause the "overall average" measured noise levels to exceed the regulatory limits within an entire given region.

#### 4.4 Noise cont.

An analogous example of focal impact to these increased noise events would be by examining a rural area where a few neighboring homes are situated or within an area encompassing a cultural landscape or wild and scenic region of the SUA. At ground level, imagine a home or property owner routinely discharges rifles and shotguns one hour every day. The noise level of this gunfire at the point of discharge would be at a decibel range that exceeds the ambient noise level to the annoyance range. The noise generated near his neighboring homes or within a wild and scenic area would likely be of short duration just as that of which is associated with a passing overhead jet in the same areas. However, the noise from each incident individually would be at a decibel level range that would equate to annoyance. If each of these one hour intermittent noise events (gunfire) are then simply averaged out among the remaining 23hrs of ambient noise from the same neighborhood, landscape or wild area, it would result in an acceptable decibel range for the overall region.

As such, it is necessary to consider the decibel increases caused at the time focalized events occur, such as in the example of when a gun is fired , or in the case of low level flight, at the point in which a jet flies overhead. Then further examine the impacts to the areas subjected to such noises, not just simply average them into an overall area calculation. When considering a 33.6%<sup>1</sup> increase in flight hours throughout the SUA which is inclusive of AGL flights of as low as 300', there will be a marked increase in focalized disruption ie, noise incidents. Each of these incidents, specifically lower level sorties, would likely be at a high decibel level that would equate to annoyance within the ground level residential areas, cultural landscapes and wild areas throughout the SUA.

The wider dispersal and resulting increase in low level flight patterns will most notably effect changes of character within the underlying rural residential properties, state and federal forests and areas of significant cultural landscapes including wild and scenic rivers. The increase in these specific noise events may further impact area wildlife. It has been indicated in this EA that wildlife within the SUA is likely habituated to pre-flight and post-flight overhead aircraft activity. However, is has not been indicated as to whether or not supporting studies looked at the type of aircraft activity patterns ie, sustained or repetitive low level flights and whether or not this may effect wildlife activities or their presence and or avoidance of such areas where low level flight is routinely taking place. The fact that these increased noise events caused by increased flight hours and low level flight patterns can be simply "averaged" into a total Ldnmr metric by evaluating a 24hr period by geographic location, and then be used as a method of determining that no significant impacts will arise from noise being introduced into these APE's, is not a suitable method of reaching such a conclusion.

As to section 4.4, CORA supports Alternative D: No Action

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<sup>1</sup> Alpena SUA EA-table 2-3

## 4.5 Land Use

Land uses under this proposal are not typical in that this proposal is for the reconfiguration of already existing airspace inclusive of military air strips and training centers. The concerns with the use of the underlying lands mainly comes from the anticipated and proposed increase in the use of Chaff and Flare deployments above the lands within the perimeter of this SUA which will likely contribute to an increase in introduction of pollutants into the environment. Additionally, the increase in low level flight patterns ie, noise, vibrations and air quality deficits within the SUA will also directly impart a change in the feeling of use and character during human interactions and perception within the wild and scenic lands and areas of significant cultural landscape.

Notwithstanding the knowledge of active use of both Chaff and Flare in the already existing areas of the SUA, and that seasonal fire restrictions are routinely imposed and would continue, there is concern that the reported 20 percent increase in use of both Chaff and Flare will contribute to a further introduction of pollutants. Two of the known pollutants are namely aluminum (Al) and styrenes to which are both components of Chaff. It is well known that Chaff contains fibrous materials coated in aluminum. Studies have shown that the bio-availability of aluminum in water can result in negative impacts to fish and other aquatic life as it is not considered an essential component to aquatic life.<sup>1</sup> Aluminum can be damaging to the growth rates, re-productive rates and mortality of fishes. Many streams and rivers occupy the lands underlying the SUA are an important resource to the recreational, economic and cultural uses of the public. These areas of land provide habitat and refuge for not only terrestrial life but also provide spawning and rearing habitat for fishes that are particularly important in supporting tribal subsistence, commercial fishing and cultural activities throughout ceded territories that underlie this SUA. This comment is not intended to be construed as speculation as to how much greater of an introduction of pollutants will occur as a result of the proposed increase in Chaff beneath the Alpena SUA. Rather, this comment is being stated to highlight the fact that there is not enough information available as to the long term effects Chaff pollutants may have upon humans or the environment.<sup>2</sup>

In other words, with the increased use of both Chaff and Flare, there will be a resulting increase in the introduction of cast off aluminum, styrene and likely other pollutants into the environment of the lands underlying the SUA. Just as the increased emissions from longer flight times in the SUA will likely contribute to greater concentrations of pollutants settling on the land and waters. With respect to Chaff, studies have suggested that there is not enough data as to the long term effects of pollutants introduced by deployment of Chaff or Flares that may effect the environment or humans. As such, further research has been indicated (ARMY, 1992; USAF, 1997; USGAO, 1998).

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<sup>1</sup> EPA Final 2018 Fact Sheet-Aquatic Life Ambient Water Quality Criteria for Aluminum in Fresh Water

<sup>2</sup> Reid Report-USGAO, 1998; USAF, 1997; NRL 1999



#### 4.5 Land Use cont.

As to styrenes, these are also known to be a component of Chaff. It is also known that styrene is made from petroleum products and can be used to make plastics. The degrading and weathering that takes place with plastics, including styrenes, will contribute to a greater presence of micro or nano plastics entering the lands and waters underlying the SUA. In the environmental community, and under the Clean Water Act, micro-plastics are considered a contaminant of emerging concern (CEC). As such, there is still much to be learned about the long term effects of micro-plastics. Of the impacts that are already known, there are studies that indicate micro-plastics can have a negative effect on aquatic life, specifically to fish and that they also have the structural composition that lends to the ability to support bacteria growth and provide ability to serve as a vector in the transporting of bacteria within an ecosystem or host.<sup>1</sup> With the presence of this knowledge, it does not make sense to introduce additional micro-plastics to the lands and waters of an ecosystem that supports the world's largest body of freshwater, and it makes even less sense to compromise a fishery that is of significant importance to both the recreational interests of the public, and even more so to the interests of tribal treaty rights associated with harvesting and fishing.

This proposed action by way of increasing the introduction of pollutants to land surfaces holding tributaries to the waters of the Great Lakes further contravenes the stated purpose of Article 2, Section (c) of the Great Lakes Water Quality Agreement (GLWQA). As stated; The purpose of this Agreement is to restore and maintain the chemical, physical, and biological integrity of the Waters of the Great Lakes; (c) eliminate or reduce, to the maximum extent practicable, environmental threats to the Waters of the Great Lakes.

Finally, as to the land use impacting the expectations of character or feeling associated with changes to environmental conditions presented in culturally significant landscapes, public lands or wild and scenic rivers, these conditions would be subject to negative changes as a result of this proposal. Essentially the proposal will introduce 33.6% more flight hours, many of which are at low level altitudes that will almost certainly cause a change to the feeling associated with such land uses that are typically not associated with intrusive high level noises, vibrations and ground level air quality deficits that will likely result from the increased activities identified within this proposal.

As to section 4.5, CORA supports Alternative D: No Action

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<sup>1</sup> Effects of Micro-plastics on Fish and Human Health; S. Bhuyan 2022

## 4.7 Biological Resources

The proposed action as it pertains to the affects to Biological resources in this section fall largely upon the consultation of the USFWS as it may pertain to threatened or endangered wildlife species, insects or vegetation. However, as eluded to earlier in this public comment, a concern with implementing this proposed action would be to the disruption of routine or normal wildlife activities. The increase in flight hours and low use airspace areas under this proposal will result in increased noise, vibrations, air quality changes and the further introduction of criteria pollutants that may further impact area wildlife, insects or fish (as previously mention in section 4.5 above).

It has been indicated in this EA that wildlife within the SUA is likely habituated to pre-flight and post-flight overhead aircraft activity. However, not explained is whether or not supporting studies looked at the type of aircraft activity patterns ie, sustained or repetitive low level flights and whether or not this may effect wildlife activities or their presence and or avoidance of such areas where low level flight is routinely taking place. The absence of this consideration may not only effect wildlife activity but could also impair harvest activities for migratory birds and other inhabitant birds or game.

Further as to migratory birds, and notwithstanding that the NGB recognizes the physical location of the SUA is located within a great lakes pattern of the Mississippi migratory bird flyway and has enacted mitigation programs to avoid bird collisions such as the BASH program, this EA does not fully address seasonal migratory bird activity in the SUA. The proposed action sets forth a 1-mile restriction of shoreline flight patterns below 1500' AGL within its Steelhead low airspace during the period of May 15<sup>th</sup> to Sept 15<sup>th</sup>. This is stated to help reduce encounters with shorebirds using these areas. The concern is that *migratory* waterfowl using these same areas and specifically the Saginaw Bay and its embayments, use these areas as daytime staging areas in early spring and early fall as seasonal migration takes place. These waterfowl will congregate by the thousands and will transition daily in and out of these bays underlying the Steelhead low airspace. The waterfowl transitions may be North or South for several days or weeks at a time dependent upon weather, time of year and available feed. The same migratory birds will also transit from land to water each day during the daylight and dark hours. Although the EA recognizes an enhanced presence of migratory birds in the spring and fall, the focus is on high elevation flights and does not account for the presence of staging waterfowl in these low use airspaces during peak times.

As to section 4.7, CORA supports Alternative D: No Action

## 4.8 Cultural Resources

CORA is of the understanding that as used in this section of the EA, cultural resources may more typically be represented by historical structures, archeological or religious sites and the like. As to the significance of 1836 treaty ceded territories, CORA considers these treaty ceded lands and waters as a significant and traditional cultural landscape and equally considers the resources within them as culturally significant, to which both are the basis of supporting Tribal customs, privileges, lifestyles and the economies of Tribal communities.

Traditional cultural properties can include;

Archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of cultural identity and traditions.<sup>1</sup>

A large portion of the lands and waters of the 1836 ceded territory is underlying the Alpena SUA. Any proposed action by federal, state or other agencies or entities that may result in an effect that limits exercising the Treaty Rights to harvest, use or access these areas or otherwise causes an environmental impact or threat to the preservation of these lands, waters and its fishery are matters of paramount importance. The Alpena SUA proposal is an action that may cause an immediate or long term threat to the environment or changes in conditions or feeling within this traditional cultural landscape underlying the airspaces of the SUA.

As to section 4.8, CORA supports Alternative D: No Action

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<sup>1</sup> Section 106, NHPA

## 4.9 Socioeconomics and Environmental Justice

In this section, CORA would like to point out that by enacting a proposal such as the Alpena SUA that situates such airspace over any portion of the 1836 ceded territory is of concern for the impact of environmental consequence and change to lands, waters, fishery, culturally significant landscapes and reserved treaty rights. That being said, in this section the primary concern is environmental justice and so, it is offered that the administration and particularly the offices of the EPA and others have developed policy and directives aimed at considering environmental consequences that disproportionately impact minorities or person of low economic status. Members of our five tribes are classified as a minority population, some of which may also fall under the poverty level for the census areas they live in that are underlying the SUA. When considering these factors and how this will apply to the proposed action, we offer the following;

The proposed footprint ie, map of the current Alpena SUA, when compared to the footprint of the reconfigured Alpena SUA, indicates they are essentially the same as to exterior boundaries as is shown in EA Figures 1-1 and 2-1 respectively. When determining the level of impact to those persons living in areas underlying the proposed SUA, these sectors or census tracts have been evaluated to determine as to whether or not there are disproportionate effects upon minority or low income persons living in the areas underlying this SUA.

What has not been examined by NGB in arriving at a determination of no significant impact ie, disproportionate effect to minority or low income populations, is whether or not *other* comparable areas would have the same or similar populations in the categories of minority or low income persons residing within these comparable areas that could be hypothetically examined as if the SUA was situated above them.

As an example to test this concern, consider if one were to use the footprint ie, boundary map of the already existing SUA and were to transpose this boundary map to the western half of norther lower Michigan and then re-assess the economic and minority characteristics of the new underlying region and determine whether this would indicate similar findings of no significant or disproportionate effects to minority or low income persons in a similar or equal manner as it indicated in the current SUA.

By use of this example, one must imagine a land based hinge point consisting of the north/south running lineal line that makes up the far western border of what is known as Grayling Temporary MOA. Then by flipping the entire footprint ie, map to the west, as if turning a page in a book, the resulting underlying areas would then encompass an entirely different socioeconomic sector of northern Michigan. As an aside, the values of property lying underneath this hypothetical westerly SUA has not been studied as part of this EA or as part of this example. However, when considering the infrastructure and economies of Northwestern Lower Michigan, it can reasonably be assumed that the properties lying under the Alpena SUA as it exists today are of significantly less overall value than that of the property underlying the airspace of the example illustrated here, otherwise indicating a likely different income level in the populations of the two areas compared.

#### 4.9 Socioeconomics and Environmental Justice, cont.

To further illustrate this example, a similar data set<sup>1</sup> as was used by NGB in determining socioeconomic standing of the residents within the regions underlying the current SUA was used here to examine one portion of the proposed SUA identified as VR-1601 and VR-1602. Under the current SUA proposal these proposed VR's allow flights as low as 300' AGL and cover an airspace that is 6-miles wide and 35 miles long. Underlying VR-1601 and VR-1602 are the counties of Otsego, Montmorency and Alpena. Of lands lying underneath the airspace of the hypothetical example route situated to the western side of northern lower Michigan and representing a "mirror image" of VR-1601 and VR-1602, this area would cover the same width, length and portray the same flight path.

The effected census tracts examined under this hypothetical airspace example would then be located in portions of Otsego and Charlevoix counties. Census information by census tract were used to determine socioeconomic status of the populations living underneath the proposed and reconfigured Alpena SUA. For purposes of this example, similar reports were used from the Census Reporter.org Website. The land areas under the proposed VRs of the current SUA were examined by their respective census tracts related to incomes for those persons living under both VR-1601 and VR-1602. These census tracts were then compared with census tracts from areas from within the hypothetical airspace that correspond with lands lying under the airspaces used to represent a westerly and hypothetical version of VRs-1601 and 1602.

For purposes of simplifying this example, data obtained from the Otsego county census tracts were removed from both the original SUA and the hypothetical westerly example, as they represent the same land areas of Otsego county and the same economic indicators as both the current SUA proposal and the hypothetical airspace, as they both occupy overlapping airspace near the starting point of VR 1601 and 1602.

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<sup>1</sup>Census Reporter.org

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## 4.9 Socioeconomics and Environmental Justice, cont.

The following table shows the data obtained and used to determine per capita income and the percentage of persons under the Michigan poverty level in the areas examined. These results were then compared for both the original census tracts used for lands under the existing proposal for VR-1601 and VR-1602, and the census tracts used for lands underlying the hypothetical westerly “mirror image” pattern of VR-1601 and VR-1602.

**Table 4.9**

### Existing Alpena SUA/ Proposed VR-1601 and 1602

County	C-Tract	Per Cap	% Below Poverty
Montmorency	CT 9101	\$25,300	17.1%
Montmorency	CT 9102	\$25,300	15.9%
Alpena	CT 1.01	\$27,700	15.6%
Michigan	-	\$31,700	13.0%
U.S.	-	\$34,100	10.5%
Combined below Poverty Average by Census Tracts			16.2%

### Hypothetical Example of VR-1601 and 1602

Charlevoix	CT	8	\$33,300	6.2%
Charlevoix	CT	10	\$32,000	11.4%
Charlevoix	CT	12	\$35,400	6.6%
Michigan	-	-	\$31,700	13.0%
U.S.	-	-	\$34,100	10.5%
Combined below Poverty Average by Census Tracts				8.6%

Note : All Per capita incomes are rounded to nearest 100<sup>th</sup>

(Census data derived from 2021 values presented on Census Reporter.org)

The combined average percentage of those persons residing under the airspace of the proposed VR-1601 and 1602 who live below the Michigan Poverty level is 16.2 percent. When compared to the same geographical region on the hypothetical western, or mirror opposite side of northern lower Michigan, residents living in this area under the mirror opposite route of VR-1601 and 1602, are less impoverished with an average rate of 8.6 percent of these residents below the Poverty Level in Michigan.

As to section 4.9, CORA supports Alternative D: No Action

## 5. Cumulative Effects

In addition to this proposal, the early stages of proposals for the lease expansion of MI/ANG Camp Grayling and what has been eluded to in this section as a proposal to modernize the Overwater ranges encompassed within the waters of multiple Great Lakes areas are likely to create or exacerbate the concerns outlined in this public comment and as such remain an ongoing concern.

This pursuit of the expansion of use or alterations to land, air and waters within territories lying in or above 1836 Treaty Ceded lands and waters that can impact Reserved Treaty Rights or cause potential for environmental harm or change will be of future concern and must be treated as matters that are subject to necessary and meaningful consultation.

### Final Summation

It has been demonstrated throughout this EA, that there is simply not enough information available or in some cases, there are gaps in the knowledge necessary to fully understand or evaluate long term effects of this proposal. This lack of information or knowledge must be replaced with and supported by long term data sets or studies that are necessary to proclaim or to otherwise make determinations that “no significant impacts” are known or found as they may pertain to Air Quality, Noise impacts, Land, Noise, Water and Biological Resources, Cultural Resources, and Environmental Justice considerations. The presence of a Draft FONSI is indicative to the fact that this will become the record of decision before these gaps in knowledge will ever be filled.

It should also be noted that there is an absence of alternatives explored that would consider options to provide the needed expanded airspace or training venues in other areas. Alternatives should have been explored that utilize airspace or lands that are not situated over the world’s largest source of freshwater lakes, do not occur over the lands and waters containing scenic and wild rivers, do not occur over large tracts of public forests and do not lie within traditional cultural landscapes or lands ceded to Tribes under the various treaties with the United States.

It is for these reasons and the responses provided in the body of this public comment, that CORA and its five member tribes cannot support the proposed action to expand and reconfigure the Alpena SUA, and would elect the **No Action** alternative in all areas of this EA.

Respectfully submitted,



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**NATIONAL GUARD BUREAU**  
3501 FETCHET AVENUE  
JOINT BASE ANDREWS 20762-5157

30 October 2023

**MEMORANDUM FOR RECORD**

**From:** National Guard Bureau (NGB) / Air National Guard (ANG)  
A4AM Plans and Requirements  
Air National Guard Readiness Center

**Subject:** Limited Level Tribal Consultation Brief for Alpena Special Use Airspace Complex  
Environmental Assessment

Pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321 et seq.), the NGB is preparing an Environmental Assessment (EA) for a proposed undertaking that will analyze potential effects to human health and the natural environment, including historic and traditional cultural properties. The purpose of the undertaking is to modify the Alpena Combat Readiness Training Center's (CRTC) Special Use Airspace (SUA) supporting military readiness requirements that would contribute to the overall provision of an integrated, year-round, realistic training environment. The proposed modifications are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure. The Alpena SUA Complex overlies part of Lake Huron and all or parts of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola.

In June of 2023, the Air National Guard (ANG), with logistical support and assistance from the United States Army Corps of Engineers (USACE) Tribal Nations Technical Center of Expertise (TNTCX), held four separate, identical consultation meetings. The purpose of these consultation meetings was to engage with federally recognized Tribes that have interest or concerns regarding the modification and addition of airspace within the Alpena Special Use Airspace (SUA) Complex and to strengthen ANG communications and relationships with Tribal partners in Michigan. Sixteen federally recognized Tribes and one Treaty Organization—the Chippewa Ottawa Resource Authority (CORA)—were invited to participate.

As outlined in Department of Defense Instruction (DoDI) 4710.02-*Interaction with Federally Recognized Tribes*, Air Force Manual (AFMAN) 32-7003, and Executive Order (EO) 13175 – *Consultation and Coordination with Indian Tribal Governments*, consultation between federal agencies and Tribal governments (and their representatives) have government-to-government status. Out of respect for Tribal sovereignty and to uphold guidance provided by the DoD and the Department of the Air Force (DAF), the ANG does not provide specific details of government-to-government consultation for public consumption unless such details are approved by the Tribes.

In an effort to respond to comments made by the Michigan State Historic Preservation Officer (SHPO) in a letter dated 4 January 2023, however, the ANG can provide controlled unclassified information relating to three issues raised by the SHPO without disclosing culturally sensitive information and violating federal trust responsibilities.

1. In four consultation meetings held in June 2023, the ANG and Alpena CRTC provided details of the proposed Alpena SUA Complex modification and each Tribe was provided with web access to the Draft Environmental Assessment that was released for public review in November 2022.



Tribal representatives were provided with the opportunity to ask questions relating to the action either in the meeting or in separate email/phone communications.

2. Many Tribal representatives singled out one specific location underneath the proposed SUA as an area of concern. As a result of consultation, Alpena CRTC will program aircraft flight instruments to maintain a three (3) nautical mile radius buffer from the identified location to avoid overhead flights. The Alpena CRTC will also limit flights during certain times of the year based on information provided during consultation.
3. The ANG, Alpena CRTC, and Tribal representatives agreed at the conclusion of consultation to establish a communications channel for activities resulting from the implementation of the SUA Complex.

Prepared by:



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NEPA Program Manager  
NGB/A4AM Plans and Requirements  
Air National Guard Readiness Center

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## Appendix G

### Public Review of the Draft Environmental Assessment

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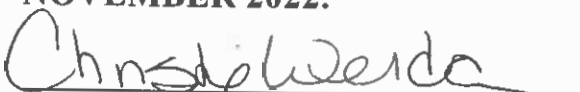
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Justin A Hinkley, Publisher  
Sworn to before me and signed in  
my presence, this **30<sup>th</sup>** day of  
**NOVEMBER 2022**.

  
Christie Werda, Notary Public for  
Alpena County, Acting in Alpena County.  
Notary Expires: 7/30/2028.

**Notice of Availability and Notice of  
No Adverse Effects on Historic Properties**

Draft Environmental Assessment and Draft Finding of No Significant  
Impact Modification and Addition of Alpena Special Use Airspace Complex

The Air National Guard has prepared a Draft Environmental Assessment (EA) on the potential impacts associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The proposed modifications and additions to the Alpena SUA Complex are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure. No construction or ground-disturbing activities would occur. The Proposed Action, two action alternatives, and the No Action Alternative were evaluated in the EA. Detailed analysis of the potential impacts to various resource areas was conducted and found that the Proposed Action and alternatives would result in no significant impacts to the environment, supporting a Finding of No Significant Impact (FONSI). An Environmental Impact Statement is not required.

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The Draft EA and Draft FONSI are available for review and comment for 30 calendar days on the Alpena Combat Readiness Training Center website (<https://www.alpenacrtc.ang.af.mil/>) and in paper copy at the following libraries:

- Alpena County George N. Fletcher Public Library, 211 N 1st Ave, Alpena, MI
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County of Alpena) ss:

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**DECEMBER 2022** and the last of said  
Publication was on the **15TH** day of  
**DECEMBER 2022**. And further  
deponent saith not.

  
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Sworn to before me and signed in  
my presence, this **16<sup>th</sup>** day of  
**DECEMBER 2022**.

  
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STATE OF MICHIGAN

County of Crawford

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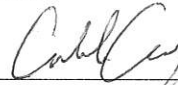
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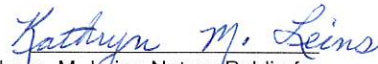
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Caleb Casey of said County and State, being duly sworn, deposes and says, that he is the general manager of THE CRAWFORD COUNTY AVALANCHE, a newspaper, published and circulated in said County of Crawford, and having a general circulation in said County and elsewhere, that the annexed notice was correctly published in the regular and entire issues of every number of said paper for one week, and that the first publication of said notice was made in said newspaper on the 17th day of November, 2022, in said newspaper; that during publication of said notice he was and now is the Managing Editor of said newspaper, and has a personal knowledge of the facts herein set forth.



Caleb Casey, Managing Editor  
Dated this 8th day of  
December, 2022

Subscribed and sworn to before me  
this 8th day of December, 2022



Kathryn M. Leins Notary Public for  
Midland County  
Acting in Crawford County  
My commission expires  
January 27, 2023

# AFFIDAVIT OF PUBLICATION

STATE OF MICHIGAN

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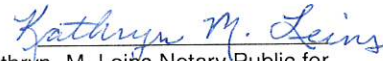
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Caleb Casey, Managing Editor  
Dated this 20th day of January, 2023

Subscribed and sworn to before me  
this 20th day of January, 2023



Kathryn M. Leins Notary Public for  
Roscommon County  
Acting in Crawford County  
My commission expires  
January 27, 2029

# AFFIDAVIT OF PUBLICATION

STATE OF MICHIGAN

SS

County of Crawford

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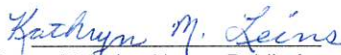
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Caleb Casey, Managing Editor

Dated this 20th day of January, 2023

Subscribed and sworn to before me  
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Kathryn M. Leins Notary Public for  
Roscommon County  
Acting in Crawford County  
My commission expires  
January 27, 2029



# LOCALiQ

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The Monroe News | Holland Sentinel  
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PO Box 630491 Cincinnati, OH 45263-0491

## **PROOF OF PUBLICATION**

Mary Young  
Mary Young  
Marstel-Day, LLC  
10708 Ballantraye DR  
Fredericksburg VA 22407-4701

STATE OF MICHIGAN, COUNTY OF OTSEGO

The Gaylord Herald Times, a newspaper published in the English language for the dissemination of local or transmitted news, which is a duly qualified newspaper, and that annexed hereto is a copy of a certain order taken from said newspaper in which the order was published.

Published in the issue dated:  
12/16/2022

Sworn to and subscribed before on 12/16/2022

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Legal Clerk

*D. Roberts*  
*Kathleen Allen*

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The Draft EA contains an assessment of cultural resources and a finding that there would be no adverse effect on historic properties, as defined in 36 CFR 800.5, caused by the undertaking. The National Guard is providing notice of this proposed finding to the public and all consulting parties, defined in 36 CFR 800.2, including the state historic preservation officer, Native American tribes, and representatives of local governments. Pursuant to 36 CFR 800.5(c)(2), if any consulting party disagrees with the proposed finding, the disagreement and the reasons for such disagreement must be raised within 30 days.

The Draft EA and Draft FONSI are available for review and comment on the Alpena Combat Readiness Training Center website (<https://www.alpenacrtc.ang.af.mil/>) and in paper copy at the following libraries:

Alpena County George N. Fletcher Public Library, 211 N 1st Ave, Alpena, MI

Devereaux Memorial Crawford County Library, 201 Plum St, Grayling, MI

Rogers City Library, 181 E Erie St, Rogers City, MI

Atlanta Branch (Montmorency Headquarters), 11901 Haymeadow Rd, Atlanta, MI

Hillman-Wright Branch, 610 Caring St, Hillman, MI

Robert J. Parks Library, 6010 N Skeel Ave, Oscoda, MI

Harrisville Branch (Alcona Headquarters), 312 W Main St, Harrisville, MI

Tawas City Library, 208 North St, Tawas City, MI

Otsego County Main Library, 700 S Otsego Ave, Gaylord, MI

Bad Axe Area District Library, 200 S Hanselman St, Bad Axe, MI

Port Austin Township Library, 114 Railroad St, Port Austin, MI

Harbor Beach Public Library, 105 N Huron Ave, Harbor Beach, MI

Sebewaing Township Library, 41 N Center St, Sebewaing, MI


Written comments should be sent to the National Guard Bureau, Attn: Ms. Kristi Kucharek, 3501 Fetchet Ave, Joint Base Andrews, MD 20762-5157 or emailed to [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with subject ATTN: ALPENA SUA EA. Comments must be received by January 14, 2023, for consideration in the Final EA.

# AFFIDAVIT OF PUBLICATION

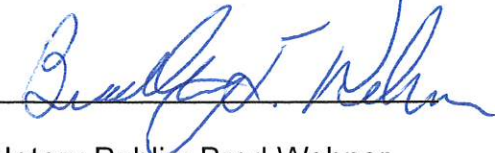
STATE OF MICHIGAN  
County of Huron

Cathy Bott, being duly sworn, deposes and says that she is one of the editors, publishers of the Huron Daily Tribune, a newspaper published and circulated in said County of Huron, and the annexed notice was duly printed and published in said newspaper on the following dates:

November 15, 2022, November 29, 2022

  
Cathy Bott

Subscribed and sworn before  
me, this 29th day of November, 2022



Notary Public: Brad Wehner  
State of Michigan, County of Huron  
My Commission Expires: August 30, 2023  
(Acting in the County of Huron)

Notice of Availability and  
Notice of No Adverse Effects on Historic Properties

Draft Environmental Assessment and Draft Finding of No Significant Impact  
Modification and Addition of Alpena Special Use Airspace Complex

The Air National Guard has prepared a Draft Environmental Assessment (EA) on the potential impacts associated with modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex. The proposed modifications and additions to the Alpena SUA Complex are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure. No construction or ground-disturbing activities would occur. The Proposed Action, two action alternatives, and the No Action Alternative were evaluated in the EA. Detailed analysis of the potential impacts to various resource areas was conducted and found that the Proposed Action and alternatives would result in no significant impacts to the environment, supporting a Finding of No Significant Impact (FONSI). An Environmental Impact Statement is not required.

The Draft EA contains an assessment of cultural resources and a finding that there would be no adverse effect on historic properties, as defined in 36 CFR 800.5, caused by the undertaking. The National Guard is providing notice of this proposed finding to the public and all consulting parties, defined in 36 CFR 800.2, including the state historic preservation officer, Native American tribes, and representatives of local governments. Pursuant to 36 CFR 800.5(c)(2), if any consulting party disagrees with the proposed finding, the disagreement and the reasons for such disagreement must be raised within 30 days.

The Draft EA and Draft FONSI are available for review and comment for 30 calendar days on the Alpena Combat Readiness Training Center website (<https://www.alpenacrto.ang.af.mil/>) and in paper copy at the following libraries:

Alpena County George N. Fletcher Public Library, 211 N 1st Ave, Alpena, MI  
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Rogers City Library, 181 E Erie St, Rogers City, MI  
Atlanta Branch (Montgomery Headquarters), 11901 Haymeadow Rd, Atlanta, MI  
Hillman-Wright Branch, 610 Caring St, Hillman, MI  
Robert J. Parks Library, 6010 N Skeel Ave, Oscoda, MI  
Harrisville Branch (Alcona Headquarters), 312 W Main St, Harrisville, MI  
Tawas City Library, 208 North St, Tawas City, MI  
Otsego County Main Library, 700 S Otsego Ave, Gaylord, MI  
Bad Axe Area District Library, 200 S Hanselman St, Bad Axe, MI  
Port Austin Township Library, 114 Railroad St, Port Austin, MI  
Harbor Beach Public Library, 105 N Huron Ave, Harbor Beach, MI  
Sebawaing Township Library, 41 N Center St, Sebawaing, MI


Written comments should be sent to the National Guard Bureau, Attn: Ms. Kristi Kucharek, 3501 Felchel Ave, Joint Base Andrews, MD 20762-5157 or emailed to [NGBA4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGBA4.A4A.NEPA.COMMENTS.Org@us.af.mil) with subject ATTN: ALPENA SUA EA. Comments must be received by December 14, 2022, for consideration in the Final EA.

# AFFIDAVIT OF PUBLICATION

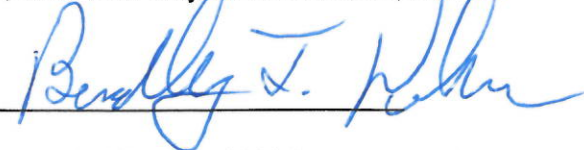
STATE OF MICHIGAN  
County of Huron

Dan Chalk, being duly sworn, deposes and says that he is one of the editors, publishers of the Huron Daily Tribune, a newspaper published and circulated in said County of Huron, and the annexed notice was duly printed and published in said newspaper on the following dates:

December 15, 2022

  
\_\_\_\_\_  
Dan Chalk

Subscribed and sworn before  
me, this 15th day of December, 2022

  
\_\_\_\_\_

Notary Public: Brad Wehner  
State of Michigan, County of Huron  
My Commission Expires: August 30, 2023  
(Acting in the County of Huron)

**Public Comment Period Extended**  
**Notice of Availability and Notice of No Adverse Effects on**  
**Historic Properties**

Draft Environmental Assessment and Draft Finding of No Significant Impact  
Modification and Addition of Alpena Special Use Airspace Complex

The Air National Guard has prepared a Draft Environmental Assessment (EA) on the proposed request associated with modification, expansion, and relocation of the Alpena Special Use Airspace (SUA) Complex. The proposed modifications and additions to the Alpena SUA Complex are designed to meet current and emerging training requirements and contribute to the most efficient use of the airspace structure. No construction or ground disturbing activities would occur. The Proposed Action, taken either individually, and the No Action Alternatives are evaluated in the EA. Detailed analysis of the potential impacts to various resource areas was conducted and found that the Proposed Action and alternatives would result in no significant impacts to the environment, supporting a Finding of No Significant Impact (FONSI). An Environmental Impact Statement is not required.

The Draft EA contains an assessment of cultural resources and a finding that there would be no adverse effect on historic properties, as defined in 36 CFR 600.5, caused by the undertaking. The National Guard is proposing minor changes to the public and all interested parties, defined in the CFR 600.7, including the state historic preservation officer, Native American tribes, and representatives of local governments. Pursuant to 36 CFR 600.5(c)(2), if any consulting party disagrees with the proposed finding, the disagreement and the reasons for such disagreement must be raised within 30 days.

The Draft EA and Draft FONSI are available for review and comment on the Alpena Combat Readiness Training Center website (<https://www.alpenaertc.org/erms/>) and in paper copy at the following libraries:

- Alpena County Library, 42 Fletcher Field Dr., Alpena, MI
- Alpena County Library, 201 Park St., Alpena, MI
- Alpena County Library, 131 E. 4th St., Alpena, MI
- Alpena County Library, 11501 Hamdenwood Rd., Alpena, MI
- Hillman-Wright Branch, 815 Lansing St., Hillman, MI
- Hillman-Wright Branch, 6019 Grand Ave., Cheboygan, MI
- Hillman-Wright Branch (Alpena Headquarters), 312 W. Main St., Hamden, MI
- Traverse City Library, 204 North St., Traverse City, MI
- Charlevoix County Library, 300 N. DuSable Ave., Charlevoix, MI
- East Area Branch Library, 200 S. Hamden St., East Area, MI
- Port Austin Township Library, 114 Railroad St., Port Austin, MI
- Harbor Beach Public Library, 170 N. Harbor Ave., Harbor Beach, MI
- Isabella County Library, 41 N. Center St., Isabella, MI

Written comments should be sent to the National Guard Bureau, Attn: A4, Kresh-Kochanek, 3501 Fletcher Ave., Joint Base Andrews, MD 20722-5157 or emailed to [NGR.A4.A4@AFMIL.MIL](mailto:NGR.A4.A4@AFMIL.MIL). Comments must be received by January 14, 2023, for consideration in the Final EA.



**Draft EA Distribution List**

Federal Elected Officials

The Honorable Debbie Stabenow  
Senator

The Honorable Gary Peters  
Senator

The Honorable Jack Bergman  
1st District Representative

The Honorable John Moolenaar  
4th District Representative

The Honorable Dan Kildee  
5th District Representative

The Honorable Lisa McClain  
10th District Representative

State and Local Elected Officials

The Honorable Gretchen Whitmer  
Governor

The Honorable Mary Catherine Hannah  
County Administrator  
Alpena County Board of Commissioners

The Honorable Shelly Pinkelman  
Chair  
Crawford County Board of Commissioners

The Honorable John Wallace  
Chairperson  
Cheboygan County Board of Commissioners

The Honorable Carl Altman  
Chairperson  
Presque Isle County Commissioners

The Honorable Ken Glasser  
Chairperson  
Otsego County Board of Commissioners

The Honorable Robert Stacy  
Chairperson  
Montmorency County Board of  
Commissioners

The Honorable Kyle Yoder  
Chair  
Oscoda County Board of Commissioners

The Honorable Adam Brege  
Chairman  
Alcona County Board of Commissioners

The Honorable Donald Jay O'Farrell  
Chairman  
Iosco County Board of Commissioners

The Honorable Harold Woolhiser  
Chairman  
Arenac County Board of Commissioners

The Honorable Sami Khoury  
Chairman  
Huron County Board of Commissioners

The Honorable Jenny David  
Chairperson  
Ogemaw County Board of Commissioners

The Honorable Thomas Bardwell  
Chairperson  
Tuscola County Board of Commissioners

The Honorable Jon Block  
Chairperson  
Sanilac County Board of Commissioners

The Honorable Bob Schneider  
Chairman  
Roscommon County Board of Commissioners

Federal Agencies

Ms. Carrie Tansy  
Assistant Field Office Supervisor  
U.S. Fish and Wildlife Service

Ms. Jessica Pruden  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service

Ms. Jennifer Day  
Great Lakes Regional Coordinator  
National Oceanic and Atmospheric  
Administration

Ms. Sara Siekierski  
Refuge Manager  
Seney National Wildlife Refuge

Dr. Tim Boring  
Farm Service Agency State Executive Director  
U.S. Department of Agriculture

Mr. John Walker  
Director  
U.S. Geological Survey Upper Midwest Water  
Science Center

Mr. Mark Gaikowski  
Director  
U.S. Geological Survey Upper Midwest  
Environmental Sciences Center

Mr. James Simino  
Forest Supervisor  
Huron-Manistee National Forests

Mr. Greyling Brandt  
District Ranger, Mio Ranger Station  
Huron-Manistee National Forests

Mr. Benjamin Wiese  
District Ranger, Huron Shores Ranger Station  
Huron-Manistee National Forests

Mr. Jeff Gray  
Superintendent, Thunder Bay National  
Marine Sanctuary  
National Oceanic and Atmosphere  
Administration

Supervisor, Regulatory Sault Ste. Marie Field  
Office  
U.S. Army Corps of Engineers

State Agencies

Mr. Ron Olson  
Division Chief, Parks and Recreation Division  
Michigan Department of Natural Resources

Ms. Martha MacFarlane-Faes  
Deputy State Historic Preservation Officer  
Michigan State Historic Preservation Office

Mr. Brian Grennell  
Cultural Resource Management Coordinator  
Michigan State Historic Preservation Office

Mr. Daniel Eichinger  
Director, Executive Division  
Michigan Department of Natural Resources

Mr. Steve Milford  
District Field Supervisor, Region 3 (Eastern  
LP)  
Michigan Department of Natural Resources,  
Forest Resources Division

Mr. Scott Thayer  
Region Engineer, North Region Office  
Michigan Department of Transportation

Mr. Robert Ranck  
Region Engineer, Bay Region Office  
Michigan Department of Transportation

Mr. Bryan Budds  
Deputy Administrator, Office of Aeronautics  
Michigan Department of Transportation



Ms. Liesl Clark  
Director  
Michigan Department of Environment, Great  
Lakes, and Energy

Ms. Ronda Wuycheck  
Chief, Coastal Management Program  
Water Resources Division, Michigan EGLE

Mr. Matt Smar  
Federal Consistency Specialist  
Water Resources Division, Michigan EGLE

Mr. Jared Duquette  
Division Chief, Wildlife  
Michigan Department of Natural Resources

Mr. Jeff Stampfly  
Division Chief, Forest Resources  
Michigan Department of Natural Resources

Airports and Airspace Management

Mr. Matthew Barresi  
Manager  
Gaylord Regional Airport

Mr. Chris Jackson  
Manager  
Huron County Memorial Airport

Mr. Alan Stiller  
Manager  
Presque Isle County Airport

Mr. Steve Smigelski  
Manager  
Alpena County Regional Airport

Mr. Kevin Vangordon  
Manager  
Cheboygan County Airport

Mr. Allen Hoffman  
Manager  
Hoffman's Black Mountain Aerodome

Mr. Christian Kindsvatter  
Manager  
Calvin Campbell Airport

Mr. Jerry Siudara  
Manager  
Pbeaaye Airport

Mr. Dale La Clair  
Manager  
Atlanta Municipal Airport

Mr. Mark Melligen  
Manager  
Hillman Airport

Mr. Gary Vollmar  
Manager  
Eagle II Airport

Mr. Scott Brown  
Manager  
Lakes of the North Airport

Mr. Ben Evergreen  
Manager  
West Branch Community Airport

Mr. David Kauffman  
Manager  
Oscoda County Dennis Kauffman Memorial  
Airport

Mr. Edward Higgins  
Manager  
Harrisville Airport

Ms. Nancy Milwrick  
Manager  
Milwrick Flying M Airport

Mr. Jay Samuels  
Manager  
Iosco County Airport

Mr. Jeff Blust  
Manager  
Field of Dreams Airport

Mr. Alan Engler  
Manager  
Engler Field Airport

Mr. Kelly Hanson  
Manager  
Grindstone Air Harbor Airport

Mr. Brent Bowman  
Manager  
Sebewaing Township Airport

Mr. Bart Perry  
Manager  
Arnold Field Airport

Mr. William Schutzler  
Manager  
Flugplatz Airport

Mr. Phil Roach  
Manager  
Marlette Township Airport

Mr. Don Johnston  
Manager  
Sandusky City Airport

Mr. Dale Cowley  
Manager  
Cowley Field Airport

Mr. Gary Kellan  
Manager  
Oscoda-Wurtsmith Airport

Mr. Eric Jaroch  
Manager  
Roscommon Co. Blodgett Memorial

Mr. Jim Hill  
Manager  
Saint Helen Airport

Mr. Joe Greene  
Manager  
Tuscola Area Airport

Mr. Kevin Jacobs  
Manager  
Roscommon Conservation Airport

Mr. Cliff Olson  
Manager  
Lost Creek Airport

Other Interested Parties

Alpena Area Chamber of Commerce

Grayling Regional Chamber of Commerce

Legal Department  
Aircraft Owners and Pilots Association

Mr. Jim McClay  
Director, Airspace, Air Traffic and Security

Aircraft Owners and Pilots Association

National Business Aviation Association

American Clean Power Association

Ms. Jacque Rose  
Anglers of Au Sable

Libraries

Alpena County George N. Fletcher Public  
Library

Devereaux Memorial Library (Main Branch,  
Crawford County Library)

Rogers City Library (Presque Isle District  
Library)

Atlanta Branch – Headquarters  
(Montmorency County Public Libraries)

Hillman-Wright Branch (Montmorency  
County Public Libraries)

Robert J. Parks Library (Oscoda Township  
Public Library)

Bad Ave Area District Library

Port Austin Township Library

Harbor Beach Public Library

Sebewaing Township Library

Harrisville Branch (Alcona County Library  
HQ)

Tawas City Library

Otsego County Main Library

15 November 2022

MEMORANDUM FOR DRAFT ENVIRONMENTAL ASSESSMENT DISTRIBUTION

FROM: NGB/A4AM

Attn: Ms. Kristi Kucharek  
NEPA Program Manager  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762

SUBJECT: Notice of Availability for the Draft Environmental Assessment and Draft Finding of No Significant Impact for Modification and Addition of Airspace at the Alpena Special Use Airspace (SUA) Complex, Alpena Combat Readiness and Training Center (CRTC), Alpena, Michigan

1. The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed modification, expansion, and utilization of the Alpena SUA Complex, located at the Alpena CRTC, Alpena, Michigan. No construction or ground-disturbing activities are proposed for this activity. The Federal Aviation Administration is acting as a cooperating agency. The Draft EA was prepared in accordance with the Council on Environmental Quality regulations pursuant to the National Environmental Policy Act (NEPA) of 1969, as implemented by the Department of the Air Force's Environmental Impact Analysis Process.
2. The NGB and Michigan Air National Guard respectfully invite your organization to review the Draft EA, which is available online at: <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request. We are soliciting your comments concerning the proposal and any potential effects on physical, ecological, social, cultural, or archaeological resources. If the environmental impact analysis process concludes the Proposed Action would have no significant impacts, then the FONSI will be signed. Please let us know if you wish to receive the Final EA/FONSI and, if so, your preference for an electronic copy or a paper copy.
3. The Draft EA contains an assessment of cultural resources and a finding that there would be no adverse effect on historic properties, as defined in 36 CFR 800.5, caused by the undertaking. The NGB is providing notice of this proposed finding to the public and all consulting parties, defined in 36 CFR 800.2, including the state historic preservation officer, Native American tribes, and representatives of local governments. Pursuant to 36 CFR 800.5(c)(2), if any consulting party disagrees with the proposed finding, the disagreement and the reasons for such disagreement must be raised within 30 days.

4. Please provide any comments you may have within 30 calendar days of receipt of this letter to the NGB, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with the subject titled as ATTN: ALPENA SUA EA. Thank you for your assistance.

Sincerely



KRISTI L. KUCHARAK, GS-13, DAF  
NEPA Program Manager

13 December 2022

MEMORANDUM FOR DRAFT ENVIRONMENTAL ASSESSMENT DISTRIBUTION

FROM: NGB/A4AM

Attn: Ms. Kristi Kucharek  
NEPA Program Manager  
3501 Fetchet Avenue  
Joint Base Andrews MD 20762

SUBJECT: Comment Period Extended for the Draft Environmental Assessment and Draft Finding of No Significant Impact for Modification and Addition of Airspace at the Alpena Special Use Airspace (SUA) Complex, Alpena Combat Readiness and Training Center (CRTC), Alpena, Michigan

1. The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the proposed modification, expansion, and utilization of the Alpena SUA Complex, located at the Alpena CRTC, Alpena, Michigan. No construction or ground-disturbing activities are proposed for this activity. The Federal Aviation Administration is acting as a cooperating agency. The Draft EA was prepared in accordance with the Council on Environmental Quality regulations pursuant to the National Environmental Policy Act (NEPA) of 1969, as implemented by the Department of the Air Force's Environmental Impact Analysis Process.
2. The Notice of Availability was first published on 15 November 2022. The comment period is being extended until 14 January 2023.
3. The NGB and Michigan Air National Guard respectfully invite your organization to review the Draft EA, which is available online at: <https://www.alpenacrtc.ang.af.mil/>, or in paper copy by request. We are soliciting your comments concerning the proposal and any potential effects on physical, ecological, social, cultural, or archaeological resources. If the environmental impact analysis process concludes the Proposed Action would have no significant impacts, then the FONSI will be signed. Please let us know if you wish to receive the Final EA/FONSI and, if so, your preference for an electronic copy or a paper copy.
4. The Draft EA contains an assessment of cultural resources and a finding that there would be no adverse effect on historic properties, as defined in 36 CFR 800.5, caused by the undertaking. The NGB is providing notice of this proposed finding to the public and all consulting parties, defined in 36 CFR 800.2, including the state historic preservation officer, Native American tribes, and representatives of local governments. Pursuant to 36 CFR 800.5(c)(2), if any consulting party disagrees with the proposed finding, the disagreement and the reasons for such disagreement must be raised within 30 days.

5. Please provide any comments you may have by 14 January 2023 to the NGB, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or by email at [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with the subject titled as ATTN: ALPENA SUA EA. Thank you for your assistance.

Sincerely



KRISTI L. KUCHARAK, GS-13, DAF  
NEPA Program Manager



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF NATURAL RESOURCES  
LANSING



DANIEL EICHINGER  
DIRECTOR

December 5, 2022

VIA E-MAIL

Ms. Kristi Kucharek  
National Guard Bureau (NGB/A4AM)  
3501 Fetchet Avenue  
Joint Base Andrews, Maryland 20762-5157

Dear Ms. Kucharek:

Thank you for the opportunity to comment on the "Draft Environmental Assessment and Draft Finding of no Significant Impact for Modification and Addition of Airspace at the Alpena Special Use Airspace (SUA) Complex, Alpena Combat Readiness and Training Center (CRTC), Alpena, Michigan". The Michigan Department of Natural Resources (MDNR) appreciates the opportunity to respond to the current version of the Environmental Assessment as it pertains to environmental impact and safety.

Referencing Figure 5-1, page 86, there are two Low-Altitude Tactical Navigation Areas (LATN) that list a minimum altitude of 300' above ground level (AGL) and maximum altitude of 1500' AGL. Michigan MDNR has a Quiet Airspace Agreement (QAA) with the Michigan Air National Guard to maintain an altitude of 3000' mean sea level over the Pigeon River Country (PRC). Since Figure 5-1 doesn't depict the PRC boundaries, it is not clear if the LATN Area North is honoring the QAA.

Additional consideration for the LATN stems from the unprecedented growth of unmanned aircraft systems (UAS) in the private sector. The 300' AGL floor of the LATN could put military aircraft in conflict with UAS that have a ceiling of 400' AGL.

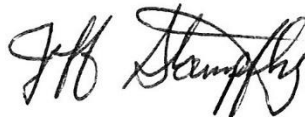
Concerns remain regarding the Grayling West Memorandum of Understanding (MOA) and the large expanse of area with a floor of 500' AGL. This area is frequented by civil aircraft including the Michigan MDNR for missions ranging from wildfire detection and suppression to Bald Eagle surveys and many other missions, given the proximity to its base of operations in Roscommon. It appears the NGB is trending towards implementing Grayling West MOA as illustrated in Figure 2-1, pg. 22. Grayling West MOA is depicted as having an angular boundary on the south end of the MOA extending to the southeast passing VR1634 where it ties in with Grayling MOA East, which then angles back to the northeast to the Pike West MOA. It is our preference to see the south boundary of Grayling West and Grayling East to follow the south boundary of the current temporary Grayling MOA, Figure 1-1, page 12. The squared off south boundary of the West and East MOA would be easier to identify and avoid for civil pilots and slightly reduce the land area that is impacted by the 500' AGL floor.



Ms. Kristi Kucharek  
Page 2  
December 5, 2022

Once again, we appreciate the chance to offer input and look forward to clarification on the items listed in our response. If further information is needed, please contact Mr. Kevin Jacobs, Aviation Manager, at MDNR-Forest Resources Division, Roscommon Customer Service Center, 8717 North Roscommon Road, Roscommon, Michigan 48653; or 989-275-5151 extension 2722053 or 989-370-4041; or [jacobsk@michigan.gov](mailto:jacobsk@michigan.gov); or you may contact me.

Sincerely,

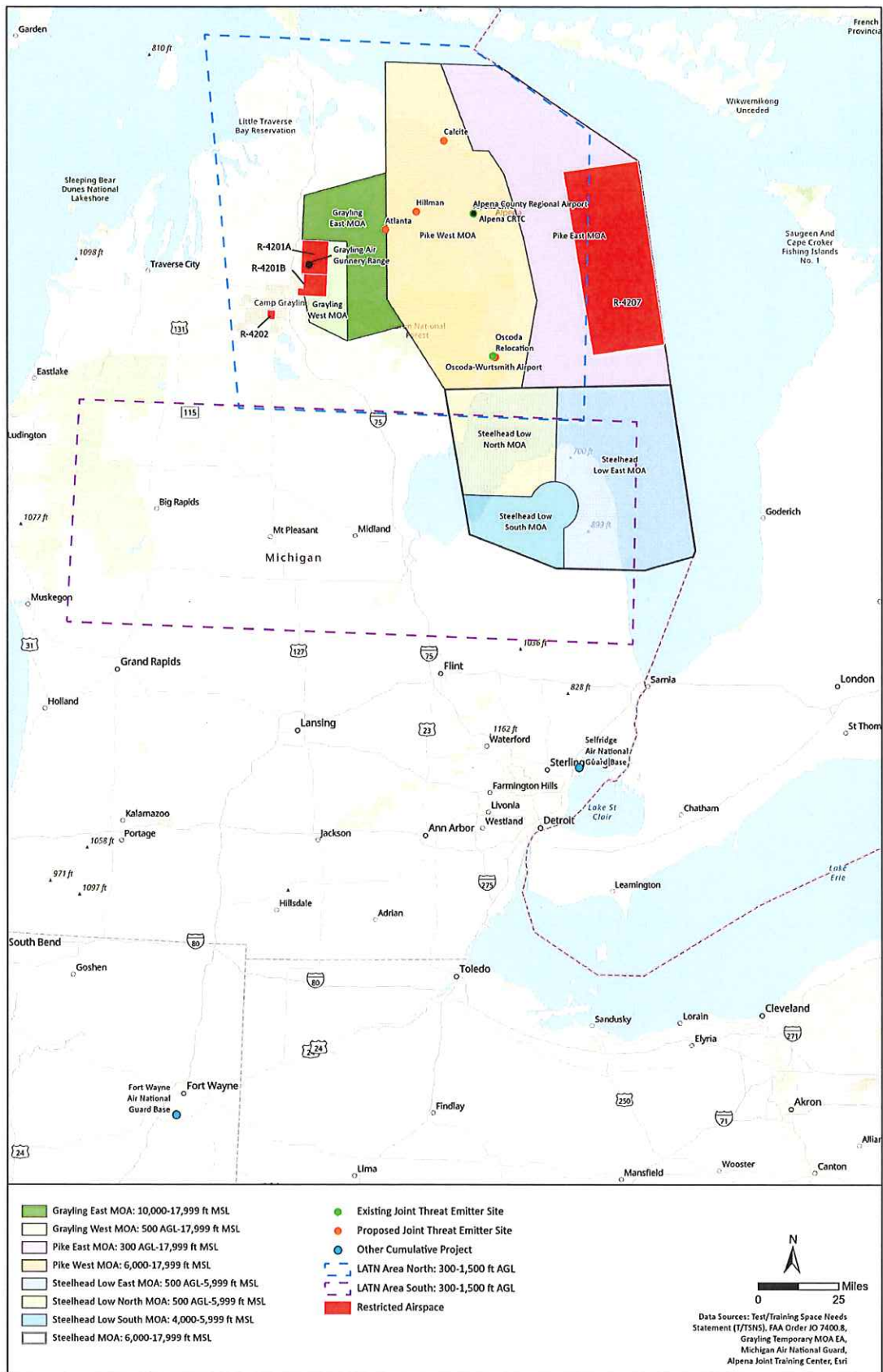
A handwritten signature in black ink, appearing to read "Jeff Stampfly". The signature is written in a cursive, flowing style.

Jeff Stampfly  
Chief and State Forester  
906-250-6590

Attachment

cc: Ms. Shannon Lott, Natural Resources Deputy, MDNR  
Mr. Kevin Jacobs, MDNR

Figure 5-1 Locations of Projects in Cumulative Effects Analysis



Draft EA for Modification of the Alpena SUA Complex

Alpena CRTC / MIANG

86



## COMBAT READINESS TRAINING CENTER

MICHIGAN AIR NATIONAL GUARD  
PHELPS COLLINS ANGB, ALPENA, MI 49707-8125

REPLY TO  
ATTN OF: CRTC/OT

8 AUGUST 1990

SUBJECT: Grayling Air Gunnery Range Noise Sensitive Areas

TO: All Grayling Air Gunnery Range Users

1. The Michigan Air National Guard, the Grayling Air Gunnery Range and the Phelps Collins Combat Readiness Training Center are soliciting your assistance in dealing with some of our hottest noise complaint areas. Our public affairs work will require your support and compliance with the following recommended restrictions.

2. The first area of concern is the Pigeon River Country State Forest. This area is outlined on the map, north of R4201. Aircraft flying in the LATN area should transition this forest at or above 3000' MSL. Aircraft approaching or departing the range on one of the low level routes are to be east of the indicated line and no lower than 1000' AGL (approximately 1900' MSL).

3. Another long standing noise sensitive area is Wakeley Lake. This lake is south of the R4201B complex, just north of M72 between Grayling and Luzerne. There is a small triangle shaped landing field just east of the lake. Please avoid this Wakeley Lake by 2 NM or 5000' AGL.

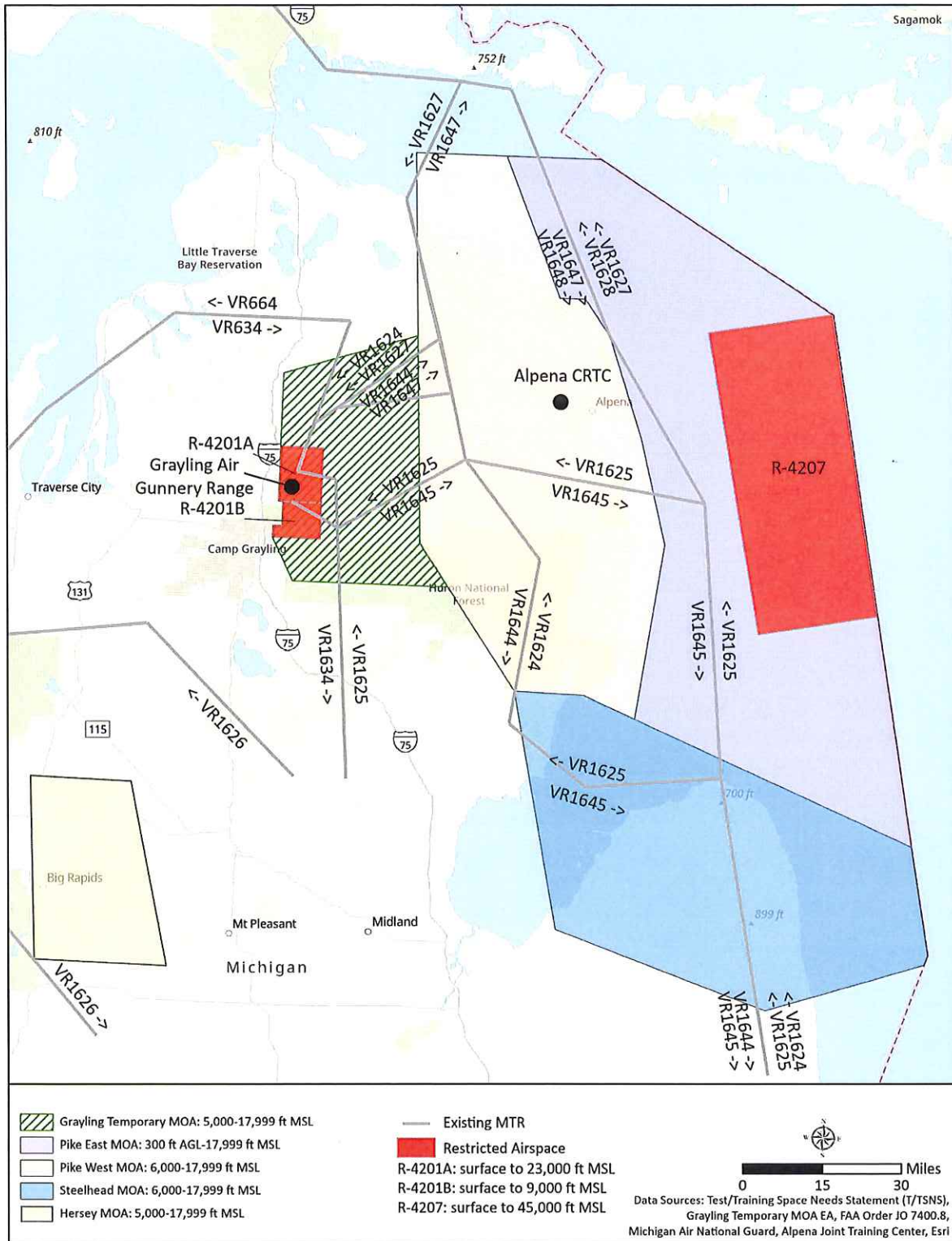
4. All units flying out of Phelps Collins ANGB, Alpena Michigan will be briefed prior to their first flight. Unit DOs will be required to insure that all of their aircrews are familiar with these areas. All briefing rooms at the CRTC will reflect these high interest items.

5. If there are any questions or concerns please call me at AV 741-3205. Your support will help us maintain our ability to provide the best possible training environment to your unit.

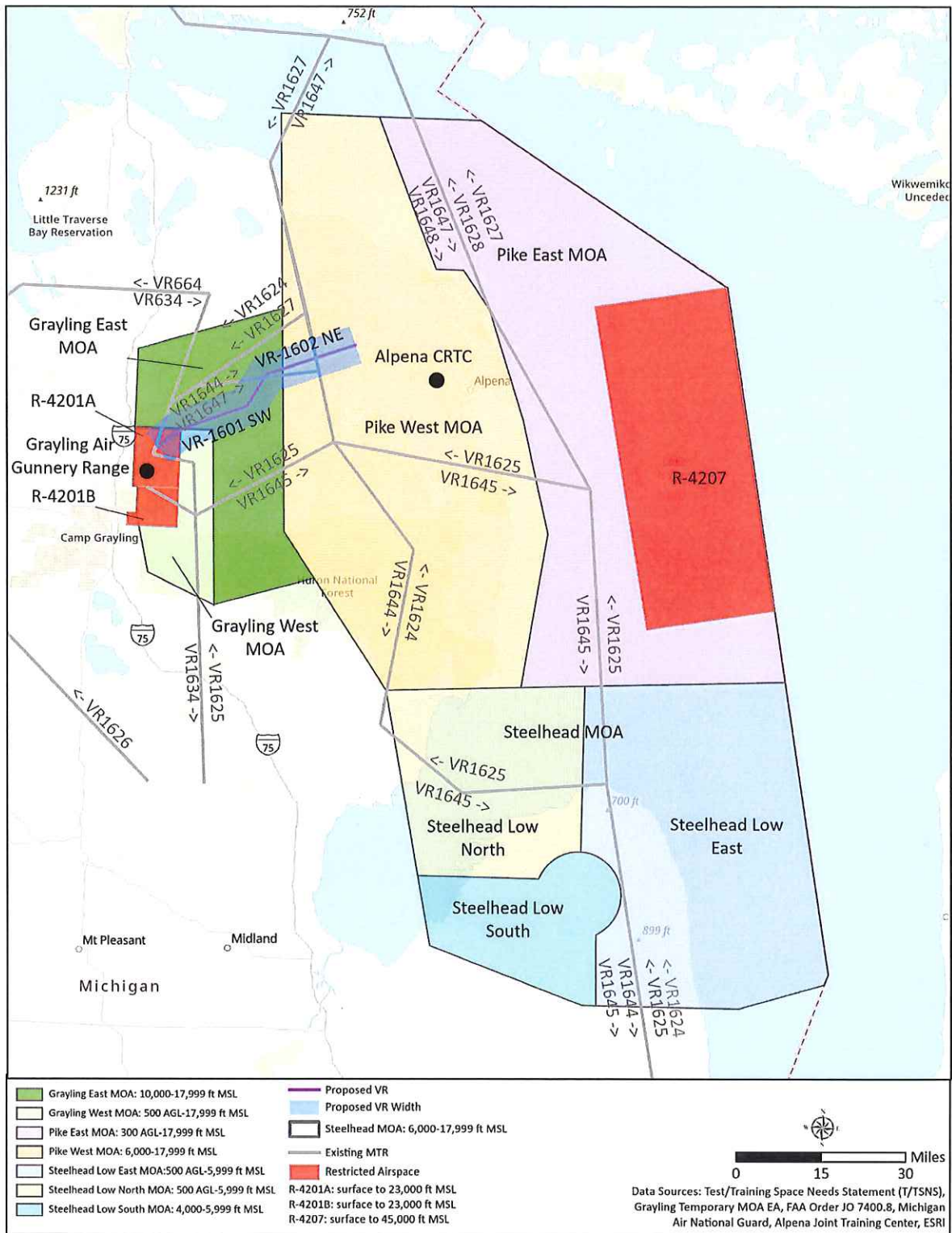
*Ewin R. Sansom*  
EWIN R. SANSOM, Maj, MI ANG  
Operations/Training Officer

Attch: 3 Grayling Area Maps

**Figure 1-1 Location of Alpena Combat Readiness Training Center and Extent of Existing Alpena Special Use Airspace Complex**



**Figure 2-1 Proposed Modifications to Alpena Special Use Airspace Complex**



**LOVELLS TOWNSHIP RESOLUTION #12-13-2022**  
**LOVELLS' POSITION ON THE PROPOSAL TO PERMIT LOW-FLYING MILITARY**  
**AIRCRAFT WITHIN THE IMMEDIATE VICINITY OF THE PRIMARY**  
**BUSINESS DISTRICT OF LOVELLS TOWNSHIP (LT)**

*WHEREAS*, the LT primary business district is located just 3.25 statute miles east south east of the eastern fence line of Camp Grayling's (CG) existing Range 40 complex; Range 40 being the location where all air delivered ordinance is directed, and

*WHEREAS*, the proposal would, if approved as presented, permit the operation of military aircraft at altitudes as low as 300 feet above ground level in the vicinity of the LT primary business district; a dramatic reduction in allowed minimum altitude when compared to current restrictions, and

*WHEREAS*, given that the visitors to, residents of, and businesses located in the vicinity of LT's primary business district currently do and historically have been forced to tolerate the noise and jet fuel fumes of low flying military aircraft under the current flight restrictions, and

*WHEREAS*, given the significant deficiencies of the proposal as presented the LT Board must adamantly and resolutely oppose the lessening of any altitude restrictions for military aircraft operating within the LT area.

*NOW, THEREFORE, BE IT RESOLVED* that the Lovells Township Board hereby adopts Resolution #12-13-2022 as their official position on the proposal to lessen minimum altitude restrictions on military aircraft operating within the LT area.

The foregoing resolution was offered by Board Member NEUMANN and supported by Board Member HOPP.

Upon a Roll Call vote the following voted:

Aye DUBOY, HOPP, INFANTE-INMAN, LOVELL, NEUMANN.

Nay NONE.

The Supervisor declared the foregoing resolution adopted.

Cynthia Infante-Inman 12/13/2022

Cynthia Infante-Inman, Lovells Township Clerk

Date

**From:** [Jonathon Block](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 1:56:19 PM

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I am writing this correspondence in opposition to the expansion and modification of the Alpena Special Use Airspace Complex. I have received public input from residents in northern Sanilac County in opposition to the proposed modifications. There are deep concerns related to the excessive noise and disruption of our rural community. While we all value proper defense training the aforementioned proposal presents a direct threat to the rural character and quality use of open spaces in Sanilac County. The Sanilac County Board of Commissioners intends to have further discussion on this topic and may render an official position in the near future.

Further I am officially requesting that any changes to the public comment period be forwarded to me directly.

Regards,

Jon Block  
Commissioner District 1  
Sanilac County Board of Commissioners Chairman



January 13, 2023

Ms. Kristi Kucharek  
NGB/A4AM – Programming and Planning  
3501 Fetchet Avenue  
Joint Base Andrews, MD 20762-5157

[NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)

**Re: *Draft Environmental Assessment and Draft Finding of No Significant Impact for Modification and Addition of Airspace at the Alpena Special Use Airspace (SUA) Complex, Alpena Combat Readiness and Training Center (CRTC), Alpena, Michigan***

Dear Ms. Kucharek,

The Aircraft Owners and Pilots Association (AOPA), the world's largest aviation membership association, submits the following comments in response to the solicitation for feedback on the Draft Environmental Impact Statement (DEIS) on the modification, expansion, and utilization of the Alpena Special Use Airspace (SUA) Complex in Alpena, Michigan. We appreciate this opportunity to comment and for your consideration of our earlier comments on the Environmental Assessment.

We appreciate the modifications and evolution of the military's proposal that appear responsive to many concerns identified by the general aviation community and makes accommodations in line with the comments we submitted regarding the DOPAA in January 2020 and the Environmental Assessment in July 2021.

The increased floor altitude of 4,000 feet MSL for the Steelhead Low South Military Operations Area (MOA) and the lowered ceilings of 5,999 feet for all three Steelhead MOAs are a vast improvement over the initial concept. Additionally, the restrictions on the Steelhead Low MOAs, preventing participating aircraft from flying below 1500 feet AGL within one nautical mile of Lake Huron between May 15 and September 15 each year, are all beneficial to general aviation (GA), as is the return of the Hersey MOA to the National Airspace System (NAS).

We still have concerns about this proposal, however, as laid out below.

#### **Airspace utilization**

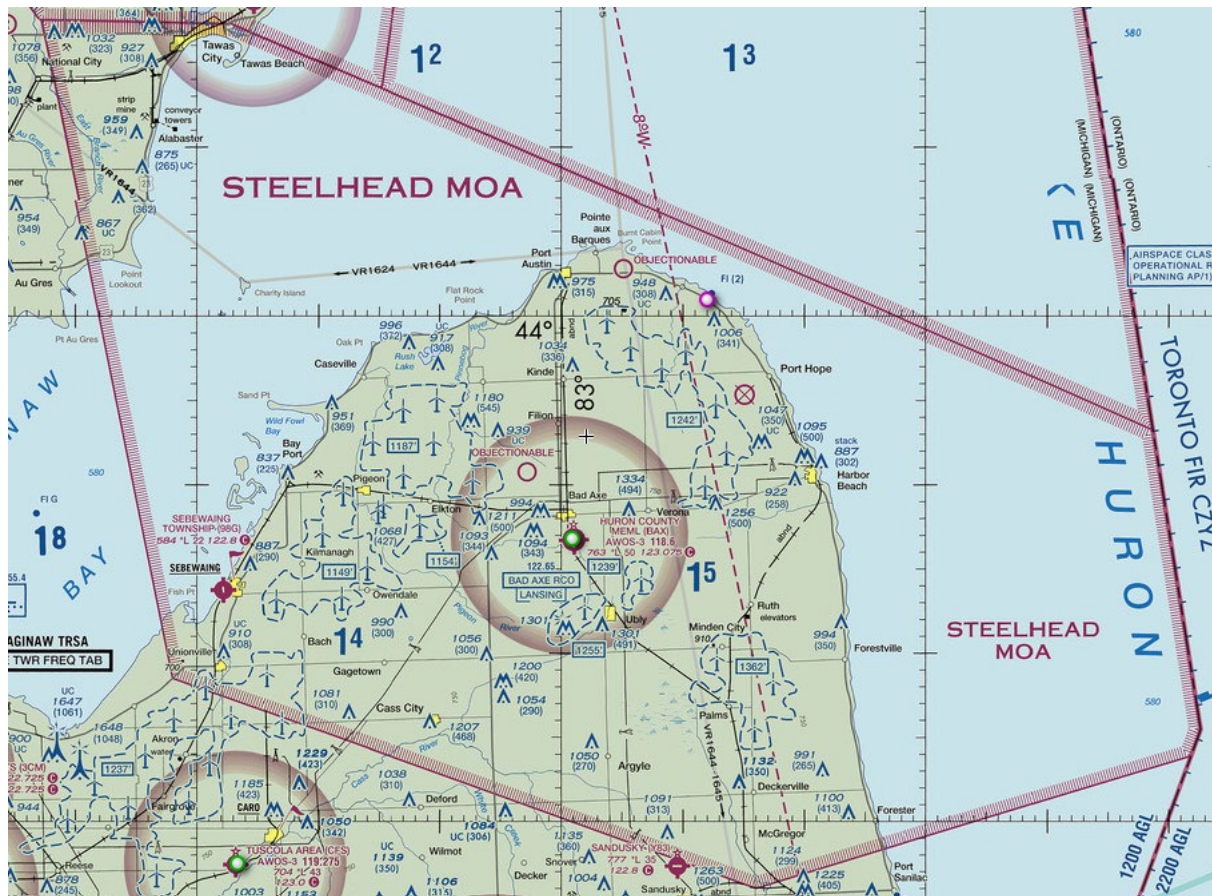
As mentioned before, we continue to have concerns about the relatively low, and still unexplained, current utilization rate of the airspace, contrasted with the steep increase in the number of sorties being proposed with the new airspace. AOPA will be paying close attention to the utilization of this airspace going forward.

Furthermore, as we noted in our 2018 and 2020 letters, Michigan's economy and the economy of many underlying communities are heavily supported by general aviation and the local airports. These airports account for thousands of jobs and millions of dollars in economic value, and they would be economically harmed and disadvantaged by the creation of certain SUA.

#### **Steelhead Low MOAs**



While we welcome the new proposed ceilings of 5,999 feet AGL, we continue to hear concerns from many members about the Steelhead Low North and Steelhead Low East MOAs 500-foot AGL floor altitude. Pilots indicate there are numerous obstructions, including wind farms, that make flying at low-altitude in this area impractical (see graphic below). While the lower ceiling allows GA aircraft to overfly these MOAs, the 500-foot floor would lead many pilots to avoid the area entirely, losing the ability to do lakeshore flying and efficiently fly to many airports, thus leading to less visitation.



Not only would GA pilots not safely be able to fly beneath the Steelhead Low North and Low East MOAs, but it is questionable whether military pilots would be able fly as low as 500 feet AGL in an area proliferated with wind turbines reaching as high as about 500 feet AGL. While AOPA does not feel that the Steelhead Low MOAs should be dispensed with entirely, as is suggested in Alternative 2 of the EA, we do advocate for a higher floor more reflective of what the military will actually be able to use, given the presence of these high obstructions in the area.

AOPA's broader 2019 survey<sup>1</sup> on SUA showed most VFR pilots choose not to fly through active MOAs. About two-thirds of pilots indicated that when flying VFR (not on an IFR flight plan) that they had not flown through a MOA when they were aware it was active. This shows most pilots treat active MOAs as Restricted Areas and would

<sup>1</sup> <https://eaa1361.org/wp-content/uploads/2019/03/AOPA-SUA-Survey-2019.pdf>

route around the airspace, at great cost to the operator and with potentially lost revenue for underlying airports and communities.

Thus, consistent with our earlier comments on the Steelhead MOA complex, we believe the floor altitude must be higher. The lowest the floor altitude could be in this area is 3,000 feet MSL. This floor altitude would allow VFR aircraft maneuvering space to transit to and from airports without entering active SUA.

There are also concerns with limited communications and radar coverage at low altitudes in this area, with aircraft departing local airports not able to communicate with ATC, or obtain radar service, until they are well above 500 feet AGL. This does not appear to have been addressed since we raised the concern in earlier comments.

### **Airspace dynamic deactivation documentation and real-time status notification**

While we are pleased that this proposal includes a legal requirement that the airspace must be activated by NOTAM at least four hours in advance, we still have concerns about the mechanism in which the ANG will disclose and publicize the procedures for airspace dynamic deactivation. We have heard from our members that there are many instances of the existing airspace being activated and not utilized or cancelled early and not returned for civil use.

As is required in Section 1085 of the 2021 National Defense Authorization Act (NDAA)<sup>2</sup>, GA pilots must be given the ability to find out, via electronic means, the real-time status of SUA – both on the ground during flight planning as well as once airborne. This is especially important in a large SUA complex like Moody.

During preflight planning pilots can access SUA information via NOTAMs and scheduled SUA information via SUA.FAA.gov. If a pilot operating under IFR sees the SUA overlying or near their departure or destination airport, such as at 4J5, MGR, or CKF, is scheduled to be active, the pilot has no choice but to amend their flight to arrive before the SUA's activation or after it is scheduled to be inactive.

The GA flying public does not have access to Letters of Agreement or other information that states air traffic control will coordinate with the military to give way to IFR GA aircraft to allow them access during a SUA's scheduled utilization. It is not reasonable to think a pilot will expend the money and time to fly IFR under the possibility the scheduled time in SUA.FAA.gov is incorrect. Pilots flying IFR are trained to plan for not having any access to SUA when the airspace is active and will delay their flights if a destination is located below the SUA.

If there is to be “flexible use” or “dynamic deactivation” of the airspace formally documented with the FAA, that arrangement should be publicly disseminated so pilots can be informed that they will be provided egress or ingress to underlying airports with minimal delay. AOPA agrees this is a significant mitigation as it facilitates airport access, but only if pilots are told this is the case. Any arrangement must be noted for each airport in FAA publications utilized by pilots. For example, if it is the proponent's intention to release the MOA when IFR aircraft are transiting the airspace, it must be documented so civil aircraft operators understand they will receive airspace access with minimal delay. Without clear communication of the mitigation to the pilot community, it is effectively nonexistent and ineffective.

<sup>2</sup> [Text - H.R.6395 - 116th Congress \(2019-2020\): William M. \(Mac\) Thornberry National Defense Authorization Act for Fiscal Year 2021 | Congress.gov | Library of Congress](#); page 134 STAT. 3877

In addition, pilots operating under VFR must be able to easily determine whether the MOAs in question are active or not. Currently, this is a cumbersome process, with pilots either having to make a phone call before departure or a radio call after departure to inquire about the SUA status with ATC. In some cases, this can take upwards of 15 to 30 minutes, which is unreasonable.

All of this reinforces our assertion that a system providing information about the real-time status of SUA, as required by the 2021 NDAA as noted above, must be implemented immediately. This will allow pilots to make an informed decision whether or not to transit the airspace and will mitigate the automatic avoidance of MOAs referenced earlier in these comments.

### **Military aircraft should operate with ADS-B Out on unless on truly sensitive missions**

Along similar lines, AOPA continues to be deeply concerned with the widespread practice of military aircraft not utilizing ADS-B Out, citing FAR 91.225 (f)(1). This additional flexibility was granted to the military and law enforcement by FAA in 2019 and, according to the preamble to the interim final rule<sup>3</sup>, was very clearly intended to be used sparingly for truly “sensitive missions”. However, portions of the military are now using this as a blanket policy, categorizing routine training flights as “sensitive” and instructing pilots to turn ADS-B Out off for all flights.

In our view, this is unacceptable from a safety perspective and is particularly troubling in an SUA complex like Moody. With MOA floors being proposed down to 1,000 feet AGL, the inability for GA aircraft (which are relying increasingly on ADS-B technology for situational awareness) to see high-speed, low-flying military aircraft on their cockpit displays increases the risk of midair collisions dramatically. While these military flights are visible on TCAS, it must be noted that most small GA aircraft do not utilize TCAS.

To be clear, AOPA supports the military having the ability to turn ADS-B Out off when truly needed, but a blanket application of 91.225(f)(1) seems counter to the intent of its creation and to aviation safety.

Before consideration of lowering the Moody MOA floors, this practice needs to be examined and 91.225 (f)(1) revisited.

### **Requirements for lights-out training**

The existing Pike West, Pike East, and Steelhead MOAs are listed as approved for lights-out training per FAA exemption 7960I, issued August 10, 2017. Lights-out training allows military aircraft to turn off their exterior lights. In this exemption the FAA notes that the use of night vision goggles limits a pilot’s ability to perform see-and-avoid; therefore, monitoring activities must be conducted to ensure participating aircraft are alerted to the presence of non-participating aircraft.

AOPA considers lights-out training to be hazardous for non-participating aircraft. First, the mitigations in place for non-participating VFR traffic are one sided. In other words, every strategy has been predicated on the ability of the military pilots to see-and-avoid civilian traffic, and for controllers to de-conflict traffic they may not be talking to. This seems to be the logical focus, as lights-out operations would make it impossible for civilian pilots to meet their obligation to perform see-and-avoid. However, the inability of the general aviation pilot to protect himself or herself is the cornerstone of our objection. It is concerning for a pilot to completely relinquish their responsibility

<sup>3</sup> <https://www.federalregister.gov/documents/2019/07/18/2019-15248/revision-to-automatic-dependent-surveillance-broadcast-ads-b-out-equipment-and-use-requirements>

for their safety, and the safety of their passengers, to the pilot of another aircraft, especially one with whom they have no contact (visual or otherwise).

As this proposal would result in a significant increase in SUA in this area that would be used for lights-out training, the military should identify how this monitoring activity will be performed to ensure no increase in risk to general aviation aircraft flying through the airspace VFR at night. Additional justification is needed on why lights-out training could not be limited to a finite area of the complex, such as the preexisting MOAs, instead of the entire expanded complex. Limiting the area where this activity takes place would reduce the extent of the hazard. Regardless, communicating the activities taking place in MOAs, per FAA requirements, is important so that general aviation pilots are aware of any hazards.

### **Conclusion**

We appreciate the opportunity to review this proposal and encourage the military to build on the positive modifications already made to further improve upon this SUA proposal. The feedback from local pilots and airports continue to indicate the proposed SUA would have a significant impact and that more rigorous analysis and documentation is needed via an EIS, versus an Environmental Assessment. We are happy to support this effort and provide further data and input during the process.

Thank you for reviewing our comment on this important issue. Please feel free to contact me at 202-509-9515 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "J. McClay". The signature is stylized and cursive.

Jim McClay  
Director, Airspace, Air Traffic and Security



601 Pennsylvania Ave NW  
North Building, Suite 250  
Washington, D.C. 20004

T. 202-737-7950

[www.aopa.org](http://www.aopa.org)

July 12, 2023

Manager, Operations Support Group, AJV-C2  
Airspace Study 22-AGL-361-NR  
Department of Transportation  
Federal Aviation Administration  
10101 Hillwood Parkway  
Fort Worth, TX 76177

**Re: AIRSPACE STUDY 22-AGL-361-NR, Alpena Airspace Complex**

To Whom It May Concern,

The Aircraft Owners and Pilots Association (AOPA), the world's largest aviation membership association, submits the following comments in response to the FAA's Airspace Study involving the modification of the Alpena Special Use Airspace (SUA) Complex in Alpena, Michigan.

We appreciate the modifications and evolution of the military's proposal that appear responsive to many concerns identified by the general aviation community and makes accommodations in line with the comments we submitted regarding the DOPAA in January 2020 and the Environmental Assessment in July 2021.

As we noted in our comments on the Draft Environmental Impact Statement (DEIS) in January of this year, the increased floor altitude of 4,000 feet MSL for the Steelhead Low South Military Operations Area (MOA) and the lowered ceilings of 5,999 feet for all three Steelhead MOAs are a vast improvement over the initial concept. Additionally, the restrictions on the Steelhead Low MOAs, preventing participating aircraft from flying below 1500 feet AGL within one nautical mile of Lake Huron between May 15 and September 15 each year, are all beneficial to general aviation (GA), as is the return of the Hersey MOA to the National Airspace System (NAS).

However, we still have some concerns about the current proposal, as laid out below, that warrant FAA's attention before the it is approved.

**Airspace utilization**

We continue to have concerns about the relatively low, and still unexplained, current utilization rate of the airspace, contrasted with the steep increase in the number of sorties being proposed with the new airspace. AOPA will be paying close attention to the utilization of this airspace going forward.

Furthermore, as we noted in our earlier comments, Michigan's economy, and the economy of many underlying communities, are heavily supported by general aviation and the local airports. These airports account for thousands of jobs and millions of dollars in economic value, and they would be economically harmed and disadvantaged by the creation of certain SUA.

### Steelhead Low MOAs

While we welcome the new proposed ceilings of 5,999 feet AGL, we continue to hear concerns from many members about the Steelhead Low North and Steelhead Low East MOAs 500-foot AGL floor altitude. Pilots indicate there are numerous obstructions, including wind farms, that make flying at low altitude in this area impractical (see graphic below).

While the lower ceiling allows GA aircraft to overfly these MOAs, the 500-foot floor would lead many pilots to avoid the area entirely, losing the ability to do lakeshore flying and efficiently fly to many airports, thus leading to less visitation.



Not only would GA pilots not safely be able to fly beneath the Steelhead Low North and Low East MOAs, but it is questionable whether military pilots would be able to fly as low as 500 feet AGL in an area proliferated with wind turbines reaching as high as about 500 feet AGL.

While AOPA does not feel that the Steelhead Low MOAs should be dispensed with entirely, as is suggested in Alternative 2 of the EA, we do advocate for a higher floor more reflective of what the military will likely be able to use, given the presence of these high obstructions in the area.

We would also like to note that, while the summary of the FAA Airspace Study notice states that “No restrictions will be imposed on nonparticipating Visual Flight Rules (VFR) aircraft,” AOPA’s broader 2019

survey<sup>1</sup> on SUA showed most VFR pilots choose not to fly through active MOAs. About two-thirds of pilots indicated that when flying VFR (not on an IFR flight plan) that they had not flown through a MOA when they were aware it was active. This shows most pilots treat active MOAs as Restricted Areas and would route around the airspace, at great cost to the operator and with potentially lost revenue for underlying airports and communities.

Thus, consistent with our earlier comments on the Steelhead MOA complex, we believe the floor altitude must be higher. The lowest the floor altitude could be in this area is 3,000 feet MSL. This floor altitude would allow VFR aircraft maneuvering space to transit to and from airports without entering active SUA.

There are also concerns with limited communications and radar coverage at low altitudes in this area, with aircraft departing local airports not able to communicate with ATC, or obtain radar service, until they are well above 500 feet AGL.

### **Airspace dynamic deactivation documentation and real-time status notification**

While we are pleased that this proposal includes a legal requirement that the airspace must be activated by NOTAM at least four hours in advance, we still have concerns about the mechanism with which the ANG will disclose and publicize the procedures for airspace dynamic deactivation. We have heard from our members that there are many instances of the existing airspace being activated and not utilized or cancelled early and not returned for civil use.

As is required in Section 1085 of the 2021 National Defense Authorization Act (NDAA)<sup>2</sup>, GA pilots must be given the ability to find out, via electronic means, the real-time status of SUA – both on the ground during flight planning as well as once airborne. This is especially important in a large SUA complex like Alpena.

During preflight planning pilots can access SUA information via NOTAMs and scheduled SUA information via SUA.FAA.gov. If a pilot operating under IFR sees the SUA overlying or near their departure or destination airport is scheduled to be active, the pilot has no choice but to amend their flight to arrive before the SUA's activation or after it is scheduled to be inactive.

The GA flying public does not have access to Letters of Agreement or other information that states air traffic control will coordinate with the military to give way to IFR GA aircraft to allow them access during a SUA's scheduled utilization. It is not reasonable to think a pilot will expend the money and time to fly IFR under the possibility the scheduled time in SUA.FAA.gov is incorrect. Pilots flying IFR are trained to plan for not having any access to SUA when the airspace is active and will delay their flights if a destination is located below the SUA.

If there is to be "flexible use" or "dynamic deactivation" of the airspace formally documented with the FAA, that arrangement should be publicly disseminated so pilots can be informed that they will be provided egress or ingress to underlying airports with minimal delay. AOPA agrees this is a significant mitigation as it facilitates airport access, but only if pilots are told this is the case. Any arrangement must be noted for each airport in FAA publications utilized by pilots. For example, if it is the proponent's intention to release the MOA when IFR aircraft are transiting the airspace, it must be documented so civil aircraft operators understand they will

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<sup>1</sup> <https://eaa1361.org/wp-content/uploads/2019/03/AOPA-SUA-Survey-2019.pdf>

<sup>2</sup> [Text - H.R.6395 - 116th Congress \(2019-2020\): William M. \(Mac\) Thornberry National Defense Authorization Act for Fiscal Year 2021 | Congress.gov | Library of Congress](https://www.congress.gov/116/bills/6395/text/2020/09/16/html/textof/H.R.6395-116th-Congress-(2019-2020):-William-M.-Mac-Thornberry-National-Defense-Authorization-Act-for-Fiscal-Year-2021-116th-Congress-116th-Congress-2019-2020); page 134 STAT. 3877

receive airspace access with minimal delay. Without clear communication of the mitigation to the pilot community, it is effectively nonexistent and ineffective.

In addition, pilots operating under VFR must be able to easily determine whether the MOAs in question are active or not. Currently, this is a cumbersome process, with pilots either having to make a phone call before departure or a radio call after departure to inquire about the SUA status with ATC. In some cases, this can take upwards of 15 to 30 minutes, which is unreasonable.

All of this reinforces our assertion that a system providing information about the real-time status of SUA, as required by the 2021 NDAA as noted above, must be implemented immediately. This will allow pilots to make an informed decision whether or not to transit the airspace and will mitigate the automatic avoidance of MOAs referenced earlier in these comments.

### **Requirements for lights-out training**

The existing Pike West, Pike East, and Steelhead MOAs are listed as approved for lights-out training per FAA exemption 7960I, issued August 10, 2017. Lights-out training allows military aircraft to turn off their exterior lights. In this exemption the FAA notes that the use of night vision goggles limits a pilot's ability to perform see-and-avoid; therefore, monitoring activities must be conducted to ensure participating aircraft are alerted to the presence of non-participating aircraft.

AOPA considers lights-out training to be hazardous for non-participating aircraft. First, the mitigations in place for non-participating VFR traffic are one sided. In other words, every strategy has been predicated on the ability of the military pilots to see-and-avoid civilian traffic, and for controllers to de-conflict traffic they may not be talking to. This seems to be the logical focus, as lights-out operations would make it impossible for civilian pilots to meet their obligation to perform see-and-avoid.

However, the inability of the general aviation pilot to protect himself or herself is the cornerstone of our objection. It is concerning for a pilot to completely relinquish their responsibility for their safety, and the safety of their passengers, to the pilot of another aircraft, especially one with whom they have no contact (visual or otherwise).

As this proposal would result in a significant increase in SUA in this area that would be used for lights-out training, the military should identify how this monitoring activity will be performed to ensure no increase in risk to general aviation aircraft flying through the airspace VFR at night.

Additional justification is needed on why lights-out training could not be limited to a finite area of the complex, such as the preexisting MOAs, instead of the entire expanded complex. Limiting the area where this activity takes place would reduce the extent of the hazard. Regardless, communicating the activities taking place in MOAs, per FAA requirements, is important so that general aviation pilots are aware of any hazards.

### **Conclusion**

While we appreciate the opportunity to comment on this proposal, and to encourage the FAA to make adjustments before it is implemented, the feedback from local pilots and airports continue to indicate the proposed SUA would have a significant impact. We are happy to support this effort and provide further data and input during the process.



Thank you for reviewing our comment on this important issue. Please feel free to contact me at 202-509-9515 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "J. McClay". The signature is written in a cursive, flowing style.

Jim McClay

Director, Airspace, Air Traffic and Security



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

1/13/2023

REPLY TO THE ATTENTION OF:  
Mail Code R-19J

Kristi Kucharek  
National Guard Bureau  
3501 Fetchet Avenue  
Joint Base Andrews, Maryland 20762-5157

**Re: Draft Environmental Assessment for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties, Michigan**

Dear Ms. Kucharek:

The U.S. Environmental Protection Agency (EPA) has reviewed the referenced Draft Environmental Assessment (DEA), dated November 2022, which was prepared by the National Guard Bureau (NGB). We are providing comments pursuant to our authorities under the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

NGB proposes to modify and expand the Alpena Special Use Airspace (SUA) Complex. The proposal does not include construction or ground-disturbing activities. The four alternatives in the DEA include:

- Alternative A - Alpena Airspace Modification and Addition (preferred alternative).
  - Establish five new Military Operating Areas (MOA), including Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East;
  - Discontinue the annual request for the Grayling Temporary MOA;
  - Modify the internal lateral boundaries of three existing MOAs, including Pike East, Pike West, and Steelhead;
  - Return the Hersey MOA to the National Airspace System (NAS);
  - Raise the vertical ceiling of R-4201B to 9,000 feet above mean sea level (MSL); and;
  - Establish two new Military Training Routes (MTR), including Visual Flight Rules (VR)-1601 and VR-1602.
- Alternative B: No Steelhead Low MOAs. Alternative B would include all aspects of Alternative A, except that Steelhead Low North, Steelhead Low South, and Steelhead Low East MOAs would not be established;

- Alternative C: No Grayling East or West MOA. Alternative C would include all aspects of Alternative A, except that Grayling East and Grayling West MOAs would not be established; and:
- Alternative D: No Action Alternative. The No Action Alternative would result in no change to the Alpena SUA Complex as currently charted. No new MOAs or MTRs would be established or modified. Alpena Combat Readiness Training Center (CRTC) would continue to request activation of the Grayling Temporary MOA each year, and the Grayling Temporary MOA would remain uncharted. The Hersey MOA would remain with the Michigan Air National Guard.

Based on our review of the DEA, we recommend NGB address our comments on (1) environmental justice, (2) children’s health, (3), noise and vibrations, (4) air quality and greenhouse gas emissions, and (5) tribal consultation, in the subsequent NEPA document. Please find EPA’s detailed comments enclosed. Please send EPA an electronic copy of the subsequent NEPA document when it becomes available. We welcome the opportunity to discuss any of our comments further. You may contact Mike Sedlacek, Region 5’s lead reviewer for this project, at 312-886-1765 or [sedlacek.michael@epa.gov](mailto:sedlacek.michael@epa.gov), or you may contact me at 312-353-4293.

Sincerely,

KATHY  
TRIANAFILLOU

Digitally signed by KATHY  
TRIANAFILLOU  
Date: 2023.01.13 14:22:30  
-06'00'

Kathy Triantafillou  
Acting NEPA Section Supervisor  
Tribal and Multi-media Programs Office  
Office of the Regional Administrator

Encl: EPA’s Detailed Comments for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties, Michigan

## **EPA's Detailed Comments for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola Counties, Michigan**

### *Environmental Justice*

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income (environmental justice (EJ)) populations, allowing those populations a meaningful opportunity to participate in the decision-making process. The DEA did not identify communities with EJ concerns that could be impacted by the proposed project.

EPA encourages use of EJSCREEN. EPA's nationally consistent EJ screening and mapping tool is a useful first step in highlighting locations that may be candidates for further analysis. The tool helps identify potential community vulnerabilities by calculating EJ Indexes and displaying other environmental and socioeconomic information in color-coded maps and standard data reports (e.g., pollution sources, health disparities, critical service gaps, climate change data). EJSCREEN can also help focus environmental justice outreach efforts by identifying potential language barriers, lack of broadband access, and other factors. For purposes of NEPA review, EPA considers a project to be in an area of potential EJ concern when the area shows one or more of the EJ Indexes at or above the 80th percentile in the nation and/or state. However, scores under the 80th percentile should not be interpreted to mean there are definitively no EJ concerns present.

While EJSCREEN provides access to high-resolution environmental and demographic data, it does not provide information on every potential community vulnerability that may be relevant. The tool's standard data report should not be considered a substitute for conducting a full EJ analysis, and efforts using the tool should be supplemented with additional data and local knowledge. Also, in recognition of the inherent uncertainties with screening level data and to help address instances when the presence of EJ populations may be diluted (e.g., in large project areas or in rural locations), EPA recommends assessing each block group within the project area individually and adding an appropriate buffer around the project area. Please see the EJSCREEN Technical Documentation for a discussion of these and other issues.

### **Recommendations for the subsequent NEPA Document:**

- Identify the presence of low-income and/or minority communities within the project areas that could experience environmental impacts from the proposed project. Disclose demographic information. For initial screening, use EPA's EJSCREEN mapping tool. Use census-tract level information to initially help locate communities with EJ concerns;
- Describe past activities and future plans to engage minority populations, low-income populations, and the surrounding community in the environmental review and planning phase, and, if the project commences, during operations;

- Evaluate the impacts (adverse and beneficial) of project proposals on low-income and/or minority communities and sensitive receptors (e.g., children, people with asthma, etc.);
- Compare project impacts on low-income and minority populations with an appropriate reference community to determine whether there may be disproportionate impacts, and ensure to account for noise and all indirect impacts;
- In conducting the EJ analysis, utilize resources such as the *Promising Practices Report*<sup>1</sup> and the *Community Guide to EJ and NEPA Methods*<sup>2</sup> to appropriately engage in meaningful, targeted, community outreach, analyze impacts, and advance environmental justice through NEPA implementation;
- Identify measures to: (1) ensure meaningful community engagement; (2) minimize adverse community impacts; and (3) avoid disproportionate impacts to communities with EJ concerns;
- Consider cumulative environmental impacts to minority populations, low-income populations, and indigenous peoples that may be impacted by the proposed project within the environmental justice analysis;
- Include NGB's analysis and conclusions regarding whether the Proposed Action or any action alternatives may have disproportionately high and adverse impacts on low income or minority communities, as specified in CEQ's Environmental Justice Guidance.<sup>3</sup> If so, then describe measures that NGB would take to minimize or mitigate impacts any disproportionate impacts to communities with EJ concerns and impacts to other sensitive populations; and:
- If there would be impacts to communities with EJ concerns, the cumulative impacts from climate change on public health and communities with EJ concerns should be discussed. Studies have shown that communities with EJ concerns may have less adaptive capacity and are thus more prone to disproportional impacts from climate change. See EPA's report *Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems* at: <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=197244>.

### Children's Health

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs each Federal agency, to the extent permitted by law, to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and to ensure that its policies, programs, activities, and standards address those risks. Analysis and disclosure of these potential effects under NEPA is important because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to environmental health and safety risks.

<sup>1</sup> [https://www.epa.gov/sites/default/files/2016-08/documents/nepa\\_promising\\_practices\\_document\\_2016.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf)

<sup>2</sup> <https://www.energy.gov/sites/prod/files/2019/05/f63/NEPA%20Community%20Guide%202019.pdf>

<sup>3</sup> CEQ's Environmental Justice Guidance Under the National Environmental Policy Act. See Section III, Part C-4. [https://www.epa.gov/sites/default/files/2015-02/documents/ej\\_guidance\\_nepa\\_ceq1297.pdf?VersionId=78iNGtdwSTz5E2x.H0aHq.E96\\_Tphbgd](https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf?VersionId=78iNGtdwSTz5E2x.H0aHq.E96_Tphbgd)

**Recommendation for the subsequent NEPA Document:**

- Identify any sensitive receptors (such as schools, day care centers, nursing homes, and hospitals), and consider mitigation measures, such as limiting noise- and vibration-inducing events when children are present (i.e., during the school day when in session) and working with any impacted receptors to identify physical improvements to reduce the impact of noise (such as new windows).

Noise and Vibrations

Noise and vibration impacts on land areas and waterbodies are expected to occur within the Alpena SUA Complex. NEPA requires the assessment and disclosure of project impacts, including noise. Within our review of EAs across agencies, EPA typically sees noise assessments that include noise contour maps, identification of sensitive receptors (single and multi-family residences, medical facilities, schools, etc.) that could be impacted, and estimates of noise impacts for specific receptors. Such information was not included in the DEA.

**Recommendations for the subsequent NEPA Document:**

- Provide maps and tables to disclose how noise and vibrations associated with current daily operations would vary from daily operations of the proposed future operations. Include all potentially impacted areas within and adjacent to the Alpena SUA Complex;
- Explain who is responsible for noise and vibrations mitigation. Describe any authority NGB has to address noise and vibration issues off-base that are caused by military aircraft;
- Collaborate with potentially impacted communities to hold public meetings to (1) receive addition ideas on mitigation from communities and (2) gather public input any NGB proposed noise and vibration mitigation;
- Describe and commit to maintain a comprehensive noise analysis and monitoring program for the operation period. This would help ensure that the ongoing noise impacts are assessed, appropriately addressed, and mitigated. Airspace within the lower-altitude MOAs within the Alpena SUA Complex are expected to be where noise and vibrations are most likely to affect sensitive receptors, such as schools, hospitals, day care centers, senior centers, and EJ communities. These areas should be equipped with remotely monitored noise sensors to enable ongoing evaluation; and:
- Include specific noise and vibrations mitigation measures. Discuss (1) offering window and insulation treatments for impacted homes, schools, and other buildings, (2) limiting hours of operation for noise intensive activities, (3) and maintaining communication with impacted communities, with clear contacts and a phone number to call if residents observe violations of commitments.

Air Quality and Greenhouse Gas Emissions

The proposed project would result in increased emissions of greenhouse gases (GHG) and other air pollutants. Executive Order 14008: Tackling the Climate Crisis at Home and Abroad states, “The United States and the world face a profound climate crisis. We have a narrow moment to pursue action...to avoid the most catastrophic impacts of that crisis and to seize the opportunity that tackling climate change presents.”

Federal courts consistently have held that NEPA requires agencies to disclose and consider climate impacts in their reviews, including impacts from greenhouse gas (GHG) emissions. On January 9, 2023, CEQ's National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, was published in the Federal Register. CEQ issued this interim guidance to assist Federal agencies in assessing and disclosing climate impacts during environmental reviews. The guidance in response to Executive Order 13990: Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which directed CEQ to review, revise, and update CEQ's 2016 emissions guidance. The 2023 interim guidance is effective immediately and should be used to inform the reviews of new proposed actions. While NGB's proposal to modify and expand the Alpena Special Use Airspace (SUA) Complex is not a new proposed action (the NEPA process is already underway), EPA raises the interim guidance for situational awareness, and we suggest that it may be a helpful resource for NGB.

In addition, estimates of the social cost of greenhouse gases (SC-GHG) are informative for assessing the impacts of GHG emissions. SC-GHG estimates monetize the societal value of changes in GHG emissions from actions that have small, or marginal, impacts on cumulative global emissions. Estimates of the social cost of carbon (SC-CO<sub>2</sub>) and other greenhouse gases (e.g., social cost of methane (SC-CH<sub>4</sub>)) have been used for over a decade in Federal government analyses. Quantification of anticipated GHG releases and associated SC-GHG comparisons among all alternatives (including the No Action Alternative) within the DEA could inform project decision-making and provide support for implementing all practicable measures to minimize GHG emissions.

**Recommendations for the Subsequent NEPA Document:**

- Use the January 2023 CEQ GHG Guidance as a resource for considering GHG emissions and climate change;
- Quantify reasonably foreseeable direct and indirect GHG emissions. Consider the potential for more personnel traveling to bases, use of larger planes and/or increases in flight hours, and increases in fuel being brought to bases and consumed, among other potential consequences of modify and expand the Alpena Special Use Airspace (SUA) Complex;
- Use SC-GHG estimates to consider the climate damages from net changes in direct and indirect emissions of CO<sub>2</sub> and other GHGs from the proposed project. To do so, EPA recommends a breakdown of estimated net GHG emission changes by individual gas, rather than relying on CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) estimates, and then monetize the climate impacts associated with each GHG using the corresponding social cost estimate (i.e., monetize CH<sub>4</sub> emissions changes expected to occur with the social cost of methane (SC-CH<sub>4</sub>) estimate for emissions).<sup>4</sup> When applying SC-GHG

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<sup>4</sup> Transforming gases into CO<sub>2</sub>e using Global Warming Potential (GWP) metrics, and then multiplying the CO<sub>2</sub>e tons by the SC-CO<sub>2</sub>, is not as accurate as a direct calculation of the social costs of non-CO<sub>2</sub> GHGs. This is because GHGs differ not just in their potential to absorb infrared radiation over a given time frame, but also in the temporal pathway of their impact on radiative forcing and in their impacts on physical endpoints other than temperature change, both of which are relevant for estimating their social cost but not reflected in the GWP. See the Interagency Working Group on Social Cost of Greenhouse Gases' February 2021 *Technical Support Document*:

- estimates, just as with tools to quantify emissions, disclose the assumptions (e.g., discount rates) and uncertainties associated with such analysis and the need for updates over time to reflect evolving science and economics of climate impacts;
- Compare GHG emissions and SC-GHG across alternatives to inform project decision-making; and:
  - Identify practices NGB could take to reduce and mitigate GHG emissions and include commitments in the subsequent NEPA document.

### Tribal Consultation

The DEA identified Tribes that could be impacted by the proposed action.

#### **Recommendations for the Subsequent NEPA Document:**

- Disclose all potential impacts to Federally and state recognized Tribes. Consider impacts on-reservations, within off-reservation indigenous communities, and within lands where Tribes hold Treaty rights;
- Describe consultation, pursuant to Executive Order 13175 *Consultation and Coordination With Indian Tribal Governments*. Describe how consultation efforts are consistent with the December 2021 Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights, to which the U.S. Department of Defense is a signatory; and:
- Describe efforts to avoid, minimize, and mitigate impacts to indigenous communities. Describe proactive measures to gain Tribal input on such protective measures, and document how that input informed NGB's decision-making.

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*Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* for more discussion and the range of annual SC-CO<sub>2</sub>, SC-CH<sub>4</sub>, and SC-N<sub>2</sub>O estimates currently used in Federal benefit-costs analyses.





# SIERRA CLUB

## MICHIGAN CHAPTER

Kristi Kucharek, GS-13  
Airspace NEPA Program Manager  
Air National Guard Readiness Center  
3501 Fletchet Avenue  
Joint Base Andrews, MD 20762

RE: Environmental Assessment Modification Plan For Alpena Special Use Airspace Complex

Dear Ms. Kucharek,

The Air National Guard has proposed changes in the airspace allotted for its use in the northern Lower Peninsula - the Alpena Special Use Airspace Complex. The proposal would allow for much lower combat training flights ("sorties") by additional types of aircraft in several large areas of the Complex that are over land, including state forest land.

Michigan prides itself on its forests, rivers, lakes and wetlands, and the ecosystems they sustain. A large part of Michigan's economy depends on the health of these lands and ecosystems, and the opportunities for recreation and communing with nature that they represent. Meantime, our state and our planet face a crisis in diminishing populations of many species of animals, as habitat is damaged or destroyed by development, climate change, and other human action.

The Air National Guard airspace proposal creates a potentially unacceptable risk of habitat damage, species disruption, and impacts on the recreational usage of trails and waterways. When paired with the Camp Grayling expansion proposal under consideration by the Department of Natural Resources, these proposed actions represent a huge, and detrimental, increase in the usage of Michigan land and natural resources by the National Guard of many states and several foreign countries.

### **Low-Level Flight Areas**

The current Airspace Complex allows for flights below 5000 feet only in specified areas above Lake Huron and in the Restricted Area surrounding the Air Gunnery Range to the north and east of the City of Grayling. The current proposal would create new areas over land where combat training sorties could be flown as low as 500 feet above the ground. These areas would include a 375 square mile area called the Grayling West MOA to the east and north of the Restricted Area northeast of the city of Grayling, and the Steelhead North and Steelhead East MOAs, which cover a substantial portion of Michigan's Thumb region plus extend over Saginaw Bay onto land between Au Gres and Tawas City. The proposal will also involve the use of aircraft that have not been used in this airspace before, particularly F-22 and F-35 fighters.

### **Noise Pollution**

Low-flying military jets are loud. A Vermont resident living near a National Guard training airfield described the noise of F-35's flying sorties: "They literally make you shake, and my ears rattle, my inner ear- I can just hear it rattling even with my hands over them."

The Air National Guard's own Environmental Assessment (EA) demonstrates the impact of low-level flights. The report estimated changes in the Lmax or loudest sounds an area will experience, from the change to low-level flying. The South Branch Campground, along the South Branch of the Au Sable River in the new Grayling West MOA, which will get flights as low as 500 feet in altitude, will as a result have its loudest noise levels, or Lmax, increase from 86 decibels to 110 decibels, which is equivalent to the loudest noise at a rock concert. Locations in the Steelhead North and East MOAs will experience similar changes in the loudest noise they will have to put up with due to low-level flying.

Areas important to fishing, hiking, canoeing, and other recreational activities on or near the Au Sable River and its North and South Branches, as well as recreational areas of the Thumb and the northern part of the Saginaw Bay, will have extremely disruptive ear-splitting fly-overs under this proposal.

Similar to the quiet and diverse habitat in the heart of Michigan, Military aircraft are flying out of a U.S. Navy base on Whidbey Island in Puget Sound. University of Washington researchers interviewed residents in the Olympic Peninsula of Washington State where "The chronic and unpredictable nature of the noise is especially tiresome for residents, and some report difficulty sleeping, learning in school and even interference with hearing aids".<sup>1</sup> Other research has shown that noise disturbances also impact wildlife by triggering physiological stress that affects their ability to successfully reproduce, communicate with other animals and find prey.<sup>2</sup> Sporadic whooshes of aircraft can cause difficulty sleeping and problems finding food for animals.

### Negative Effects on Wildlife

The Air National Guard's EA takes a placid view of the effects of low-flying combat jets on animal life. The Assessment contends that birds and other animals have adjusted to noisy aircraft in this area and other loud sounds, and will adjust to increases. Two narrow studies are cited, one that looked at nesting osprey, and the other assessed changes in the evening activity of long-tailed bats. However, there have been studies done showing that only some, not all animals and birds can adjust their calls to avoid noise pollution masking.<sup>3</sup>

The Environmental Assessment ignored a substantial body of evidence that low-level jet flights can have an extensive negative impact on animal life. A 1994 comprehensive review of animal studies by the National Parks Service found extensive evidence that low-level overflights disrupt animal behavior.<sup>4</sup> One conclusion of this report was: "That exposure to low-altitude aircraft overflights does induce stress in animals has been demonstrated."<sup>4</sup>

Furthermore, The Air National Guard does not acknowledge the potential for an echo of the noise disturbance outside the zone they prescribe. At every instance when the Steelhead Low MOAs are activated, 264 days a year for multiple hours a day, there would be noise disturbance in the region.

Preventing bird strikes is an even more pressing concern in the areas surrounding the proposed airspace because of the presence of Bald Eagles and endangered bats. Additionally, the areas around the proposed Modification are home to many other threatened and endangered species. Every year migrating birds road trip across Michigan along the Mississippi Flyway, specifically the endangered Kirtland Warbler breeds and nests in

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<sup>1</sup> Camero, K. (2020, December 10). *Quietest place in US hammered by military aircraft noise, study says. Why that matters*. The News Tribune. Retrieved January 2, 2023, from <https://www.thenewstribune.com/news/state/washington/article247679515.html>

<sup>2</sup> Malik, S. (2021, April 15). *4 Ways that Noise Pollution Can Impact Wildlife (and 4 Ways to Help)*. Wildlife Habitat Council. <https://www.wildlifehc.org/4-ways-that-noise-pollution-can-impact-wildlife-and-4-ways-to-help/>

<sup>3</sup> Slabbekoorn H. *Noise pollution*. *Curr Biol*. 2019 Oct 7;29(19):R957-R960. doi: 10.1016/j.cub.2019.07.018. PMID: 31593676. [https://www.cell.com/current-biology/pdf/S0960-9822\(19\)30863-2.pdf](https://www.cell.com/current-biology/pdf/S0960-9822(19)30863-2.pdf)

<sup>4</sup> U.S. National Park Service, *Report to Congress: Effects of Aircraft Overflights on the National Park System (1994) [Chapter 5.2][Table 5.1]*

Northern Michigan throughout the summer. Many people travel to northern Michigan every year just to see these magnificent birds, a tourism plus. The Kirtland Warbler also communicates the identity and whereabouts of individuals to each other and breeding selection through vocalization. To protect these species and others, we have to think about their entire journey, flight patterns, and noise impacts of the low-altitude MOAs on them. Studies have shown bird diversity declines in high-noise areas and that stressed animals in high-noise pollution areas increase watchful behavior while decreasing foraging behavior.<sup>5</sup>

We appreciate the incorporation of the Bird/Wildlife Aircraft Strike Hazard (BASH) Management Program into the EA;<sup>6</sup> however, we also are aware that even under the BASH program thousands of bird strikes happen annually.<sup>7</sup> The Air National Guard should consider further measures to prevent bird strikes in furtherance of the Nation's goals of protecting migratory birds.<sup>8</sup> Therefore, the Guard must take extra precautions in ensuring the proposal does not create risks to these species.

Failure to follow the National Bald Eagle Management Guidelines<sup>9</sup> could cause harm to bald eagles and their habitats. Any negative responses will likely result in direct or indirect harm to nestlings which in turn compromises the continued health of the bald eagle population. We encourage the Guard to more thoroughly evaluate their proposal in regards to activities around bald eagle habitat and nesting areas. We also encourage additional seasonal limitations and buffer zones before approving the proposed airspace.

Not only sound, but vibrations can disturb bats, compromising their ability to survive. It is misguided to not consider the effects of both sound and vibration on bats and their habitat. For example, after hibernation in caves, Indiana bats migrate to their summer habitats under loose bark on dead and dying trees. In this habitat, the female bats give birth to their young.<sup>10</sup> Sound and vibrations can disrupt this process.

In its EA, the Air National Guard omits consideration of the effects of low-altitude flying at supersonic speeds on aquatic life in our waterways. Certain species of aquatic life use sound to communicate, find food, fight off predators, navigate, and maintain group cohesion, and all are altered by excessive noise.<sup>11</sup> Also, different species react differently to sudden noise and vibrations.<sup>12</sup> The proposal to lower the flight ceiling to as low as 300 feet over rivers and wetlands is low enough to vibrationally affect rivers, streams, and wetland inhabitants with extreme levels of noise pollution. "Human-generated noise disrupts the behavior, physiology, and reproduction of marine organisms so much that it can lead to an increased risk of mortality."<sup>13</sup> Therefore, sound wave impacts on aquatic life, their habitat, and spatial patterns in our waterways must be analyzed and noted before any determination is made.

Additionally, the Air National Guard must consider the effects of visual disturbances on eagles and other wildlife. Given the low altitude proposal, the likelihood of visual disturbances is significantly increased, leading to a foreseeable increase in disturbances to eagles and others.<sup>14</sup> Likewise, given the random combat maneuvering – and the possibility of simulated gun runs – the likelihood of visual disturbances that affect eagles and other birds is almost certain to occur.

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<sup>5</sup> Daley, B. (2015, December 17). *How noise pollution is changing animal behavior. The Conversation.* <https://theconversation.com/how-noise-pollution-is-changing-animal-behaviour-52339>

<sup>6</sup> U.S. Air Force, *Air Force Guidance Memorandum to AFI 91-212, Bird/wildlife Aircraft Strike Hazard (BASH) Management Program*, AFI 91-212 (June 1, 2021)

<sup>7</sup> See generally T. Adam Kelly, *Managing Birdstrike Risk with the Avian Hazard Advisory System*, FLYING SAFETY (Sept. 2002)

<sup>8</sup> See Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*

<sup>9</sup> U.S. Fish & Wildlife Serv., *National Bald Eagle Management Guidelines* (May 2007)

<sup>10</sup> U.S. Fish & Wildlife Serv., *Indiana Bat (Myotis Sodalis)* (Dec. 2006)

<sup>11</sup> Noise Monitoring Services. (2016, June 25) *Noise Pollution Can Be as Dangerous to the Environment and Ecosystems as All Other Types of Pollution.* [Noisemonitoringservices.com. https://www.noisemonitoringservices.com/the-effects-of-noise-pollution-on-wildlife/](https://www.noisemonitoringservices.com/the-effects-of-noise-pollution-on-wildlife/)

<sup>12</sup> See U.S. Fish & Wildlife Serv. *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife* (1988) at 62

<sup>13</sup> Tarino, G. (2021, February 22). *Noise Pollution Impacting Marine Animals Worse Than Previously Thought.* E360 Digest. <https://e360.yale.edu/digest/noise-pollution-impacting-marine-animals-worse-than-previously-thought>

<sup>14</sup> See Nat'l Park Serv., *Report to Congress: Report on Effects of Aircraft Overflights on the National Park System* (1994) at 103-105

Lastly, the EA dismisses concerns regarding disturbances to on-the-ground wildlife, like deer and elk. Overall, the Guard must complete a full Environmental Impact Statement (EIS) to evaluate the effects the proposal will have on all wildlife and the wild character of the areas around the proposed airspace. This analysis must include evaluations of visual disturbances and effects of vibrations in addition to an analysis of noise.

### **Insufficient notice procedures to citizens residing under the modification zone**

While we appreciate the extra thirty-day extension, this is still not enough. Not only did the Air National Guard announce the original comment period during the start of deer hunting season, which is to the likes of a national holiday in Michigan, they further extended the thirty-day time period during the holiday season when many residents are out traveling, on vacation, and simply occupied with family during this time. Even where the Air National Guard attempted to notify the public, it fell short.

The Air National Guard must provide sufficient notice to citizens in all counties underlying the proposed modification to promote robust public involvement. According to the EA, thirteen counties in Michigan would be located under proposed MOAs and VRs with altitude floors lower than 1,000 feet. However, the Air National Guard only gave a notice of availability for public review of the Draft EA in four different newspapers that do not even cover half of those counties, meaning affected counties were left out of public notices. While there was printing in public libraries in some of these areas, this is not adequate. It seems other methods such as publication in newsletters, direct mailing to affected property owners, or notice through other local media were not utilized. Moreover, seasonal residents were not notified.

Lastly, while they are mentioned, there are no appendices in the report linked or on the Alpena command page. If it is hard for us to access, it is also hard for the general public. How can the public intelligently engage in this process when all information is not easily available to them? This complete lack of transparency and oversight by the Air National Guard must be addressed.

### **Impact of the proposed Modification on the local economies of the area are not fully addressed and does not account for tourism or recreation.**

We request the Air National Guard adequately address how disturbances could impact the economies of the surrounding areas that rely on tourism for significant income. Visitors to the region come to experience the wildness of the area, our beaches, historic towns, and natural wonders. If they wanted to hear those sounds usually reserved for cities or desert training grounds, they would not flock to Michigan's public lands and beaches. Though many visit Michigan's Thumb and Northern region to recreate in the State's public lands and waters, the tourism economy is grounded in lodging and dining. These enterprises are driven by peaceful recreation, festivals, and various hunting and fishing seasons throughout the year. In Michigan, hunting and fishing have a combined \$11.2 billion economic impact on the State and provide an estimated 171,000 jobs, according to a 2019 study done by the Michigan United Conservation Club and Michigan State University.<sup>15</sup> Disturbing the getaways of persons visiting these areas can cause decreasing visitation and loss of income to the local economy through declines in dining, lodging, and retail spending.

The EA report states that there would be no significant impact, and no areas would be exposed to noise effects for an extended period, but fails to recognize that the people flocking to the region do so for tranquility and peace. Loud military flights overhead for over half the year for multiple hours a day do not preserve the tranquility of the region. Immediately after making the claim that the noise would have little impact, the Air

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<sup>15</sup> *Economic impact study 2019*. Michigan United Conservation Clubs. (2019, January). Retrieved January 3, 2023, from <https://mucc.org/about-us/economic-impact-study-2019/>

National Guard detailed their plan to mitigate noise over recreational public lands, shorelines, and areas of special concern. It's not necessarily about the decibels when it comes to people, but rather it is their experiences of increased disruption to their daily lives. One Vermont resident who has F-35 training over her home stated, "If I'm on the phone or on a Zoom meeting or if I'm watching a movie with my kids, that all has to pause, all has to stop, when the planes go over."<sup>16</sup>

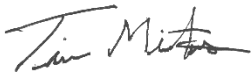
### **Impact of proposed Modification on wind projects**

With climate change, Michigan and its utilities are looking to move its energy sources away from fossil fuels and into renewable energy sources such as wind energy. As stated in the EA, there is a cluster of wind turbines within the proposed Steelhead Low North and Steelhead Low South MOA in the thumb area. Many of these turbines sit above 600 ft AGL. We understand pilots would follow low-level guidance and be 500 ft-1000 ft above obstacles, however, in a time where we need to be rapidly building out renewable energy resources, we are concerned about the ability to locate new wind turbines within the SUAs. Restrictions on siting could potentially slow our State's transition. Without this being answered in the EA, The Guard must address the question of whether its Plan would prevent new authorization of wind projects within low-altitude flying areas.

### **The Need for an Independent Study**

The treatment of the impact of low-level flights on animal life in the EA suggests that an independent expert appraisal of the impacts on humans, our experience of nature, and the natural world itself is needed before any decision is made to approve the low-level flight plans in this proposal. The likely effects of this proposal reach much farther than the Draft EA would lead one to believe, and the studies used to dismiss these concerns are inapplicable or insufficient to truly analyze the unique characteristics of the areas around the proposal. In order to adequately address the key issues outlined above and fully investigate thoroughly the impacts the proposed action may have on this region and its wildlife, the Air National Guard should conduct a full Environmental Impact Statement (EIS) before a decision is made.

Sincerely,



Tim Minotas  
Legislative and Political Coordinator  
Sierra Club Michigan Chapter

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<sup>16</sup> Rachel Nostrant and Lana Cohen Oct 28 2021 October 28, 2021, Kevin O'Connor Jan 13 2023, 7:21 A. M. J. 12, Ethan Weinstein Jan 13 2023, 6:01 A. M. J. 12, Sarah Mearhoff Jan 12 2023, 7:33 P. M. J. 12, & Shaun Robinson Jan 12 2023, 6:15 P. M. J. 12. (2021, October 28). *Burlington Airport Monitoring Sound levels following jet-noise complaints*. VTDigger. Retrieved January 4, 2023, from <https://vtdigger.org/2021/10/28/burlington-airport-monitoring-sound-levels-following-jet-noise-complaints/>



January 13, 2023

VIA EMAIL AND FIRST CLASS MAIL

National Guard Bureau  
Attn: Ms. Kristi Kucharek  
3501 Fetchet Ave.  
Joint Base Andrews, MD  
20762-5157  
[NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)

Re: Draft Environmental Assessment for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex

Dear Ms. Kucharek:

This letter contains comments by Anglers of the Au Sable relating to a Draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI), dated November 2022, prepared by the Michigan Air National Guard relating to a proposed massive expansion of vertical and horizontal airspace for low-altitude training over the eastern half of Michigan's lower peninsula.

Anglers of the Au Sable (Anglers), with 1,200 members spread throughout Michigan and the Midwest, have a 35-year history of defending the watershed of the Au Sable River, one of the finest trout streams east of the Mississippi River, as well as being a powerful economic engine for the state of Michigan. "Located in the northern lower peninsula of Michigan, the Au Sable is known for its high water quality, scenery, recreational opportunities, coldwater fishery, and historic and cultural significance. It may just be the finest brown trout flyfishing east of the Rockies."  
(<https://www.rivers.gov/rivers/ausable.php>).

What is also so special to the Au Sable River is its amazing watershed. "One of the main reasons why the Au Sable River is so bountiful and famous for fishing is that it has around 476 miles of streams within its system. Most of which hold prime fishing waters. The river's mainstream flows for about 129 miles."  
([https://www.fmsptceis.com/9894951\\_FMS%20PTC%20Draft%20EIS\\_Vol%202\\_August%202022.pdf](https://www.fmsptceis.com/9894951_FMS%20PTC%20Draft%20EIS_Vol%202_August%202022.pdf))

Additionally, the Au Sable for 23 miles from the Mio Pond downstream to the Alcona Pond is designated a National Wild and Scenic River.  
([https://en.wikipedia.org/wiki/Au\\_Sable\\_River\\_\(Michigan\)](https://en.wikipedia.org/wiki/Au_Sable_River_(Michigan))). The Au Sable is also a designated Michigan Natural River (<https://www.michigan.gov/dnr/managing-resources/fisheries/natural-rivers>).

As such, this special river and its watershed is deserving of all the protection allowed under the National Environmental Policy Act (NEPA).

The purpose of the proposed air space expansion is to allow the National Guard to fly jets in low-altitude training over the eastern half of the lower peninsula of Michigan, including the Au Sable River watershed.

The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with NEPA. The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below.

**Flawed Modeling.** The EA uses a flawed population model relying on what it claims to be a decreasing and aging population of the affected area. The EA fails to account for tens of thousands of seasonal residents, hikers, bikers, hunters, fishers, and outdoor lovers who support the local economies whose lives, outdoor experience, and property values would be adversely affected by the proposal.

**Noise.** The proposal will result in a dramatic increase in noise. The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.

**Pollution.** The proposal will result in an increase of various pollutants. This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan.

**Cumulative Effects.** The EA ignores the cumulative effects of the proposal. For instance, throughout its discussion of cumulative impact, the EA defers any effort to deal with the problem by saying that cumulative impacts will be discussed in further NEPA documentation. And the EA throughout minimizes impacts of increased noise and pollution on all flora, fauna, and humans in the affected area.

Though the National Guard asserts that the proposed land expansion by the Army National Guard and the proposed air expansion by the Air National Guard are two separate processes, when it comes to the cumulative effects of both proposed expansions, this is in reality one enormous proposed expansion that is terribly detrimental to the environment.

**Alternatives.** The proposed airspace expansion and modifications contained in the Draft EA would cover the entire Au Sable watershed and are therefore of primary importance to the Anglers. The Draft EA discusses alternatives A, B, C, and D. Alternatives A, B and C are wholly rejected by Anglers for the reasons discussed below. The EA glosses over the no-action alternative, alternative D. The EA does not discuss alternatives of using other airspace in the United States already in use for these training missions that involve less sensitive environments.

**Notice and Process.** It should be noted that publishing a notice in small local papers and putting up a notice on a library board is not adequate to notify all possible stakeholders of the action proposed in this Draft EA. The public comment period for this most recent rendition of the Draft EA opened in mid-November, yet the application for the airspace involved was submitted to the FAA in November, before the initial and subsequently extended public comment period ended. As such, proper process was not followed. The application should be withdrawn. The applicant should reapply with a proper and complete EA as required by statute.

Amazingly, the Guard sought no input from The Michigan Department of Environment, Great Lakes, and Energy (EGLE). This despite the fact that dramatically increasing the airspace in northern Michigan will most assuredly impact the public and private land and waters of northern Michigan over which EGLE has jurisdiction.

**Collection and Disposal of Waste.** There is no process in the Draft EA as to how or in what manner waste will be disposed with the increased airspace.

Below are our detailed comments regarding the myriad of problems and flaws contained in the Draft EA. Those details make clear that a full Environmental Impact Statement is required. Even if an EIS is not required, the Draft EA does not take the required “hard look” at environmental impacts; and the alternatives analysis is inadequate.

## **DETAILED COMMENTS**

### **Flight Floors**

The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

### **Proposed Sorties**

The number of sorties proposed in Grayling East and Grayling West is over **10 times** the number of sorties stated to have taken place in the Temporary Grayling MOA. This extreme escalation in the number of flights, especially in the Grayling West MOA with



its proposed 500 foot floor, would shatter the peace and solitude of the area, intruding on and curtailing recreational activities, including fishing.

Any branch of the military, including as well various military airfields located throughout the region, may request to train at the Alpena CRTC. Therefore, how was the number of proposed sorties arrived at, when it cannot be known at this time how many squadrons would request to train or what kind of aircraft they may be flying in the future? The ANG has not stated that the number of sorties or the type of aircraft stated in the Draft EA would be the maximum number of sorties allowed or limited to the aircraft listed: it can therefore be concluded that the projections contained in the Draft EA cannot be factual.

There is no definition contained in this Draft EA which sets forth what events or occurrences would necessitate an additional environmental assessment being required-i.e. how many more flights, how many additional makes of aircraft could be introduced before a new EA was required?

## **Noise**

The EA fails to discuss that peak noise will shatter the solitude of the populations noted above with constant low overflights of ear-splitting jets. The EA justifies this increased noise by a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase in average noise.

There are 5 sorties stated for the EA-18G aircraft in the Grayling West MOA, an aircraft stated not to have been used in this airspace previously. This aircraft is exceedingly loud (Jamal, Truthout.org). The harmful impacts of noise from these fighter jets is the subject of a lawsuit in the Western District of Washington (State of Washington v U S Navy et al, 19-cv-01059-RAJ). The decibel level change stated in the EA for the areas where the EA-18G is to operate does not appear to reflect an overall high increase in noise levels. It is impossible to believe this could be true, in view of the level of sound generated by this aircraft, especially when combined with the presence of both the F-16 and A-10 aircraft in the same MOA.

The FAA expressly instructs that the military utilize the NOISEMAP system to evaluate noise impact (FAA 1050.1F Desk Reference (v2); FAA 7200.2M), yet there is no mention whatsoever of this system or its use or its findings in this Draft EA.

It is unclear to Anglers how the ambient sound levels were determined as presented in the Draft EA, or for what period of time or at what time of day obtained. They appear to be averages (i.e.DNL) but averages of what? How many samples? With aircraft or without? If with, how far away from the ground and for which aircraft? None of this raw data is presented in the Draft EA. Even if it was, utilizing an “average” level of sound over 24 hours does not demonstrate what the impact of single event sound would be on the ground. For example, if someone started a jackhammer outside your home, ran it for an hour, and then averaged the decibel level experienced during that hour over the next 23

hours, the “average” would not begin to accurately describe the sound level of the jackhammer experienced during the hour it was running. That is the same flawed reasoning utilized in the Draft EA.

Similarly, it is absolutely nonsensical that introducing 10 times the number of flights in Grayling West MOA or adding aircraft at 300 feet in VR-1601 and 1602, would create only a negligible increase in noise, due to the sheer volume of sorties and the low flight floors proposed in those areas. Common sense calls for the opposite conclusion.

Furthermore, it is military practice that military planes travel in pairs, or in a formation larger than two. (Military Formation Flying, Wikipedia) However, nowhere in the Draft EA is the noise level from 2 or more aircraft stated or evaluated.

### **Unmanned Aircraft**

Remotely piloted aircraft (RPA) are not addressed in the Draft EA, despite the fact that the prior EA published for the Grayling Temporary MOA stipulated their use (<https://www.alpenacrtc.ang.af.mil/Portals/12/documents/Draft%20EA%20for%20the%20Grayling%20Temporary%20MOA.pdf?ver=2018-11-14-110733-903&timestamp=1542211765593> ). It is reasonable to assume that the operation of RPAs and the training of National Guard RPA operators will be an integral mission of the Guard.

### **Electromagnetic Warfare**

There are no specifications for the EA-18 G aircraft, which is equipped for electronic attack included in the Draft EA. Additionally, tasking events for the F-16 and A-10 aircraft contained in Table H-2 of the Appendices includes “military activities that use electromagnetic energy to control the electromagnetic spectrum (“the spectrum”) and attack an enemy”. Yet there is no discussion whatsoever of possible effects of such warfare on humans or any other life form in the Draft EA or the FONSI. This is a glaring omission of a possible source of harm from the activities to be undertaken.

Listing the EA-18G aircraft in the EA indicates that there will likely be training that includes the use of electronic warfare (EW) elements. EW includes an array of tools that function across the electromagnetic spectrum. For example, Active Denial Systems were developed for crowd control and operate at 95 GHz ([https://jnlwp.defense.gov/Portals/50/Documents/Press\\_Room/Fact\\_Sheets/ADT\\_Fact\\_Sheet\\_May\\_2016.pdf](https://jnlwp.defense.gov/Portals/50/Documents/Press_Room/Fact_Sheets/ADT_Fact_Sheet_May_2016.pdf) ).

Although the exact electromagnetic wavelengths utilized for this type of training are for some reason omitted, it is reasonable to assume that this training will utilize a range of electromagnetic frequencies (<https://sgp.fas.org/crs/natsec/IF11155.pdf>). For example, the military appears to typically use frequency bands L, S, and C ([Army Aims to Fully Push Electromagnetic Spectrum | AFCEA International](#)). The L-band frequencies are in the ultra-high frequencies and fall into the 1 and 2 GHz range. The S- and C-band

frequencies are in the microwave band, S falling between 2 and 4 GHz and C falling between 4 and 8 GHz. Additional electronic warfare activities have been noted as part of ground operations training and R&D (perhaps by independent contractors), but full details are not available.

However, we assume that these training and research/development activities will employ a range of electromagnetic frequencies, potentially in the Q ([Radar Bands | Frequency bands and power used in radar \(rfwireless-world.com\)](#)), V, W bands, and higher ([Army Aims to Fully Push Electromagnetic Spectrum | AFCEA International](#)).

In addition to frequency, other factors related to the use of electromagnetic radiation are duration of transmission, how often transmissions occur, and power density. These three factors combined will determine the amount of electromagnetic radiation that is transmitted into the environment. The significance of effects of electromagnetic radiation (EMR) on flora and fauna is often minimized due to a perceived lack of evidence such as quantified mortality rates due to EMR exposure. Establishing impact using this type of metric essentially requires direct observations of animals dying instantaneously following EMR exposure. However, accepting the fact that effects of EMR may be expressed in ways other than direct mortality, then there is growing evidence that EMR can have a negative impact on flora and fauna (Goodman and Blake 1998; Blank and Goodman 1999).

An area of research that has received relatively little public attention is the impact of electromagnetic fields (ELF) on behavior (Burda et al. 2009, Shepard et al. 2018), physiological function (Goodman and Blake 1998), and DNA (Blank and Goodman 1999). The lack of consideration regarding these impacts is likely due to the fact that they are difficult to measure and are not immediately visible to the public.

None the less, these kinds of effects may have long-term negative impacts on organisms, populations, and communities. For example, heat shock proteins (e.g., hsp70) are produced by animals during periods of stress (Goodman and Blank 1996). Typically, the animal will experience a stress, produce hsps to protect various physiological elements, and then the hsps decrease as the stress factor subsides. However, in the case of ELF generated by aircraft during training, an animal may be exposed to the stress factor several times in a day, or several times over a longer period of time (e.g., a week). Thus, animals living within or adjacent to electronic warfare training areas may be regularly placed in a state of stress which could result in reduced fitness or ultimately, mortality.

The risk may be greatest to threatened or endangered species due to the already low number of individuals across their range. The FONSI admits that the proposed action “may affect” the northern long-eared bat. FONSI page 4. Even though the FONSI goes on to assert that the Fish and Wildlife Service screening did not indicate Endangered Species Act concerns, that does not satisfy the NEPA “hard look” requirement. For purposes of NEPA, a project need not jeopardize the continued existence of a threatened or endangered species to have a "significant" effect on the environment. See e.g., *Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1275-76 (10th Cir. 2004) (finding the

Fish and Wildlife Service's conclusion that construction of housing development and golf course along Snake River would not likely jeopardize the continued existence of the bald eagle was not determinative of the need to prepare an EIS for the project); *Makua v. Rumsfeld*, 163 F. Supp. 2d 1202, 1218 (D. Hawaii 2001) (finding of "no jeopardy" under ESA does not avoid the need for an EIS where a project may nonetheless affect a species).

Bats are generally considered to be capable of evading physical structures due to their echo location. But there is significant evidence that bats may and do collide with fixed structures (Nicholls and Racey 2007). Similarly, the general assumption has been that bats will not be impacted by the expanded/reconfigured training area and operations, including the use of EMW. The popular theory is that EMR does not interfere with a bat's echo location system and consequently, may lead some to the conclusion that EMR has no negative impacts on bats. However, there is evidence that bats do avoid radar specifically used at airports, including military facilities (Nicholls and Racey 2007). Thus, there may be impacts to bat populations not related to disruption of the echo location system, but due to their avoidance of an area with EMR. Joint Threat Emitters (JTE) which generate a "high-density radio frequency environment" may create just such a scenario.

There are several indirect impacts that may be realized by a threatened/endangered bat species. First, it may cause bats to vacate a preferred roosting site for a lower quality, less preferred roosting location. Second, bats may be forced from a high-quality feeding location (e.g., within a river corridor like the North Branch Au Sable River) to a low-quality feeding area due to their response to EMR. Feeding in lower quality areas will result in a reduction in fitness and a loss in body condition that may manifest in mortality during the winter hibernation period (Zahn et al. 2007).

Although some effects of EMR are difficult to quantify, others are easier to measure. Soft tissues directly exposed to EMR such as the eye, can be damaged by EMR exposure. Studies have shown that exposure to 40, 75, and 95 GHz will cause damage to parts of the eye (Kojima et al. 2018).

Exposure to EMR has also been linked to various human conditions such as the Havana Syndrome. In this case, a National Academy of Sciences report (<https://www.saferemr.com/2020/12/national-academy-of-sciences-report-on.html>) concluded that the symptoms exhibited by those exposed were consistent with individuals that had been exposed to "directed, pulsed radio frequency (RF) energy". It should be noted that EMR and acoustic energy can impact auditory function even at relatively low power densities.

Even exposure to EMR from a mobile phone is listed as a potential health risk. Each mobile phone provides a statement of risk due to the EMR exposure an individual will experience during mobile phone use. Research has found that even exposure to common cell phone radiofrequencies can cause DNA damage (Smith-Roe et al. 2020) .

The fact that EMR has been shown to have impacts on plants, birds, insects, livestock, rodents, and amphibians (<https://www.saferemr.com/2018/05/EMF-wildlife.html> ) supports the hypothesis that training activities that employ ELF will likely cause significant negative impacts to wildlife (<https://www.saferemr.com/2016/07/effects-of-wireless-radiation-on-birds.html> ).

Add to this, exposure to EMR in use during ground operations and the prospect that outside contractors may be developing and testing new EMR warfare components (DBusiness Magazine, 7/13/22), and it is reasonable to conclude that these activities will have a negative impact on wildlife.

Although we do not have access to the specific frequencies that will be used within the training complex, there is sufficient evidence to suggest that there will be impacts due to EMW. The EA wrongfully dismisses the risk of exposure to EMR used during training activities and the potential risks and impacts of electromagnetic activity noted above.

## **Chaff**

The deployment of chaff by military aircraft is one of several countermeasures used to evade radar detection. There are several types of chaff cartridges, but the chaff is typically composed of either aluminum foil or aluminum coated glass fibers. The chaff cartridge that will be used in the operations area as identified in the EA is the RR-188.

The RR-188 is an 8x1x1 rectangular tube that contains 1.0 mil diameter (25 micron) (<https://www.globalsecurity.org/military/systems/aircraft/systems/chaff.htm>) micro-glass fibers coated with a very thin layer of aluminum. Available information notes that the total number of fibers (dipoles) per cartridge is approximately 5.46 million. The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes primarily within the R-4201 and the Pike West MOA per year which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere primarily over the two training areas (EA pg. 27).

There is an important inconsistency (among others) in the information presented on the altitudes of these operations. Designated Altitudes for Pike West MOA (Appendix G) is 6,000 feet to 17,999 feet MSL. However, Table 2-17 notes that chaff/flare training is generally 2,000 feet AGL (above ground level) or higher. If training occurs at 2,000 feet AGL and average elevation for the Pike West MOA is 1,020 feet MSL (mean sea level) (e.g., Mio MI), then flights could potentially occur at approximately 3,000 feet MSL which differs from the altitudes noted in Appendix G. So apparently, these operations will be at much lower elevations than indicated in the EA. Training flights occurring at lower altitudes will increase visual and auditory disturbance of species in the area. In addition, deployment of chaff cartridges at lower altitudes will likely result in a much higher concentration of micro-glass fibers accumulating in areas used for this type of training since they will have less time to drift after discharge.

The EA fails to accurately depict the altitude(s) chaff will be released from in each of the designated areas.

Although the EA concludes, based on previous government reports, that chaff is non-toxic at typical exposure levels, toxicity is not the only potential health or ecological harm. The fact that the chaff is composed of aluminum coated micro-glass fibers is a particular threat in terms of ecological and human exposure. Glass fibers that are 25 microns in size (noted above) would easily be inhaled and passed into the lungs. Exposure to glass fibers (or silica dust) leads to a well-recognized occupational hazard termed silicosis (<https://www.cdc.gov/niosh/docs/2004-108/pdfs/2004-108.pdf>). Silicosis is a group of conditions that includes asbestos-related respiratory diseases. Typical symptoms of silicosis are coughing, inflammation and fibrosis of the respiratory system. Silicosis can be chronic, subacute or acute (<https://www.cdc.gov/niosh/docs/2004-108/pdfs/2004-108.pdf>). Consequently, inhalation of micro-glass fibers generated by chaff discharge has the potential to cause serious health risks, including death, in both animals and humans.

The EA suggests that chaff particles are too large to be inhaled and only after some degradation (decrease in size) would this be a potential health risk. The EA fails to accurately assess the potential risks and impacts of chaff deployment noted above.

Other organisms, particularly invertebrates may also be injured or killed by micro-glass fiber exposure due to chaff. For example, a non-chemical insecticide that is formulated from diatomaceous earth has been widely marketed to control pest insects. Diatomaceous earth is formed from microscopic silica cell walls that are produced by marine protozoa ([https://en.wikipedia.org/wiki/Diatomaceous\\_earth](https://en.wikipedia.org/wiki/Diatomaceous_earth)). As the organisms die, the silica cell wall settles to the bottom of various marine ecosystems. The remaining silica cell walls range from tens of microns to a few hundred microns in length/diameter (<https://en.wikipedia.org/wiki/Diatom>). The diatomaceous earth is simply mined, ground and then gardeners sprinkle it on the foliage of plants (<https://www.bugtech.com/diatomaceous-earth-benefits-as-a-natural-pesticide/>). As the insect eats the plant leaves it will ingest the silica which slices through the intestine causing mortality. Alternatively, the silica can scratch the cuticle causing the insect to desiccate. Because micro-glass fibers are similar to diatomaceous earth which is used as a broad-spectrum insecticide, micro-glass fibers will impact both common and rare insects.

The EA dismisses the potential risks and fails to accurately assess the potential risks and impacts of chaff deployment noted above.

The sheer number of micro-glass fibers that will be released annually will likely cause significant negative impacts on people, other mammals, and insects that are an important source of food for some threatened and endangered species, and for fish. Indeed, an independent news source (GlobalSecurity.org) has stated that the land use management objectives of environmentally sensitive and pristine areas such as Wilderness Areas, Wild and Scenic Rivers, and National Parks and Monuments, may be compromised by the

discharge of chaff cartridges and bundles near or over these areas. This is of particular concern in the carefully balanced system in this area, that has allowed the development of a world-class trout fishery highly reliant on insect hatches. Those hatches may already be diminishing or at least changing due to impacts from global warming and climate change. This fishery is a vital economic asset to the affected region (Michigan Department of Natural Resources Public Land Strategy 2021-2027).

The EA dismisses the risk of glass-fiber exposure on the basis that glass-fibers are non-toxic, however there are other risk factors. The EA fails to accurately assess the potential risks and impacts of chaff deployment noted above.

## **Flare**

Flares deployed from aircraft are a countermeasure used to evade various types of missiles. The flare identified for use in the EA appears to be the M206 which uses in its formulation Magnesium-Teflon-Viton A (MTV).

(<https://www.globalsecurity.org/military/systems/aircraft/systems/m206.htm>)

Given the temperature at which flares burn, the DNR has previously voiced concern over the risk of fire, particularly in areas with Jack Pine, which proliferate in many of the target areas (Draft EA Appendix B-26). An equally important concern, however, may be the risk to animal and human health. This risk would be exacerbated if training is conducted at lower altitudes as noted above.

MTV combustion produces a variety of particles that can be composed of  $MgF_2$  and  $MgO$  among other compounds (Adhikary et al. 2020). The particles are generally in the range of 1 micron to 100 microns in size, well within a size range that may be inhaled. The safety data sheet (SDS) for  $MgF_2$  references the OSHA 29 CFR 1910.1200 (hazard communication) Hazard Statement and indicates this compound can cause skin irritation, serious eye irritation and may cause respiratory irritation. It also identifies this compound as a category 3 compound, exhibiting specific target organ acute toxicity. Thus, a person experiencing a single exposure to flare combustion products such as  $MgF_2$  may suffer from adversely altered function of their respiratory system. The risk of serious respiratory effects is compounded if humans suffer exposure to both  $MgF_2$  and micro-glass fibers. Similar effects may occur in wildlife suffering the same exposure to both flare combustion products and chaff.

The EA dismisses the risk of exposure to flare combustion products and fails to accurately assess the potential risks and impacts of flare deployment.

## **Munitions**

In addition to the accumulation of toxic and carcinogenic compounds released into the current and expanded training areas from increased countermeasure use, the increase in

the detonation of munitions (ground and aerial training) will add to the array of toxic substances in the environment due to military training. A major concern is that detonation of munitions results in the release of perchlorate into the environment. Perchlorate has been reported in groundwater at other military installations such as Joint Base Cape Cod (Massachusetts) where it is “often found in groundwater with explosives” ([https://www.massnationalguard.org/JBCC/afcee-documents/jbcc\\_cleanup\\_update\\_092619.pdf](https://www.massnationalguard.org/JBCC/afcee-documents/jbcc_cleanup_update_092619.pdf)). In Evart, Michigan, elevated perchlorate concentrations in groundwater were associated with an area used for the annual 4<sup>th</sup> of July fireworks display. The discovery of elevated levels in the municipal water supply led Nestle to discontinue use of one municipal well as a source of water for bottling (<https://maep.org/event-3244164>).

Perchlorate is of concern because it may impact human health. Perchlorate can disrupt thyroid function, and although negative impacts in adults may be reversible, some studies suggest that long-term exposure may inhibit thyroid function. Perhaps more important are the risks of perchlorate exposure during fetal development and early childhood development. The thyroid plays an important role in early childhood development. Disrupting thyroid function during development may cause irreversible effects. Perchlorate has also been shown to cause lung damage in lab studies (<https://wwwn.cdc.gov/TSP/PHS/PHS.aspx?phsid=892&toxid=181>).

Monitoring wells located generally to the south and east of the current Grayling practice range were sampled during October 2021. Samples were analyzed for a range of toxic substances, primarily heavy metals, but also perchlorate. The data show that almost all of the groundwater samples had detectable levels of perchlorate. (Camp Grayling Range 40 Annual Monitoring Report 2021 and additional historical Range 40 Monitoring Reports). Although the reported concentrations are relatively low, the fact that it is present across much of the practice range is concerning. Obviously, an increase in the amount of munitions expended in the practice area will result in an increase in the concentration of perchlorate in the groundwater.

Given the amount of munitions used for training in a relatively small area, it is reasonable to suggest that the concentration of perchlorate (and other toxins such as lead) could increase. The EA fails to accurately assess the potential risks and environmental impacts of munitions deployment noted above.

## **Aircraft Flight Operation**

### Aircraft Fuel Combustion Products

The EA report Appendix I details the amounts of various combustion products resulting from flight activities within the designated flight areas. Aircraft fuel generates a significant quantity of products upon combustion, many of which are known to have negative environmental impacts. (Bendtsen et al. 2021). For example, an F-15 produces over 35 organic compounds from fuel combustion (Spicer et al. 2009). In addition, a study that estimated combustion products found that during “military operation engine



power” levels, an F-15 generated 3151 g of CO<sub>2</sub> kg<sup>-1</sup> fuel and 32 g kg<sup>-1</sup> of NO<sub>x</sub> (among others).

An F-16 operating for 1 hour burns approximately 8,000 to 10,000 lbs of fuel (up to 60,000 lb per hour with afterburner) (<https://siamagazin.com/f-16-full-afterburner-11-litres-fuel-per-second/>). Assuming the F-16 and F-15 produce similar quantities of combustion products, the F-16 would produce approximately 270 lbs of NO<sub>x</sub> per hour of flight. If this aircraft conducts 1100 sorties per year we estimate the total NO<sub>x</sub> emission would be 297,000 lbs/year. In comparison, it would take 10 semi-trucks driving 835 miles to produce 270 lbs of NO<sub>x</sub>. Add to the F-16, numerous other aircraft used during training sorties. Assuming training continues at similar levels for several years, the amounts of combustion products deposited over the training area will be significant and widespread. The risk of exposure would be exacerbated if training is conducted at lower altitudes as noted above.

Jet fuel combustion produces CO<sub>2</sub>, CO, C, NO<sub>x</sub>, SO<sub>x</sub>, metals, polycyclic aromatic hydrocarbons (PAH) plus toxic and carcinogenic compounds (Bendtsen et al. 2021). Particulate matter (PM) produced by combustion is classified by size and is characterized by ultra-fine particles (UFP) that are <100 nm (Bendtsen et al. 2021). With incomplete fuel combustion, bi-products include carbon-rich aromatic compounds, including soot and char (Bendtsen et al. 2021). In atmospheric science, soot and char are measured as elemental carbon (EC) and as black carbon (BC) in soil science.

Exposure to many of the combustion products have been shown to have negative health effects (Bendtsen et al. 2021). For example, PM typically falls within a size range that is easily inhaled and can travel deep into the respiratory system. This PM can cause numerous respiratory issues, similar to those described for inhalation of micro-glass fibers (Bendtsen et al. 2021).

Unburned jet engine lubrication oil was recently found to be a significant fraction of jet emissions. Among them are organophosphate esters (OPE) which is a large class of chemicals with toxic properties. A study conducted in New York (Li et al. 2019) found that OPEs were present in air, soil, dust, river water and pine needles at varying distances from airports. Low altitude flight operations are very likely to leave OPE residue on vegetation and surface water within and near the training area.

The EA links air quality to regional criteria and dismisses risk to health due to a perceived dilution factor with increased airspace volume. However, a concentration of flights over a particular training area may result in elevated concentrations of pollutants. The EA fails to accurately assess the potential risks and environmental impacts of aircraft flight emissions as noted above.

### **Endangered/Protected species**

There are endangered and/or threatened species identified under the proposed MOAs including but not limited to the Indiana and Northern long eared bat, Karner blue

butterfly, monarch butterfly, Kirkland warbler, bald eagle, Hine's emerald dragon fly, and Hungerfords water beetle. This is acknowledged in the EA (Draft EA Appendices). However, it is continually stated that because no construction or ground disturbing activities are proposed, these species will not be affected. The EA completely, and wrongly, ignores the effect that low flying aircraft noise may have on these species or any other wildlife.

An Appendix to the Draft EA sets forth the questions and answers derived from the use of a computer software program (IpaC) through the offices of U.S. Fish and Wildlife. Nowhere therein is the impact of noise, flight level, air pollution from fuel expenditure, or release of chaff or flare material evaluated on endangered or protected species (Draft EA Appendices).

It has been well documented that a number of threatened species and species of special concern are present in the counties within the training area and are known to inhabit areas directly used for training. All of the activities and potential impacts described in the EA will have an even greater negative effect on the species which by law the Guard is supposed to protect.

### **Wildlife Response to Aircraft Operations**

The scientific wildlife literature clearly indicates that flight operations can and do have impacts on wildlife (<https://www.saferemr.com/2016/07/effects-of-wireless-radiation-on-birds.html>). Both visible and audible encounters between aircraft and wildlife have resulted in animals exhibiting stress responses. For example, several studies (Stalmaster and Kaiser 1997) have noted that eagles are disturbed while on the ground, on a perch, or on a nest due to aircraft operations. It is very likely that other species of wildlife exhibit similar negative reactions.

Spring and fall bird migrations are likely to coincide with training activities conducted by the MIANG. Data show that birds migrating over Michigan often fly between 50 and 1400 feet above ground level (<https://www.allaboutbirds.org/news/new-birdcast-analysis-shows-how-high-migrating-birds-fly/>). This is well within the proposed training flight altitudes note in the EA.

### **Wetlands/Surface Waters**

Similarly, the Draft EA concludes there will be no significant impact to wetlands or to surface waters simply because no construction activities are proposed. It is patently ridiculous to conclude, without any apparent investigation, that air pollution from fuel expenditure and/or the release of chaff and flare material cannot have any effect on wetlands or surface waters or the organisms that inhabit them.

## **Economic Impact**

The prior Environmental Impact Statement prepared for the Air National Guard for the Beddown of a Foreign Military Sales Pilot Training Center states a “Potential decrease in property values could occur (.2 to 1.2% per dB increase)...”

([https://www.fmsptceis.com/1951745\\_FMS%20PTC%20Draft%20EIS\\_Summary\\_August%202022.pdf](https://www.fmsptceis.com/1951745_FMS%20PTC%20Draft%20EIS_Summary_August%202022.pdf));

[https://www.fmsptceis.com/8493849\\_FMS%20PTC%20Draft%20EIS\\_Vol%201\\_August%202022.pdf](https://www.fmsptceis.com/8493849_FMS%20PTC%20Draft%20EIS_Vol%201_August%202022.pdf));

[https://www.fmsptceis.com/9894951\\_FMS%20PTC%20Draft%20EIS\\_Vol%202\\_August%202022.pdf](https://www.fmsptceis.com/9894951_FMS%20PTC%20Draft%20EIS_Vol%202_August%202022.pdf)). However, this factor is completely ignored in the Draft EA for this proposal.

The Draft EA must address the irretrievable loss of recreational activity and economic benefits associated with recreational activity. Every time an individual chooses to go elsewhere to avoid effects of this proposed air expansion, that potential recreational experience and any associated economic benefits are irretrievably lost.

## **Sources cited above**

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## Applicable Law

### APPLICABLE STANDARD FOR EA VERSUS AN EIS

NEPA requires each federal agency to prepare an Environmental Impact Statement (EIS) for any major federal action that may significantly affect the quality of the human environment. 42 U.S.C. 4332(2)(C); 40 C.F.R. 1502.3; *Kentucky v. Alexander*, 655 F.2d 714, 718 (6th Cir. 1981); *Friends of the Fiery Gizzard v. Farmers Home Admin.*, 61 F.3d 501, 504 (6th Cir. 1995).

An agency's determination to prepare an EA instead of a full EIS "must be reasonable under the circumstances, when viewed in the light of the mandatory requirements and the standard set by (NEPA)." *Kelley v. Selin*, 42 F.3d 1501, 1519 (6th Cir. 1995). "[A]n EIS must be prepared if 'substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor.'" *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998) (emphasis in original). See *Anglers of the Au Sable v. US Forest Service*, 565 F. Supp. 2d 812 (E.D. Mich. 2008) (citing *Idaho Sporting Congress* for this standard). Note that much NEPA case law comes from the Ninth Circuit, due to the large amount of public land in that circuit.

To trigger this requirement of a full EIS, a 'plaintiff need not show that significant effects will in fact occur,' [but] raising 'substantial questions whether a project may have a significant effect' is sufficient." *Idaho Sporting Congress*, 137 F.3d at 1150 (emph. in original). "[W]hen it is a close call whether there will be a significant environmental impact from a proposed action, an EIS should be prepared." *National Audubon Society v. Hoffman*, 132 F.3d 7, 18 (2nd Cir. 1997).

A full EIS is also required if there is "a substantial dispute [about] the size, nature, or effect of the major Federal action." *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998), cert. denied, 527 U.S. 1003 (1999). A "substantial dispute" regarding the size, nature, or effect of the action exists when evidence casts "serious doubt" upon the reasonableness of an agency's conclusions. *National Parks & Conservation Association v. Babbitt*, 241 F.3d 722, 736 (9th Cir. 2001) (internal citations omitted). Although a court should not take sides in a "battle of the experts," it must decide whether the agency considered conflicting expert testimony in preparing the Finding of No Significant Impact, and whether the agency's methodology indicates that it took a hard look at the proposed action by reasonably and fully informing itself of the appropriate facts. *Id.* at 736 n.14 (and cases cited therein). NEPA then places the burden on the agency to come forward with a "well-reasoned" – in other words, a "convincing" – explanation demonstrating why those responses disputing the EA's conclusions "do not suffice to create a public controversy based on potential environmental consequences." *Id.* at 736 (and cases cited therein).

There are ten NEPA "intensity" factors, any one of which requires preparation of a full EIS rather than a simple EA and "Finding of No Significant Impact." 40 C.F.R.

1508.27(b); Blue Mountains, 161 F.3d at 1212-14; Nat'l Parks, 241 F.3d at 731. The ten factors are:

- (1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
- (2) The degree to which the proposed action affects public health or safety.
- (3) Unique characteristics of the geographic area such as proximity to . . . ecologically critical areas.
- (4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- (5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- (6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- (7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- (8) The degree to which the action may . . . cause loss or destruction of significant scientific, cultural, or historical resources.
- (9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
- (10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

As discussed below, many of these factors are present, and therefore a full EIS is required.

#### NEPA "ALTERNATIVES" REQUIREMENT

Even if a full EIS is not required, NEPA requires defendants to "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(2)(e). An agency must "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives, which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. 1502.14(a). The

alternatives section "is the heart" of the NEPA analysis, and it "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. 1502.14.

An agency must "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives, which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." 40 C.F.R. 1502.14(a). The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." *Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9th Cir. 1985).

### NEPA "HARD LOOK" REQUIREMENT

Even if a full EIS is not required, "[t]he NEPA procedures "require that agencies take a 'hard look' at environmental consequences." *Sierra Club v. United States Forest Serv.*, 828 F.3d 402, 407 (6th Cir. 2016) (quoting *Robertson [v. Methow Valley Citizens Council]*, 490 U.S. [332,] 350, 109 S. Ct. 1835 (1989))." *Sherwood v. Tennessee Valley Authority*, 46 F.4th 439, 444-45 (6th Cir. 2022).

Even in an EA, NEPA requires the government to use high quality information and accurate scientific analysis; disclose "any responsible opposing view"; "make explicit reference . . . to the scientific and other sources relied upon for conclusions in the statement; disclose any scientific uncertainties; and complete independent research and gather information if no adequate information exists (unless the costs are exorbitant or the means of obtaining the information are not known). 40 C.F.R. 1500.1(b), 1502.9(b), 1502.22, 1502.24. NEPA requires that the NEPA document "make explicit reference . . . to the scientific and other sources relied upon for conclusions in the statement." 40 C.F.R. 1502.24; see also *Blue Mountains Biodiversity Project*, 161 F.3d at 1214 (holding EA inadequate where it contained "virtually no reference to any material in support of or in opposition to its conclusions"; deficiency not cured by support contained in administrative record.).

NEPA requires consideration of all environmental effects or impacts, that is,

changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and include . . . direct effects, which are caused by the action and occur at the same time and place . . . indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable . . . and cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

40 C.F.R § 1508.1(g) (effective May 20, 2022). "Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use,

population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” Id. §1508.1(g)(2). “Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial.” Id. § 1508.1(g)(4).

The Council on Environmental Quality (CEQ) recently explained that “[i]ncluding direct and indirect effects in the definition of ‘effects’ ensures that NEPA analyses disclose both adverse and beneficial effects over various timeframes, providing important information to decision makers.”

## CUMULATIVE EFFECTS ANALYSIS REQUIREMENT

In particular, “[c]umulative effects can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R § 1508.1(g)(3).

The CEQ recently restored the regulatory requirement to consider cumulative impacts, which had been eliminated by the Trump administration. CEQ reaffirmed the importance of evaluating cumulative impacts, stating:

[C]onsideration of reasonably foreseeable cumulative effects allows agencies and the public to understand the full scope of potential impacts from a proposed action, including how the incremental impacts of a proposed action contribute to cumulative environmental problems such as air pollution, water pollution, climate change, environmental injustice, and biodiversity loss. Science confirms that cumulative environmental harms, including repeated or frequent exposure to toxic air or water pollution, threaten human and environmental health and pose undue burdens on historically marginalized communities. CEQ does not consider such harms to be inconsequential or irrelevant, but rather critical to sound agency decision making.

87 Fed. Reg. at 23,467. “CEQ considers the disclosure of all reasonably foreseeable direct, indirect, and cumulative effects to be critical to the informed decision-making process required by NEPA, see, e.g., 42 U.S.C. 4332, such that the benefits of any such disclosure outweigh any potential for shorter NEPA documents or timeframes.” 87 Fed. Reg. at 23,467.

## REQUIREMENT OF ESTABLISHING AND DISCLOSING THE BASELINE CONDITIONS

As the Ninth Circuit noted, “without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA.” *Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci* , 857 F.2d 505, 510 (9th Cir. 1988).

## MISSING INFORMATION

In adopting the original NEPA regulations, the CEQ noted:

It must be remembered that the basic thrust of an agency's responsibilities under NEPA is to predict the environmental effects of proposed action before the action is taken and make those effects known. Reasonable forecasting and speculation is thus implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as "crystal ball inquiry."

51 Fed. Reg. 15618 (1986). Thus, the agency "cannot avoid NEPA responsibilities by cloaking itself in ignorance." *Fritiofson v. Alexander*, 772 F.2d 1225, 1244 (5th Cir. 1985). See also *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1246 n.9 (9th Cir. 1984) ("Reasonable forecasting and speculation is . . . implicit in NEPA"); *Scientists' Inst. for Pub. Info., Inc. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973)).

"The purpose of an EIS is to obviate the need for speculation by insuring that available data are gathered and analyzed prior to the implementation of the proposed action." *National Parks*, 241 F.3d at 732. The Ninth Circuit noted that it is impermissible under NEPA for the agency to

increase the risk of harm to the environment and then perform its studies. . . . This approach has the process exactly backwards. Before one brings about a potentially significant and irreversible change to the environment, an EIS must be prepared that sufficiently explores the intensity of the environmental effects it acknowledges.

*Id.* at 733 (citation omitted). NEPA requirements must be fulfilled "before a decision that may have a significant adverse impact on the environment is made." *Id.* See also 40 C.F.R. §§ 1500.1(b), 1502.5, 1506.1.

The existence of incomplete or unavailable scientific information concerning significant adverse environmental impacts triggers the requirements of 40 C.F.R. 1502.22. This provision requires the "disclosure and analysis of the costs of uncertainty [and] the costs of proceeding without more and better information." *Southern Oregon Citizens Against Toxic Sprays, Inc. v. Clark (SOCATS)*, 720 F.2d 1475, 1478 (9th Cir. 1983).

40 C.F.R. 1502.22 imposes three mandatory obligations on the government in the face of scientific uncertainty: (1) a duty to disclose the scientific uncertainty; (2) a duty to complete independent research and gather information if no adequate information exists (unless the costs are exorbitant or the means of obtaining the information are not known); and (3) a duty to evaluate the potential, reasonably foreseeable impacts in the absence of relevant information, using a four-step process.



If the extent of the impacts is truly uncertain, a full EIS is required. See, e.g., Idaho Sporting Congress v. Thomas, 137 F.3d 1146, 1151 (9th Cir. 1998); Blue Mountains Biodiversity Project, 161 F.3d 1208 (9th Cir. 1998).

### **Additional Unanswered Questions**

Anglers has submitted additional questions in connection with this Draft EA which remain unanswered as of the date hereof (See attached). These comments are therefore limited to the information we possess at the time the public comment is closing.

It should be noted that Anglers requested additional time so that this information could be obtained. That request was denied by MIANG.

Anglers requests that additional information be developed that would show the impact of the planned activities on the ground and in the air on the overall ecology of the Au Sable watershed and related waters. The economic success of this region depends on the hunting, hiking, biking and especially the fishing activities that are reliant on its special environment. It is important that those deciding whether to allow this expansion/reconfiguration understand and will be able to communicate to the community whether additional Guard and Air Force activities will endanger the insects, birds, mammals, fish and humans in the affected region. That cannot be done with the Draft EA.

The process to date has not been transparent, so it is impossible to know what the environmental impacts will be. There has been insufficient data presented. There has been an insufficient analysis conducted. NEPA requires a full disclosure.

### **Requested Action**

It is Anglers' contention that the proposed expansion/modification of the Alpena SUA would have significant impact and that much more rigorous analysis and documentation is needed in the form of a full Environmental Impact Statement which fully and accurately addresses all direct and cumulative environmental effects of this proposed action. Even if a full EIS is not required (which we do not concede), the Draft EA is flawed because of inadequate analysis of alternatives and inadequate disclosure and discussion of impacts from the project – thus lacking the required, “hard look.”

This special and valuable region of northern Michigan demands nothing less than such a hard look.

Very truly yours,



Joseph Hemming, President

cc: Gov. Gretchen Whitmer  
Joe Miniace, Great Lakes Regional Administrator, Federal Aviation Administration  
Jessica Pruden, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service  
Dan Eichenger, Acting Dir., MI Dept. of Environment, Great Lakes, & Energy  
Shannon Lott, Acting Dir., MI Dept. of Natural Resources  
Hon. Pete Buttigieg, Secretary of Transportation  
Representative Jack Bergman  
Senator Debbie Stabenow  
Senator Gary Peters  
Senator Sue Shink  
Senator Winnie Brinks  
Representative Joe Tate

Unanswered Questions submitted to Michigan Air National Guard, incorporated by reference to comments submitted by Anglers of the AuSable in re: Draft Environmental Assessment for Modification and Addition of Airspace to Alpena Special Use Airspace Complex dated January 14, 2023:

1. Unmanned aircraft: we were advised that the ANG operated M29s in MOAs, either under constant radar or a chase plane. Can you advise which MOA(s) and confirm this is the only unmanned aircraft that would be operated by ANG. It was stated that the Army NG operated unmanned aircraft but only in the restricted areas. Please confirm.
2. Sound levels- We have asked for noise contour models for each of the aircraft with proposed sorties to be conducted in Grayling East, Grayling West, Pike West, VRs 1601/1602, R-4201A/B, and ANG will try to provide.
3. Noise Complaint hotline-We were advised that noise complaints in the Camp Grayling area should be made to Camp Grayling and to the Alpena CRTIC if outside Camp Grayling area. Please provide the phone numbers for each location.
4. Ordinance waste retrieval- Anglers asked if there were procedures in place to collect and dispose of the waste from delivered ordinance. We ask if the ANG response can be re-stated as there is confusion as to what these procedures are, particularly in relation to a 10% retrieval requirement.
5. Additional flights/Additional Aircraft- It was stated at the meeting that if a 'substantial' number of sorties over what was stated in the EA for each MOA, a new EA would be required. Is it possible to better define "substantial"? It was also stated that if additional aircraft not identified in the current EA were going to be deployed in an MOA, an additional EA would be required. An example might be if F-35s were flown in Grayling West (where they are not currently listed for sorties). Please confirm.
6. It was stated at the meeting that any additional JTEs to be added would be the subject of a new separate EA. Please confirm.
7. It was stated at the meeting that if the land expansion proposal was to be implemented, it would be the subject of a separate EA, and that EA would need to assess the cumulative effects of airspace use in effect at that time. Please confirm.
8. Aircraft flying in formation-We asked if the noise levels contained in the EA reflected aircraft flying in formation, and it was stated that it was presumed that the contractors who prepared the information would have accounted for this. Can you clarify and confirm?

Additional questions not asked at meeting:

9. VRs 1601/1602- While the flight paths that aircraft may travel before entering the proposed VRs was discussed at our meeting, can we clarify if VRs are used as an approach/return pathway only to and from R-4201A?

10. Transition between VRs and MTRs to MOAs-Can you advise whether an aircraft flying in a VR or MTR into an MOA with a higher flight floor than the VR/MTR must adhere to the flight floor of the MOA? How would that be accomplished if transitioning from a VR with 500' to 1500' parameters to Pike West which has a Flight floor of 6000'? Flight levels in Grayling West The EA contains a footnote on Pg 5 which states:

"The EA for the establishment of the Grayling Temporary MOA (MIANG, 2019a) assessed the airspace floor at 5,000 feet MSL for the temporary MOA, and so this is the floor used in this EA. However, the floor of the Grayling Temporary MOA may vary year to year as required by the Air Route Traffic Control Center, which has restricted floors to higher than 5,000 feet MSL in recent years. "

What was the rationale of the Air Route Traffic Control Center to keeping the flight floor above 5,000 ft MSL in the Grayling Temporary MOA?

11. Standoff Tactics- Can you explain what the standoff ranges for precision guided munitions are and the aircraft used for delivery? (EA Pg 7)

12. "Carried Forward"- (EA Pg 10, 29, 88)... "carried forward for further analysis in the EA due to the potential for reasonably foreseeable effects: ..... land use, water resources including coastal resources, biological resources, cultural resources, and socioeconomics and environmental justice".

Is there a trigger that starts this or is it mandatory?

13. Supersonic flight-This EA states there will be no supersonic flight (Pg 14). A number of the aircraft identified in this EA are capable of supersonic flight, correct? How will you ensure that an aircraft does not go over the speed which would qualify as supersonic flight?

14. E18-G aircraft-The EA states that the EA-18G aircraft were utilized in the Grayling Temporary MOA for 13 baseline sorties annually. Proposed in this EA are 5 flights each in Grayling West, Grayling East, 4201A, and 4201B (Pages 20,24,25) and 20 flights in Pike West (Page 23) a total of 40 flights in the MOAs. There are 64 flights proposed for VRs 1601/1606 (Page 26), where the proposed flight floor/ceiling is 300 to 1500 feet AGL. Are the flights proposed in Grayling West, Grayling East, 4201A, 4201B and Pike West **in addition to** the 64 flights listed for VRs 1601/1602-i.e are these 64 flights just supposed to occur in the VRs and not deviate into adjoining airspace in Pike West, Grayling West, and 4201A? Or do 40 of the 64 flights deviate into neighboring airspace in Pike West, Grayling West and 4201A?

14a. At what speed will the EA-18G aircraft be traveling in VRs 1601/1602?

15. F-35s- It is stated in the EA (Pg 6) that the 'primary users' of the Alpena Complex would conduct exercises in A-10 and F-16 aircraft, however, it is also stated that the

Alpena CRTC airspace must be capable of satisfying the training requirements of fifth generation fighters such as the F-22 and F-35.

While the Grayling Temporary MOA was utilized for F-35 aircraft at a 5000 ft floor level in the past, no F-35 aircraft are listed for proposed flights in Grayling West, Grayling East, R-4201A, R-4201B MOAs or VRs 1601/1602. Can you confirm that there will be **no** F-35 aircraft utilized in these areas?

16. F-22s etc- There are no proposed flights for F-22 aircraft. When would you anticipate this aircraft or any other additional fifth generation aircraft would be introduced in this airspace?

17. A-10s-F-16s- A-10s/F-16s

The EA states (Pg 8):

**Low-Altitude Training Requirements**

Both the 180 FW and 127 WG, as well as most flying units deploying to the Alpena CRTC, have a Ready Aircrew Program requirement for Low Altitude Step Down Training and Low Altitude Air-to-Air Training. Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL.

The only current “low” airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions prohibit overwater flights.

(MIANG, 2019b)

Training for the A-10 and F-16 aircraft has been successfully carried out for many years in the existing airspace. Can you explain what has changed for LOWAT and LASDT training for these aircraft?

17a. With the anticipated divestiture of the A-10, will the ANG still be training pilots on this aircraft in this airspace in the next 3-4 years?

18. Chaff and Flare- It is stated in the EA that expenditures will occur at 1000 ft in 4201 A/B (Page 27). Why are these releases at 1000 feet lower than the MOAs (2000 ft)? Can you confirm that chaff and flare are not released in any VRs or MTRs?

19. Air Quality- If there is only 1 ambient air quality monitor in the study area, how has the “attainment” designation been obtained below 3000 feet for all locations? (EA Pg 35, 36)

20. JLUS- The Joint Land Use Study with Alpena CRTC and Camp Grayling reportedly called for a “noise study” in addition to other actions. Has such a study been conducted? Completed? Be accessed (where)?

21. L<sub>dn</sub> and L<sub>max</sub> Values- From what source were the values stated in Table 4-2 obtained (EA Pg 62, 66)? Was the BLAM (Blast Analysis and Monitoring System) utilized? Are they annual averages? Are they ambient values (i.e. with no aircraft sound involved in the measurement)? Or are they combined?

22. Why is an average of sorties used instead of actual numbers of sorties in Section 4.4.1? (EA Pg 61)

23. The Appendix I document only references changes for flight levels below 3000 ft AGL, is that correct? It continually references a “Noise Appendix” but we are unable to locate it in the Appendices. Is there a Noise Appendix and can you provide?

24. Has the military conducted any studies of the response of airborne organisms (e.g., birds or bats) to EMR?

25. JTEs generate a “high-density radio frequency environment”: Have any studies been conducted to evaluate the impact of “high-density radio frequency environments” on airborne organisms?

26. Low Altitude flight: Spring and fall bird migrations occur at up to 1400 m with high densities at 300 m to 600 m. Has the military conducted studies of the impact of low altitude flights on migratory bird populations?

27. Page 24- Table 2-12 Existing and Proposed Annual Sorties and Time in R-4201A: There are 110 fewer F-16 sorties (2<sup>nd</sup> line) in R-4201B than R-4201A, why?

28. Page 7 – R-4201B modifications:

EA notes an increase in volume above MSL to accommodate “longer release ranges of training ordnance, in keeping with current Precision Guided Munitions tactics; which generally occur about 9,000 feet MSL. Laser and weapons employment, which are inherently hazardous ....”.

Is the employment of training ordnance and lasers within R-4201B or R-4201A?

28a. Is training ordnance live or inert? If live, what types of ordnance? How much?

28b. What types of lasers are used and at what power?

29. Page 8 – Proposed VR-1601/VR1602 includes rotary aircraft.

What is the floor and ceiling altitudes for helicopters?

30. EA, Page 20- Table 2-4 Proposed Annual Sorties and Time in New Grayling West MOA:

AV-8B- what type of training, which military groups?

30a.MC-12- what type of training? What type of surveillance?

30b.MH-60- what type of training?

30c.CH-47- what type of training?

31. Page 36- Regional Air Quality; Aircraft generate a wide range of combustion products, for example, the F-15 and F-16 will generate approximately 270 lb. to 290 lb. of NO<sub>x</sub> during a 1-hour flight, among several other compounds. A total of 1100 sorties will produce approximately 297,000 lbs. of NO<sub>x</sub>.

Do training flights occur during ozone action days?

31a. Has the MIANG conducted air quality monitoring within areas with concentrated training activities such as R-4201A/B?

32. Use of live munitions: Has the NGB studied the concentration of toxins and perchlorates present at sites and in groundwater associated with live ammunition training activities?

33. Various sources list the size of chaff fibers used in the RR-188 cartridge as 1 mil or approximately 25 microns. What size measurement does the military apply to chaff fibers?

34. Range 40 appears to be located, at least partially, in Otsego County. The Hanson Deed from 1913 does not include any land in Otsego County. Can you advise when land in Otsego County was acquired by the military and by what method (i.e. deed, etc).

**From:** [mail.thumbland.org](mailto:mail.thumbland.org)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](https://www.thumbland.org/NEPA/NEPA-COMMENTS)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 11:55:03 PM  
**Attachments:** [EC6F60FCE51F435DB69731AD6D22821E\[68053030\].jpg](#)

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National Guard Bureau  
Attn: Ms. Kristi Kucharek  
3501 Fetchet Ave  
Joint Base Andrews, MD 20762-5157

Please see my public comment below regarding the Draft Environmental Assessment (EA) for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, Michigan.

Thank you,

William Collins



**William Collins, Executive Director**  
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**Thumb Land Conservancy**  
**Draft Environmental Assessment (EA) for Modification and**  
**Addition of Airspace at the Alpena Special Use Airspace Complex,**  
**Michigan**

My comments are organized according to various sections and pages of the Draft EA.

**1.7 Interagency and Intergovernmental Coordination for**  
**Environmental Planning and Public Involvement Process**  
**Page 9**

- *The NGB does not appear to have coordinated with the US Environmental Protection Agency and US Army Corps of*



*Engineers, which it should in my opinion, due to presence of Waters of the US, potential impact to Great Lakes coastal areas, and as a matter of reasonable practice.*

## **Page 10**

- *It does not appear that the Draft EA was made available to any newspapers in Sanilac or Tuscola Counties, such as the Sanilac County News, Tuscola Today, or The Journal.*
- *It also does not appear that the Draft EA was made available to any libraries in Sanilac County.*

## **2.1 Proposed Action (Alternative A): Alpena Airspace Modification and Addition**

### **Page 11**

“In the Steelhead Low MOAs, participating aircraft would be restricted to fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline only between May 15 and September 15.”

- *The NGB should consider that spring migrations are potentially earlier and fall migrations later in recent years, and becoming more so with climate warming.*

“The shape and altitude of the Steelhead Low South MOA has been designed to enable civil flight operations around Huron County Memorial Airport without entering military airspace.”

- *The NGB should consider how the proposed activities could impact civilian drone use, hot air ballooning, and paragliders, both motorized and non-motorized.*

### **2.1.4 Sorties, Weapons, and Chaff and Flare Use**

#### **Page 27**

“Chaff and flare are currently being used in all the MOAs and RAs within the Alpena SUA Complex. Under the Proposed Action, the number of expenditures would increase by approximately 1,000 chaff expenditures and 1,500 flare expenditures per year across the Alpena SUA Complex, as shown in Table 2-17 and Appendix H.”

- *Refer to my comments under 4.2 Safety, 4.2.1 Proposed Action (Alternative A), Chaff and Flare*

## **Chapter 4. Environmental Consequences**

### **4.1 Airspace Management**

#### **4.1.1 Proposed Action (Alternative A)**

##### **Pages 51-54**

- *A recent Federal Aviation Administration computer outage and system failure which halted all departing flights in the US on January 12, 2023 makes precise management and coordination between military and civilian air traffic controllers questionable for the proposed expanded airspace.*

### **4.2 Safety**

#### **4.2.1 Proposed Action (Alternative A)**

##### **Chaff and Flare**

##### **Page 55**

- *The Executive Summary of a 1997 report prepared for the US Air Force (referenced below) states on page ES-4 that a priority should be: “Replacing impulse cartridges and initiators in future procurements offlares with models that do not contain toxic air pollutants such as chromium and lead.” This suggests the possibility that in addition to other materials, lead and chromium may still be discharged by flares to water and land.*
- *ENVIRONMENTAL EFFECTS OF SELF-PROTECTION CHAFF AND FLARES, FINAL REPORT AUGUST 1997, Prepared for: U.S. Air Force Headquarters Air Combat Command Langley Air Force Base, Virginia*
- <https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/PB98110620.xhtml>
- <file:///C:/Users/LochanDe%20IT%20Services/Downloads/PB98110620.pdf>

### **4.3 Air Quality**

##### **Page 58**

“Air emissions were estimated using the DAF’s Air Conformity Applicability Model (ACAM), Version 5.0.17b (AFCEC, 2022).”

#### **4.3.1 Proposed Action (Alternative A)**

- *Estimated air emissions do not account for actual concentrated exposures, and long-term exposures due to release of emissions and other discharged materials to soil and water, and subsequent*

*uptake by and bioaccumulation in plants and animals.*

## **Regional Criteria Pollutant Emissions**

### **Page 58**

“The proposed increase in aircraft sorties below 3,000 feet AGL would increase criteria pollutant emissions, particularly nitrogen oxides, across the region. The size of the total airspace available would also expand by 1,633 square nautical miles, so criteria air pollutants would be dispersed over a larger area.”

- *Pollutants could still be concentrated within or near regular flight paths, despite the total airspace size.*

## **Chaff and Flare**

### **Page 60**

“Air quality issues associated with chaff and flare deployment include the potential for chaff to break down into respirable particle sizes and the possibility that hazardous air pollutants may be generated from pyrotechnic impulse cartridges used with some chaff models. The body of longterm research involving chaff particulate tests and health risk assessment suggests that these are not significant concerns on air quality (USAF, 2011).”

- *Glass fiber chaff appears to break down to near asbestos-like fiber dimensions based on OSHA definition.*

## **4.4 Noise**

### **4.4.1 Proposed Action (Alternative A) Aircraft Sorties**

- *Air combat training includes climbing, diving, turning, and multiple passes over the same area.*
- *Day-Night Average Sound Levels (DNL), a measurement spreading sound impact over a 24-hour period, is inadequate, if not deceptive, in considering the impact of high-level short-duration noise.*
- *F-16s at 500 feet generate 115 dBA noise levels. That is eight times louder than an A-10 (“Warthog”), louder than the maximum level in the audience at a rock concert, at the threshold of “uncomfortable” for people and eight times louder than your typical County/Township noise ordinance (85 dBA). This comparison can be found in the Environmental Assessment (EA) on page 39,*

*Figure 3.1. This is also the level at which the Secretary of the Air Force requires hearing protection for all Air Force personnel ON or OFF base (Air Force Instruction AFI 48-127).*

- Even at the 5999-foot flight ceiling, every overflight by F-16 jets will violate local ordinances that limit noise to 85 dBA*
- When an F-16 passes overhead at 500 feet, you will be unable to communicate with someone standing three feet away from you without shouting for approximately 20 seconds. This “Shout Zone” extends about 2.5 miles to either side of the flight path (decreasing shouting time period as you approach 2.5 miles to either side of the aircraft).*
- The EA touts a “seasonal” flight restriction concession to help reduce the significant negative impact the noise of low altitude jet combat training will have on tourism along the shoreline. This is an admission of significant impacts from the high noise levels. However, it is an empty concession that does nothing for the full time residents along the shoreline or boaters/kayakers more than 1 mile offshore.*
- The prior Foreign Military Sales pilot training Environmental Impact Statement quotes a 0.65% average decrease in property value for each dB increase in Day-Night Average Sound Level (DNL). This translates to about a 4% property value decrease for those areas showing a 6 dB DNL increase in noise in this EA.*
- The Aircraft Owners and Pilots Association (AOPA) opposed the proposed changes as early as 2018 and more recently requested the more thorough Environmental Impact Statement (EIS) in July of 2019. These professional and amateur pilots and aircraft owners indicate the Special Use Airspace (SUA) changes will significantly affect the safety and economy of civilian air use.*
- Particulates emissions from low altitude training (below the 3000’ mixing level) will settle on our farms, yards, Lake Huron, and into the deepest parts of our lungs.*
- Potential bird strikes are downplayed by mention of the Air National Guard’s use of the BASH computer program yet there is no mention in the EA of the Sandhill Crane, one of the largest birds in North America, which routinely migrates in formations in the Military Operations Airspaces (MOAs) well above 500 feet and outside and above the “seasonal” flight restrictions. Nor is there any mention of*

*Canada geese.*

- *This EA mentions that bringing jet air combat training down to 500 feet in the proposed MOA airspace would be a cost save to an organization with an annual budget of \$234 BILLION.*
- *It is also very important that an environmental assessment for a proposed air space use of this scale more fully account for the cumulative impact of so many activities happening now and proposed for our region. The population of the Thumb is already exposed to a lot of noise, pollution, and other impacts from increasingly industrialized large-scale farming, trash burning, and wind turbine complexes, among other activities, with more big projects coming our way.*
- *Even trash burning must once again be factored-in to our environmental exposure out here in the country. We thought this was largely relegated to less enlightened times, but a lot of trash is still burned in piles, in barrels, in Amish woodstoves, and increasingly in recently popular outdoor wood burners which provide the indifferent operator with a personal incinerator for everything from treated lumber to plastic to tires to who knows what. Such burning spews all kinds of nasty toxins across our land and waters. Most of these toxins are carcinogenic and disruptive to basic functions within our bodies. They include benzene, styrene, formaldehyde and other aldehydes, dioxin, PCB, furans, heavy metals, chromated copper arsenate, pentachlorophenol, creosote, acids, and other substances. Who is responding to these releases of toxins from burning on private land? No one as far as we can tell. Even fire departments are part of the problem when they burn structures containing treated lumber, vinyl siding, plywood, OSB, PVC pipes, and other materials.*
- *We also need to factor in emerging impacts like the expanding realization of PFAS contamination everywhere, micro-plastics, and the emerging issue of nanoparticle pollution. Ironically, some of the most contaminated areas include farm fields where sewage sludge has been applied.*
- *The Thumb region has been increasingly promoting itself as a destination for tourism and culture. More retirees are moving into the area, wanting to escape the commotion of suburban areas. Peaceful surroundings and natural beauty of the Thumb's shores*

*and countryside are increasingly in demand.*

## **Figure 4-1 Points of Interest within Alpena SUA Complex**

### **Page 64**

- *There are many more public and semi-public points of interest within the proposed airspace expansion area, including the following:*
- *Fish Point State Wildlife Area (SWA) and Part 323 Environmental Area (EA)*
- *Wildfowl Bay State Game Area (SGA) Part 323 EA*
- *Sebewaing County Park (CP)*
- *Michigan Nature Association (MNA) Saginaw Wetlands Nature Preserve (NP)*
- *Brown M-25 Roadside Park (RP)*
- *Saginaw Basin Land Conservancy Sand Point NP*
- *Caseville CP*
- *Philip M-25 RP*
- *Thompson M-25 RP*
- *McGraw M-25 RP*
- *Rush Lake SGA*
- *Huron County Nature Center*
- *Oak Beach CP*
- *Jenks M-25 RP*
- *Bird Creek CP*
- *Port Austin harbor*
- *Turnip Rock Outcrops*
- *Eagle Bay Boating Access Site*
- *Grindstone City historical attractions and harbor*
- *Pointe Aux Barques Lighthouse CP*
- *MNA Kernan NP*
- *MNA Sonnenberg NP*
- *Whiskey Harbor Part 323 EA*
- *Stafford CP*
- *Port Hope harbor and historical attractions*
- *Wagener CP*
- *White Rock M-25 RP*
- *Four Mile M-25 RP*
- *Sanilac CP*
- *Delaware CP*

- *Camp Bialwieza - Polish Scouts*
- *Forester CP*
- *Jellystone CP*
- *Port Sanilac and harbor*
- *Camp Ozanam*
- *CYO Camp*
- *GS Camp Playfair*
- *Camp Cavel*
- *Sandusky SGA*
- *Minden City SGA*
- *Clark Lake SGA*
- *Tuscola SGA*
- *Cass River M-46 RP*
- *Vassar SGA*
- *Indianfields Township Park*
- *Deford SGA*
- *Cass City SGA*
- *Gagetown SGA*
- *Octagon Barn historic site*
- *Brookfield SGA*
- *Elmwood SGA*
- *MNA Wood Duck NP*
- *Almer SGA*
- *Columbia SGA*

## **4.6 Water Resources**

### **4.6.1 Proposed Action (Alternative A) Chaff and Flare**

#### **Page 70**

“The components of flare (magnesium oxide, magnesium chloride, and magnesium fluoride) do not pose an adverse risk to human and environmental health at the concentrations experienced in flare use (USAF, 2011). The proposed increase in chaff bundles and flares would be distributed over a larger land area (an additional 1,633 square nautical miles). It is not anticipated or likely that dud flares would accumulate in the same place in sufficient concentrations to adversely affect water quality. Therefore, the increase in chaff and flare activity is not likely to have any adverse impact on sensitive aquatic systems. Studies have determined chaff released in airspace above aquatic

environments on a regular basis has not been found to adversely affect aquatic resources (USAF, 2011). Furthermore, the NGB prepared a comprehensive EA analyzing the effects of chaff and flare on aquatic environments in the Steelhead and Pike MOAs; no significant impacts on water quality were identified (NGB, 2002). While the Proposed Action would increase chaff and flare above existing levels, the amount of airspace would also increase, and proposed levels of chaff and flare use would remain well below the levels analyzed in the NGB's 2002 EA. Therefore, an increase in chaff activities would not have a significant impact on water resources."

- *The Executive Summary of a 1997 report prepared for the US Air Force (referenced below) states on pages ES-2 and 3 and page 4-564 that confined aquatic habitats should be given special consideration*
- *"Although the risks of significant problems appear low, based on the data collected to date, there are a few issues that may have a potential for adverse impacts which could be avoided by adopting some restrictions or limitations on chaff use. In some cases it may be appropriate to analyze the potential for impacts to highly sensitive, confined aquatic habitats that support threatened and endangered species in areas underlying airspace where chaff is proposed for use."*
- *"Laboratory analyses of flare pellets and flare ash indicate that these materials have little potential for affecting soil or water resources, except possibly in small, confined freshwater habitats that support threatened or endangered species."*
- *"Chemical effects of flare debris on vegetation are expected to be negligible due to the small amount of debris reaching the ground and the generally low toxicity of residues. In areas with small~confined aquatic habitats that support sensitive species~consideration may need to be given to assessing potential impacts from the proposed level of flare use (see Section 4.7)."*
- **ENVIRONMENTAL EFFECTS OF SELF-PROTECTION CHAFF AND FLARES, FINAL REPORT AUGUST 1997**, Prepared for: U.S. Air Force Headquarters Air Combat Command Langley Air Force Base, Virginia
- <https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/PB98110620.xhtml>



- file:///C:/Users/LochanDe%20IT%20Services/Downloads/PB98110620.pdf
- *Such a confined aquatic area in the proposed airspace expansion includes Rush Lake and other pothole lakes in the Lum Interlobate.*

**The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

**PART 39—AIRWORTHINESS DIRECTIVES**

■ 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

**§ 39.13 [Amended]**

■ 2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**Airbus SAS:** Docket No. FAA–2023–1994; Project Identifier MCAI–2023–00658–T.

**(a) Comments Due Date**

The FAA must receive comments on this airworthiness directive (AD) by November 27, 2023.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all Airbus SAS airplanes identified in paragraphs (c)(1) through (6) of this AD, certificated in any category.

(1) Model A318–111, –112, –121, and –122 airplanes.

(2) Model A319–111, –112, –113, –114, –115, –131, –132, –133, –151N, –153N, and –171N airplanes.

(3) Model A320–211, –212, –214, –216, –231, –232, –233, –251N, –252N, –253N, –271N, –272N, and –273N airplanes.

(4) Model A321–111, –112, –131, –211, –212, –213, –231, –232, –251N, –251NX, –252N, –252NX, –253N, –253NX, –271N, –271NX, –272N, and –272NX airplanes.

(5) Model A330–201, –202, –203, –223, –223F, –243, –243F, –301, –302, –303, –321, –322, –323, –341, –342, –343, –841, and –941 airplanes.

(6) Model A340–211, –212, –213, –311, –312, –313, –541, and –642 airplanes.

**(d) Subject**

Air Transport Association (ATA) of America Code 35, Oxygen.

**(e) Unsafe Condition**

This AD was prompted by a report that a production deficiency of some SafeLav gaseous oxygen container (SLGOC) batches was identified during production testing of newly manufactured oxygen containers. The FAA is issuing this AD to address missing heat treatment of the actuation pin of the SLGOC, which could cause its jamming, with consequent failure of oxygen flow activation. The unsafe condition, if not addressed, could result in lack of supplemental oxygen supply in case of decompression in the cabin/lavatory, possibly resulting in injury to lavatory occupants.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Requirements**

Except as specified in paragraphs (h) and (i) of this AD: Comply with all required actions and compliance times specified in, and in accordance with, European Union Aviation Safety Agency (EASA) AD 2023–0094, dated May 8, 2023 (EASA AD 2023–0094).

**(h) Exceptions to EASA AD 2023–0094**

(1) Where EASA AD 2023–0094 refers to its effective date, this AD requires using the effective date of this AD.

(2) This AD does not adopt the “Remarks” section of EASA AD 2023–0094.

**(i) No Reporting Requirement**

Although the service information referenced in EASA AD 2023–0094 specifies to submit certain information to the manufacturer, this AD does not include that requirement.

**(j) Additional AD Provisions**

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs):* The Manager, International Validation Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the International Validation Branch, send it to the attention of the person identified in paragraph (k) of this AD. Information may be emailed to: 9-AVS-AIR-730-AMOC@faa.gov. Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(2) *Contacting the Manufacturer:* For any requirement in this AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, International Validation Branch, FAA; or EASA; or Airbus SAS’s EASA Design Organization Approval (DOA). If approved by the DOA, the approval must include the DOA-authorized signature.

(3) *Required for Compliance (RC):* Except as required by paragraph(s) (j)(2) and (i) of this AD, if any service information referenced in EASA AD 2023–0094 contains paragraphs that are labeled as RC, the instructions in RC paragraphs, including subparagraphs under an RC paragraph, must be done to comply with this AD; any paragraphs, including subparagraphs under those paragraphs, that are not identified as RC are recommended. The instructions in paragraphs, including subparagraphs under those paragraphs, not identified as RC may be deviated from using accepted methods in accordance with the operator’s maintenance or inspection program without obtaining approval of an AMOC, provided the instructions identified as RC can be done and the airplane can be put back in an airworthy condition. Any

substitutions or changes to instructions identified as RC require approval of an AMOC.

**(k) Additional Information**

For more information about this AD, contact Tim Dowling, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone: 206–231–3667; email: [timothy.p.dowling@faa.gov](mailto:timothy.p.dowling@faa.gov).

**(l) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(i) European Union Aviation Safety Agency (EASA) AD 2023–0094, dated May 8, 2023.

(ii) [Reserved]

(3) For EASA AD 2023–0094, contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; telephone +49 221 8999 000; email [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu); website [easa.europa.eu](http://easa.europa.eu). You may find this EASA AD on the EASA website at [ad.easa.europa.eu](http://ad.easa.europa.eu).

(4) You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

(5) You may view this material that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html).

Issued on October 4, 2023.

**Victor Wicklund,**

*Deputy Director, Compliance & Airworthiness Division, Aircraft Certification Service.*

[FR Doc. 2023–22487 Filed 10–12–23; 8:45 am]

**BILLING CODE 4910–13–P**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 73**

**[Docket No. FAA–2023–1972; Airspace Docket No. 22–AGL–39]**

**RIN 2120–AA66**

**Modification of Restricted Areas R–4201A and R–4201B; Camp Grayling, MI**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** This action proposes to modify the designated altitudes of restricted area R–4201B, Camp Grayling, MI, by raising the restricted area ceiling

from 9,000 feet mean sea level (MSL) to 23,000 feet MSL to match the ceiling of the adjacent restricted area R-4201A, Camp Grayling, MI. Additionally, this action proposes to make minor administrative changes to the R-4201B time of designation information and the R-4201A and R-4201B using agency information to standardize the format of the information provided describing these restricted areas.

**DATES:** Comments must be received on or before November 27, 2023.

**ADDRESSES:** Send comments identified by FAA Docket No. FAA-2023-1972 and Airspace Docket No. 22-AGL-39 using any of the following methods:

\* *Federal eRulemaking Portal:* Go to [www.regulations.gov](http://www.regulations.gov) and follow the online instructions for sending your comments electronically.

\* *Mail:* Send comments to Docket Operations, M-30; U.S. Department of Transportation, 1200 New Jersey Avenue SE, Room W12-140, West Building Ground Floor, Washington, DC 20590-0001.

\* *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

\* *Fax:* Fax comments to Docket Operations at (202) 493-2251.

*Docket:* Background documents or comments received may be read at [www.regulations.gov](http://www.regulations.gov) at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Comments on environmental and land use aspects should be directed to: Major Anthony E. Hylko, Alpena Environmental Manager, Alpena Combat Readiness Training Center (CRTC), Alpena, MI, 49707; email: [anthony.hylko.2@us.af.mil](mailto:anthony.hylko.2@us.af.mil) or telephone: (989) 354-6212 (comm).

FAA Order JO 7400.10E, Special Use Airspace, and subsequent amendments can be viewed online at [www.faa.gov/air\\_traffic/publications/](http://www.faa.gov/air_traffic/publications/). You may also contact the Rules and Regulations Group, Office of Policy, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591; telephone: (202) 267-8783.

**FOR FURTHER INFORMATION CONTACT:** Colby Abbott, Rules and Regulations Group, Office of Policy, Federal Aviation Administration, 800

Independence Avenue SW, Washington, DC 20591; telephone: (202) 267-8783.

**SUPPLEMENTARY INFORMATION:**

**Authority for This Rulemaking**

The FAA's authority to issue rules regarding aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority. This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart I, Section 40103. Under that section, the FAA is charged with prescribing regulations to assign the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace. This regulation is within the scope of that authority as it would modify the restricted area airspace at Camp Grayling, MI, to enhance aviation safety and accommodate essential U.S. Army training requirements.

**Comments Invited**

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. Comments are specifically invited on the overall regulatory, aeronautical, economic, environmental, and energy-related aspects of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should submit only one time if comments are filed electronically, or commenters should send only one copy of written comments if comments are filed in writing.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The FAA may change this proposal in light of the comments it receives.

*Privacy:* In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to [www.regulations.gov](http://www.regulations.gov), as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at [www.dot.gov/privacy](http://www.dot.gov/privacy).

**Availability of Rulemaking Documents**

An electronic copy of this document may be downloaded through the internet at [www.regulations.gov](http://www.regulations.gov). Recently published rulemaking documents can also be accessed through the FAA's web page at [www.faa.gov/air\\_traffic/publications/airspace\\_amendments/](http://www.faa.gov/air_traffic/publications/airspace_amendments/).

You may review the public docket containing the proposal, any comments received and any final disposition in person in the Dockets Office (see **ADDRESSES** section for address, phone number, and hours of operations). An informal docket may also be examined during normal business hours at the office of the Operations Support Group, Central Service Center, Federal Aviation Administration, 10101 Hillwood Parkway, Fort Worth, TX 76177.

**Background**

The Alpena Combat Readiness Training Center (CRTC), located in Alpena, MI, is a regional hub for the Air National Guard (ANG) and hosts Department of Defense (DoD) Large Force Exercises (LFE) every year; serving as a deployed location. Activities within the Alpena CRTC airspace complex allow combat air forces to practice weapon attack mechanics, target acquisition, and reaction to simulated surface-to-air threats while coordinating with friendly ground elements.

The Alpena Airspace Complex was originally created to support aircrew training during the buildup for World War II and has continued as a valuable training area for aircrews since. As the development of advanced 4th generation and current 5th generation fighter aircraft progressed, the airspace complex was not updated concurrently to take advantage of the full spectrum of training needs required to meet the changing tactics. In particular, the development of next generation fighters and weapons with advanced sensors and significantly greater standoff capabilities has created the requirement for additional hazardous activities maneuver airspace to set up for the employment of current weapons systems at the Grayling Range restricted areas. The DoD seeks to amend Military Operations Areas (MOA) and restricted areas in the Alpena Airspace Complex to address these changing needs. This proposed rule addresses the proposed changes to 14 CFR part 73 to amend the Grayling Range restricted areas.

The DoD has already initiated proposed changes to the Alpena MOAs as a part of a separate action. At the request of the United States Air Force

(USAF), the FAA circulated a proposal to establish five new MOAs, modify the boundaries of three MOAs, and return one MOA to the National Airspace System (NAS).<sup>1</sup> Mission profiles in the proposed Alpena MOA airspace included typical MOA flight operations conducting tactical combat maneuvering by attack and transport category fixed wing aircraft involving abrupt, unpredictable changes in altitude, attitude, and direction of flight. The FAA accepted comments on the proposed MOA amendments from June 16 to August 3, 2023. These amendments do not require the FAA to conduct rulemaking or amend 14 CFR part 73. Accordingly, the FAA will document the MOA amendments in a separate non-regulatory publication.

Collectively, the proposed changes to the MOAs and the proposed Grayling Range restricted area amendments would support DoD training scenarios designed to ensure air dominance of the airspace over the battlefield. Connecting the proposed Grayling Range R-4201A and R-4201B restricted areas with the proposed Alpena CRTC MOA airspace areas would enable the ANG to host and DoD to conduct training scenarios where fighter aircraft would fight their way into a target area, employ ordnance, and then egress from either low or high altitudes depending on the training threats confronted.

### The Proposal

The FAA is proposing an amendment to 14 CFR part 73 by amending the Camp Grayling, MI, restricted areas R-4201A and R-4201B. This action would raise the ceiling of R-4201B from 9,000 feet MSL to 23,000 feet MSL to match the adjacent R-4201A ceiling, add a “tie-in” boundary point in the R-4201A boundaries description to ensure a shared R-4201A and R-4201B boundary, and make minor administrative changes to the existing R-4201B time of designation and the R-4201A and R-4201B using agency information.

The proposed amendment to raise the R-4201B ceiling to 23,000 feet MSL would match the restricted area ceiling with the adjacent R-4201A ceiling and connect the eastern boundaries of the two restricted areas equally with two new MOAs proposed to be established as part of the previously published non-rulemaking proposal to amend the Alpena CRTC Airspace Complex. Further, the proposed R-4201B 23,000-

foot MSL ceiling would accommodate additional hazardous activity maneuvering airspace, longer standoff distance capabilities for using advanced targeting pod non-eye-safe combat lasers, and extended munition release distances required in support of current USAF precision guided munitions tactics and training. The proposed amendment to increase the ceiling of R-4201B would also support United States Army requirements for high-angle artillery fires with high-arching trajectories.

The proposed amendment to add an additional boundary point to the existing southern boundary of R-4201A would ensure a shared boundary with the northern boundary of R-4201B. The inclusion of the additional geographic coordinates located at latitude 44°47'00" N, longitude 84°38'00" W in the R-4201A description matches the geographic coordinates of the northwest corner of R-4201B and would not change the boundaries alignment for either restricted area.

The proposed administrative change to the existing R-4201B time of designation would not change when the restricted area is available to be scheduled. The proposed change would simply restate the existing times and days when the restricted area may be scheduled consistent with the FAA's special use airspace description format guidance. Additionally, administrative changes to the R-4201A and R-4201B using agency information would preface the existing using agency with “U.S. Army.” These administrative changes would not affect the scheduling, use, or activities conducted within the restricted areas.

### Regulatory Notices and Analyses

The FAA has determined that this proposed regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore: (1) is not a “significant regulatory action” under Executive Order 12866; (2) is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this proposed rule, when promulgated, will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### Environmental Review

This proposal will be subject to an environmental analysis in accordance with FAA Order 1050.1F, “Environmental Impacts: Policies and Procedures” prior to any FAA final regulatory action.

### List of Subjects in 14 CFR Part 73

Airspace, Prohibited areas, Restricted areas.

### The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend 14 CFR part 73 as follows:

### PART 73—SPECIAL USE AIRSPACE

■ 1. The authority citation for 14 CFR part 73 continues to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40103, 40113, 40120; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389.

#### § 73.42 Michigan (MI) [Amended]

■ 2. Amend § 73.42 to read as follows:

#### R-4201A Camp Grayling, MI [Amended]

**Boundaries.** Beginning at lat. 44°56'00" N, long. 84°29'00" W; to lat. 44°47'00" N, long. 84°29'00" W; to lat. 44°47'00" N, long. 84°38'00" W; to lat. 44°47'00" N, long. 84°39'00" W; to lat. 44°56'00" N, long. 84°39'00" W; to the point of beginning.

**Designated altitudes.** Surface to 23,000 feet MSL.

**Time of designation.** 0800–1600 local time, Tuesday–Saturday; other times by NOTAM.

**Controlling agency.** FAA, Minneapolis ARTCC.

**Using agency.** U.S. Army, Commander, Camp Grayling, Grayling, MI.

#### R-4201B Camp Grayling, MI [Amended]

**Boundaries.** Beginning at lat. 44°47'00" N, long. 84°29'00" W; to lat. 44°41'00" N, long. 84°29'00" W; to lat. 44°41'00" N, long. 84°40'00" W; to lat. 44°43'00" N, long. 84°40'00" W; to lat. 44°43'00" N, long. 84°38'00" W; to lat. 44°47'00" N, long. 84°38'00" W; to the point of beginning.

**Designated altitudes.** Surface to 23,000 feet MSL.

**Time of designation.** 0000–2359 local time, Saturday–Sunday; other times by NOTAM.

**Controlling agency.** FAA, Minneapolis ARTCC.

**Using agency.** U.S. Army, Commander, Camp Grayling, Grayling, MI.

\* \* \* \* \*

Issued in Washington, DC, on October 5, 2023.

**Karen L. Chiodini,**

*Acting Manager, Policy and Regulations Group.*

[FR Doc. 2023–22472 Filed 10–12–23; 8:45 am]

**BILLING CODE 4910–13–P**

<sup>1</sup> Airspace Study No. 23–AGL–361–NR circularized by the Central Service Center Operations Support Group on June 16, 2023, with a public comment period that ended August 3, 2023.

**From:** [Comcast](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Expansion  
**Date:** Saturday, January 14, 2023 9:41:42 PM

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To whom it may concern.

To expand the area for flight training would take too much away from the pristine area surrounding the Au Sable and Manistee rivers. This area is some of the last areas of tranquility and solitude we have.

As much as we all appreciate our armed services, so thankful for all they do. Please consider protecting our natural resources.

Thank you  
Sent from my iPhone

**From:** [TIM ADAMS](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Thumb military air training.  
**Date:** Thursday, December 15, 2022 1:00:57 PM

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Hi if the article is accurate, I want  
No part of that in the thumb.  
This is first I heard of it and past the deadline. No.

**From:** [Timothy Adams](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Thursday, December 8, 2022 9:05:03 PM

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I am writing to express my concern about the proposed expansion of Camp Grayling in Michigan. As a property owner in Otsego County I fear that the expansion will have a negative effect on the environment, wildlife, and those of us who value a quiet life in the Michigan woods. I hope you will seriously reconsider this plan, taking into account the possible effects on our woods and waters.

Thank you,  
Timothy Adams

**From:** [Peter Albertson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, January 11, 2023 12:06:44 PM

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Reg: Comp Graying Proposed Expansion

National Guard Bureau:

Please note that I am not in favor of the above referenced expansion. We have been told by Guard representative during our MICHIGAN FLY FISH FISHING CLUB meeting that that there would be no influence with 1500' of the rivers in the expansion areas while last summer there were armed troops rafting through them. That, coupled with increased low-level helicopter flights last summer over the Lewiston and the less than desirable response to the PFAS areas of concern throughout the region has convince me that what we hear is not close to the actual intended use of the proposed area of expansion

Sincerely,

Peter Albertson



Sent from my iPad



**From:** [Mike Anderson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Attn: Alpena SUA EA  
**Date:** Friday, January 13, 2023 10:13:56 AM

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As a Guild War Marine Corps veteran, and a direct beneficiary of U.S. Air Force close air support, I am favor of low altitude training in the Alpena SUA.

Thank you, and Semper Fi!

Michael H. Anderson



[Sent from Yahoo Mail on Android](#)

**From:** [William Anderson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [dnr-camp-grayling@michigan.gov](mailto:dnr-camp-grayling@michigan.gov)  
**Subject:** [Non-DoD Source] Camp Grayling land and air expansion  
**Date:** Monday, December 5, 2022 6:22:32 PM

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Dear Ms. Kucharek:

I have owned a cabin on the lower North Branch of the AuSable for 21 years. My wife and I purchased the property because of all the outdoor recreation opportunities it offered. Since we purchased, we have noticed an increase in the amount of military air traffic, both jets and helicopters, flying lower and lower over the river and our cabin. This obviously affects our ability to enjoy the peace and solitude we enjoyed for most of the first 15 years of cabin ownership. Now Camp Grayling not only wants to more than double the footprint of land restricted for military maneuvers and industrial testing, which affects our ability to access certain areas of DNR land for hunting, fishing, hiking, kayaking, etc but also is asking for more restricted airspace for flying sorties at lower altitudes.

When is enough enough? The camp is already the largest of its kind in all 50 States and Crawford County has the most land area reserved for military exercises of any county in the US. The military has already polluted much of the groundwater, fish, wildlife, and portions of Lake Margarethe in Crawford County with PFAS, to the detriment and loss of property values to many homeowners. And the chemicals from munitions and exhaust from aircraft have an untold effect on wildlife, fish, and environment.

DO NOT expand the airspace with the resultant effect that the citizens and visitors who recreate in the Grayling area will now be faced with the certainty that their anticipated experience in the solitude of one of this country's best examples of pristine nature will be interrupted by the frequent and deafening sound of military aircraft as well as the resulting pollution of the land and waters.

Unpolluted land and water and the ability to enjoy them peacefully are the rights of the citizens of Michigan. After all, this is the citizens' land and neither the DNR nor the military has the right to encumber the citizens' peaceful enjoyment of it.

Frustrated and angry,  
William Anderson

**From:** [Arnold, Michael J](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, December 8, 2022 4:10:52 PM

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To Whom It May Concern:

I am writing to ask you to please reconsider the impact on the Grayling, MI and Au Sable River area of the proposed permissions for Low Altitude Training flights over Camp Grayling. I used to travel to the middle lower peninsula of Michigan quite frequently to fish the Au Sable River (especially the North Branch) and enjoy the peace and quiet of this area. Not so much any more and one of the reasons is the summer noise level from Camp Grayling. Night maneuvers/games and artillery fire are bad enough ... but to allow low altitude flights down to under 500 feet is just irresponsible.

Please do not destroy this area any more that it already has been by sloppy application of camp, state and local rules.

Mike Arnold, Founder/Education-Community Outreach Director  
Northern Kentucky Fly Fishers, Inc.

[REDACTED]  
[REDACTED]  
[REDACTED]

**From:** [Frederick Baker](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Jim Graves](#); [Rich Vander Veen](#); [whitmer.g@michigan.gov](mailto:whitmer.g@michigan.gov)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 2:33:17 PM

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Dear Sirs:

Michigan is almost as large as several European countries (Germany, France, Spain, Poland, Sweden) and larger than some (each of the Benelux countries, Denmark, Austria, the Czech Republic). Each of these countries – all NATO members -- maintains a robust military without destroying its environment. They choose training alternatives that protect their small nations from irreversible damage, not only for the benefit of their citizens, but because tourism is an important part of most of their economies.

Michigan should be no different. Tourism and recreation are the third largest component of the Michigan economy. The citizens of Michigan are privileged to live in a unique corner of the world: there is no other place on earth – and this is the literal truth – virtually surrounded (both peninsulas) by fresh water seas containing twenty percent of the world's fresh water and teeming with more miles of river and streams per square mile than any place on earth except Canada. We, too, have alternatives to the terribly thoughtless low flight training plan our own Michigan National Guard has proposed for Camp Grayling.

Whatever would possess you to think it is appropriate to send planes at altitudes as low as 300 feet over what some believe to be the finest trout stream in the world?

What are you thinking?? You are the **MICHIGAN NATIONAL GUARD. Please guard Michigan!**

You know the arguments – the Growler, a low altitude ground support aircraft, is named that for a reason. It is loud!

People come to the Au Sable to renew themselves, not to be buzzed by weekend warrior flyboys who think it is great fun to drop chaff on holy waters. Why would anyone think it is acceptable to deposit the 33,306,000,000 micro-glass aluminum fibers contained in the 6,103 chaff cartridges the Guard plans to drop annually over an expanded training area that includes the Au Sable?

If you adopt this plan, we – the Anglers of the Au Sable, and the citizens of Michigan -- can promise the Guard litigation. Ultimately, the Guard will not succeed in implementing this hare-brained scheme, because this plan violates NEPA, and you know it.

Don't you care??

The Au Sable was already destroyed once, when Michigan was stripped of its timber and the grayling that once teemed in it not were decimated.

The Au Sable has recovered from that devastation as a trout stream of the highest quality. This

recovery took over a century.

*We should learn from history: Do not pollute and jeopardize the fragile balance of one of Michigan's most delicate and valuable natural resources.*

The Guard's mission is to protect Michigan. We appreciate what you do, and you deserve our support and our thanks.

But remember that the Guard also have a duty – as all Michiganders do – to protect our state's beauty and resources. After all, they are an important part of what makes our state worth defending.

Please, amend your plan. Protect the Au Sable.

Frederick M. Baker Jr.



**From:** [Marty Baker](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 7, 2022 6:34:57 AM

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Please add my comment to not expand flying territory in northern MI. I own a cabin on the North Branch of the Au Sable river [REDACTED]

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

Thank you.

MARTY BAKER

SEIBOLD + BAKER



[REDACTED]

**From:** [Gayle Bantle](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Tuesday, January 3, 2023 12:20:15 PM

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I AM OPPOSED TO THE EXPANSION OF THE ANG AIR SPACE.

Upper Michigan is the place people go to for peace, serenity and quiet.

I am also concerned about disruption to wildlife and to those who enjoy it. Have migratory birds been considered in your plans? What about the impact to tourism?

What purpose would it serve to expand? I have not seen a good reason.

Sincerely,

Gayle Bantle

**From:** [Michael Barber](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Monday, December 5, 2022 4:46:50 PM

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To Whom it may concern at the National Guard Bureau,

My name is Michael Barber, I am a retired U.S. Navy Chief and own a home in [REDACTED]. My wife is currently on Active Duty in the U.S. Navy and will retire in 2 years to our home in Lewiston as well. This is where we chose to live out our Golden years after sacrificing over 40 years combined in defense of our country. After serving 22 years on Active Duty I spend most of the year fishing and hunting in the Au Sable River sheds from Grayling to Lovells to Mio. This is God's Country.

As a local resident and taxPAYER, I strongly oppose the expansion of more air and land training space for the Michigan National Guard in the Au Sable River basin and its tributaries! The noise has become deafening morning and night during training periods and the bombing flight path over the North Branch will shake the earth while fishing in the river. If it affects me it definitely affects the wildlife. At times I hate to fish the Lovells area because of the noise. I served 2 deployments in VFA-105 on the JFK and the IKE, where my berthing was under the 3 wire. I wish not to hear that sound anymore. However, I feel like I'm right back there while standing in the river when A-10s bomb then fly overhead.

In the past few years there has been an increase in sorties over the Lovells area and North Branch of the Au Sable river. The contaminants from training in this area along with the chaff that rains down eventually makes its way to the river and pollutes a very pristine environment and trout habitat. I have noticed a decrease in both brook and brown trout in the North Branch and I am most certain the cause is from the National Guard training in this area.

Not only do I strongly oppose the expansion of air and land training space for the Michigan National Guard in the Au Sable River basin and its tributaries, I feel it needs to be decreased or stopped altogether. PFAS contamination in Oscoda has resulted in Do Not Eat orders on fish and wildlife in that area, and I fear the Lovells area will be next. This is absolutely unacceptable, and an investigation into the contamination in the Lovells area and groundwater testing should be done immediately at the expense of the National Guard and not paid for by the taxPAYERS in this area.

Stop training in my backyard and on my river!

V/r,

Michael S Barber  
USN Retired

Sent from my iPhone



**From:** [bruce barlow](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Grayling Expansion  
**Date:** Saturday, January 14, 2023 7:31:24 PM

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Hello,

Please do not allow this increased disturbance to our public lands project to occur!  
There is enough toxic materials on the landscape as it is. This project may have the effect of increasing that toxic material load ten fold!!

I am against any expansion by the military on the public lands of Michigan.

Bruce Barlow



**From:** [Richard Morley Barron](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 6:13:55 PM

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As a real property owner on the N Branch of the AuSable River, I wish to join with the Anglers of the AuSable in objecting to the preposed new environmental assessment which would allow frequent low level military flights over a very large area of NE lower Michigan, To the extent that this is actually being contemplated I am strongly opposed to such a concept.

To me national security should primarily mean domestic security. Please do not allow this attack on our tranquility and enjoyment of what is, or at least used to be, Pure Michigan, Thank you.

Richard

Richard M. Barron



**From:** [James Bassler](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source]  
**Date:** Tuesday, December 13, 2022 11:35:25 AM

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I'm all for any way we can help our young men and women. Who protect our fine country. We are so blessed to have the world's best men and women who volunteer to protect us all. We have to give them all they need to train to do the best job they can. That's our job is to support them all. May God bless and protect them all.

**From:** [Marcy Beauchesne](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Opposition to air space expansion  
**Date:** Saturday, January 14, 2023 2:52:11 PM

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Not sure who to address here,

Reasons that i oppose this expansion - noise, conservation areas, low flying planes, the potential impact of chemicals released on our natural areas, massive size of the airspace expansion....  
The way this was rolled out, the lack of communication, and the fact that the public has had little opportunity to be heard concerns me.


Marcy

[Sent from Yahoo Mail on Android](#)

**From:** [Steve](#)  
**To:** [DNR-Camp-Grayling@michigan.gov](mailto:DNR-Camp-Grayling@michigan.gov); [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Tuesday, December 13, 2022 10:15:13 PM  
**Attachments:** [Letter to camp Grayling.docx](#)

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TO WHOM IT MAY CONCERN,  
I AM A RESIDENT OF CRAWFORD COUNTY AND HAVE BEEN FOR 47 YEARS. I CAN SAY THE SUMMERS ARE NOT QUIET OR PEACFUL WHERE I LIVE. WE LIVE BETWEEN THE ARMY AIRFIELD AND CAMP GRAYLING NEAR THE AUSABLE RIVER. THROUGHOUT THE SUMMER, ALL DAY AND ALL NIGHT WE HAVE HELICOPTERS FLYING OVER OUR HOUSE. IT SHAKES OUR ENTIRE HOUSE TO THE POINT SOMETIMES THINGS VIBRATE OFF FROM SHELVES AND COUNTERTOPS. DURING THE NIGHT THE HELICOPTERS WILL WAKE US FLYING VERY LOW OVERHEAD. WHILE I UNDERSTAND TRAINING MANEUVERS ARE NECESSARY FOR OUR MILITARY TO PRACTICE THERE SHOULD BE A LIMIT TO WHERE, HOW LOW AND WHAT HOURS ARE ALLOWED, TO MAKE IT MORE TOLERABLE FOR THE PEOPLE LIVING IN THE AREAS WHERE IT IS DONE. I SUPPORT AND THANK ALL OF THE ARMED FORCES FOR ALL THEY DO. WITH THIS BEING SAID THEY SHOULD ALSO SUPPORT THE COMMUNITIES WHICH ARE AFFECTED BY THEIR TRAINING, LAND, WATER AND NOISE POLLUTION. THANK YOU FOR YOUR TIME SARA BELCHER AND ROBERT BELCHER



**From:** [Sara belcher](#)  
**To:** [DNR-Camp-Grayling@michigan.gov](mailto:DNR-Camp-Grayling@michigan.gov); [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Tuesday, December 13, 2022 10:06:28 PM  
**Attachments:** [Letter to camp Grayling.pdf](#)

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TO WHOM IT MAY CONCERN,

I AM A RESIDENT OF CRAWFORD COUNTY AND HAVE BEEN FOR 47 YEARS. I CAN SAY THE SUMMERS ARE NOT QUIET OR PEACFUL WHERE I LIVE. WE LIVE BETWEEN THE ARMY AIRFIELD AND CAMP GRAYLING NEAR THE AUSABLE RIVER. THROUGHOUT THE SUMMER, ALL DAY AND ALL NIGHT WE HAVE HELICOPTERS FLYING OVER OUR HOUSE. IT SHAKES OUR ENTIRE HOUSE TO THE POINT SOMETIMES THINGS VIBRATE OFF FROM SHELVES AND COUNTERTOPS. DURING THE NIGHT THE HELICOPTERS WILL WAKE US FLYING VERY LOW OVERHEAD. WHILE I UNDERSTAND TRAINING MANEUVERS ARE NECESSARY FOR OUR MILITARY TO PRACTICE THERE SHOULD BE A LIMIT TO WHERE, HOW LOW AND WHAT HOURS ARE ALLOWED, TO MAKE IT MORE TOLERABLE FOR THE PEOPLE LIVING IN THE AREAS WHERE IT IS DONE. I SUPPORT AND THANK ALL OF THE ARMED FORCES FOR ALL THEY DO. WITH THIS BEING SAID THEY SHOULD ALSO SUPPORT THE COMMUNITIES WHICH ARE AFFECTED BY THEIR TRAINING, LAND, WATER AND NOISE POLLUTION. THANK YOU FOR YOUR TIME SARA BELCHER AND ROBERT BELCHER [REDACTED]



**From:** [Jody Bennett](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Question  
**Date:** Sunday, December 4, 2022 6:09:36 PM

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Can you give me a link by streets in a map for the proposal AS, in Grayling and areas around Grayling flight paths please? Thank you.

Sent from my iPhone Jody Bennett



**From:** benjamin benoliel [REDACTED]  
**Sent:** Monday, January 9, 2023 2:36 PM  
**To:** NGB A4/A4A NEPA COMMENTS Org  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA

To whom it may concern,

I'm a resident of Iosco county Michigan and I am deeply concerned with proposed new military airspace expansion. We are afraid our quality of life will decrease with very low altitude fighter jets flying over our heads in East Michigan Wonderland area. As well as if the current airspace changes, it will make a direct impact on my income as I operate a drone service company and it'll make it a lot harder to receive authorizations to fly if any in restricted areas to fly.

My family and myself are strongly against the proposal and hoping it won't pass.

Thanks for your time and consideration,  
Benji Benoliel

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Sent from an iPhone. Please excuse any brevity or hilarious typos.

**From:** [Greg Bierl](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 10:46:01 AM

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Greg Bierl writing to say that, as a taxpayer, local land owner [REDACTED], Public Land Owner, sportsman, and steward of the land and rivers in Crawford and Otsego counties, that I vehemently oppose this proposed additional use of our public property.

Concerns are almost equally unnecessary environmental risk/erosion of property values/economical (local travel and tourism)/degradation of the AuSable and "pure Michigan" experience.

Sent via the Samsung Galaxy S22 5G, an AT&T 5G smartphone  
Get [Outlook for Android](#)

**From:** [Emily Binard](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena sua ea  
**Date:** Monday, December 5, 2022 11:18:43 AM

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The national guard is trying to once again expand the camp grayling airspace to include large sections of the au sable headwaters. Water should be one of the most protected resources in the GREAT LAKES STATE, and if you haven't learned the lesson of Flint yet, it is that water resources should be protected at all cost...and developers who intend to mess with our natural or manmade water systems should not be allowed to do so. Low altitude fly overs cause huge amounts of pollution, both toxic chemical and noise types. The au sable feeds the groundwater wells of all the homes that exist in its surrounding areas, and military jets give off extremely toxic substances that will drop right into the headwaters of our precious beautiful trout streams and drinking water. Camp grayling is plenty large enough, and our military has aircraft testing sites across the country in much more suitable desert areas that they can utilize...YOU DO NOT NEED MORE OF MICHIGANS PRECIOUS WILD SPACES AT YOUR LITERAL DISPOSAL. PLEASE PROTECT OUR RIVER AND STOP THIS IRRESPONSIBLE PLAN.

sincerely and seriously,  
Emily Binard



Sent via the Samsung Galaxy S22+ 5G, an AT&T 5G smartphone

**From:** [Kinsley Binard](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] I grew up coming to my family's home on the Au sable and still fly back from California in order to visit it. I cannot fathom how Michigan cannot understand that this area needs preservation. The camp grayling expansion is the worst pl...  
**Date:** Saturday, January 14, 2023 4:23:52 PM

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-Kinsley Binard

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**From:** [Sally](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 11:08:02 PM

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This is my message to the National Guard and the Governor of the State of Michigan, Gretchen Whitmer regarding the proposed expansion of Camp Grayling - Michigan National Guard.

The Binard family has spent time on the South Branch of the Au Sable River in Crawford County in Michigan for over 60 years. The River has been the center of our activities with fishing, wading, floating, swimming, birding and relaxing in and along the banks of this remarkable river. We have been lucky to have our River House on this branch of the Au Sable River for over 50 years.

The request for expansion of Camp Grayling, the largest National Guard base in our nation, to more than double the size is excessive. The impact of the projected activity upon the people, the Au Sable River, the wildlife, the environment, the quality of life and the land values is beyond reason. The noise of warfare and extremely low flying aircraft along with the pollution and damage caused by the endless training in, on and over our public lands and streams is unacceptable.

Please reject this plan!

Thank you,  
Sally Lynch Binard

[REDACTED]

Sent from my iPad

**From:** [Veronica](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Proposal to increase military fly zones  
**Date:** Monday, December 12, 2022 10:38:12 AM

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My opposition to an increase in military fly zones is strong.

Do not increase the fly zones over eastern Michigan.

Veronica Blake



Sent from my iPad

**From:** [Diane Blakemore](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [John Blakemore](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 5:05:44 PM

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My name is Diane Blakemore. My husband John and I purchased a cabin on the North Branch of the AuSable three years ago. We named our cabin, "Pine Rest" as it is where we go to regain our sanity. We are appalled over the proposed expansion and vehemently voice our opposition to the expansion.

Even without the expansion we are subjected to planes flying low over our property and hear shelling very, very frequently. This disrupts our peace as well as the wildlife.

We urge you to reject this expansion!

Sincerely,

Diane and John Blakemore



**From:** [Curtis Blessing](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Curtis Blessing](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 2:15:59 PM

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To Whom it May Concern:

My wife, Amanda Van Dusen , has already submitted comments in response to the invitation to do so. We own a 120 year old cottage [REDACTED] [REDACTED] in the proposed Steelhead Lower East MOA.

My comments on the draft EA focus on process, public input and the desirability of future evaluation and assessment of the proposal.

Given the significant negative impact on the local economy and quality of life of residents of residents of the proposed Lower East Steelhead MOAI believe that it makes sense to do the following:

1. Develop a plan for two or three year one year temporary stages to the implementation of the proposed Lower East Steelhead MOA to afford impacted parties sufficient time and information to evaluate actual experience, rather than projected estimates. This would entail three follow-up EAs and evaluations to gather the data/metrics sufficient to assess the data and metrics set forth in the draft EA. The proposed Modification and Addition of Airspace would not be made permanent until the results of the temporary periods had been assessed with appropriate comments from local residents, property owners and business proprietors .
2. In addition to the process proposal set forth above, to provide local affected parties relevant information I believe that it would be constructive to provide public links to studies and documents with respect to previous proposals for enlarging and modifying the regulations of other ANG training areas and any available follow-up EAs ,studies and comments on the experience with such implementation efforts.
3. If the persons and entities included in Chapter 8 of the draft EA, "List of Preparers", have participated in the development of EAs for similar projects and any follow-up studies which shed light on the accuracy of the projections and estimates included in such EAs.

Thank you,

Curtis Blessing

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Unknown][Non-DoD Source] Draft Environmental Assessment for Military Airspace Expansion  
**Date:** Monday, December 12, 2022 11:14:23 AM

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National Guard Bureau,

I am writing in support of the expansion of the Michigan Air National Guard military combat training space across the northern lower peninsula and Thumb area of Michigan.

I live in [REDACTED] Sanilac County, in what is referred to as the "Thumb" area. As I understand it, the expansion would reach into Sanilac County as far south as Port Sanilac. I live two and a half miles north of Port Sanilac.

The ANG currently flies past my location over the lake and over land sometimes on a weekly basis. These flights are no bother to me and my family and many citizens of the area who I have talked to in the past. Frankly most (including myself) appreciated the flights knowing it involves the continued training for our military and readiness. Also nice to see something like this up close and personal.

Below is an email I received from a group that is opposing the expansion. It is an environmental group and much of their commentary is, in my opinion, inaccurate and borders on ludicrous. Hopefully you have this information for your hearings or whatever administrative action follows and can debunk their very misleading and inaccurate statements.

Again please put me on the record as SUPPORTING the expansion of the Michigan Air National Guard military combat training space across the northern lower peninsula and Thumb area of Michigan. I am a Vietnam Veteran and training and readiness of our Military is something I see as essential to our Country and National Security.

Thank You,

Roger Bobby  
[REDACTED]  
[REDACTED]  
[REDACTED]

----- Forwarded Message -----

**From:** mail [thumbland.org](mailto:thumbland.org) [REDACTED]  
**To:** mail [thumbland.org](mailto:thumbland.org) [REDACTED]  
**Sent:** Saturday, December 10, 2022 at 10:55:24 AM EST

**Subject:** Military Airspace Expansion Includes Huron, Tuscola, and Sanilac Counties

## **Public Comment Due By This Wednesday, December 14**

### **Draft Environmental Assessment Michigan Air National Guard Alpena Special Use Airspace Complex Including Huron, Tuscola, and Sanilac Counties**

By Bill Collins, Executive Director  
Thumb land Conservancy

A huge expansion of the Michigan Air National Guard military combat training space across the northern lower peninsula and Thumb was suddenly proposed for public comment on November 14. As I stated in a recent Michigan Bridge article, while military defense is very important, especially these days, if you value outdoor recreation, our wild lands, and quality of life in our region, you would do well to quickly educate yourself on this proposal and make public comment as soon as possible. You have less than 5 days. The public comment period started only a few weeks ago on November 14, as deer hunters started rifle season, just before Thanksgiving, and closes on December 14, just 5 days away and before Christmas when many people are focused on holiday activities. Restricting public comment around the holidays is an old tactic to limit public comment. It's also a time when many seasonal residents are not in northern Michigan and may not have received proper notice.

The Michigan Air National Guard wants to expand its airspace and intensify its activities over the northern Lower Peninsula, Thumb, and Lake Huron, allowing military aircraft to fly further, more frequently, and lower overhead. If approved, military pilots will train across an additional 1,633 nautical square miles, including Huron, Tuscola, and Sanilac Counties, extending as far south as the Port Sanilac area. In a portion of the proposed flight zones in the Thumb, military aircraft would be allowed to train as low as 500 feet above the ground.

The proposed military training airspace expansion will result in increased and extended high levels of noise, well beyond those currently allowed by local ordinances. Other impacts will include increased air pollution in the form of fine particulates from jet fuel exhaust, increased potential for spills of fuel and other toxins, release of thousands more of decoy chaff and flares by aircraft each year resulting in the discharge of magnesium oxide, magnesium chloride, and magnesium fluoride over water and land, greatly increased potential for accidents involving civilians, catastrophic bird strikes particularly large migratory waterfowl, and increased military presence, potentially even foreign military personnel.

At the same time, the Michigan Army National Guard, is proposing a huge expansion of its use State land and to double the size of the Camp Grayling military installation in the northern lower peninsula. The Alpena Special Use Airspace is already considered the largest overland training airspace east of the Mississippi River. Again, most of us realize military preparedness is critical, but at this rate, we run the risk of our State becoming militarized well beyond our control and any reasonable person should ask whether all of this is absolutely necessary.

For more details and a map of the proposed expansion of the combat training zones across Michigan, see the Bridge Michigan article at this link: <https://www.bridgemi.com/michigan-environment-watch/anger-over-national-guard-air-training-plan-over-grayling-and-thumb>

Fortunately, Thumb Land Conservancy member, Cliff Stuehmer of Huron County, is extremely informed on this proposal, has made extensive public comment, and has provided us with the following summary of the Michigan Air National Guard Environmental Assessment. Those of you living in Huron County, Tuscola County, and northern Sanilac County should pay special attention to this summary and make public comment by midnight on December 14, which is this coming Wednesday.

## **Can You Hear Me Now?**

By Clifford Stuehmer  
Alpena Special Use Airspace resident  
Port Hope, Michigan

A brief summary of the things the Michigan Air National Guard's Environmental Assessment is not saying out loud.

- Air combat training includes climbing, diving, turning, and multiple passes over the same area.
- F-16s at 500 feet generate 115 dBA noise levels. That is eight times louder than an A-10 (“Warthog”), louder than the maximum level in the audience at a rock concert, at the threshold of “uncomfortable” for people and eight times louder than your typical County/Township noise ordinance (85 dBA). This comparison can be found in the Environmental Assessment (EA) on page 39, Figure 3.1. This is also the level at which the Secretary of the Air Force requires hearing protection for all Air Force personnel ON or OFF base (Air Force Instruction AFI 48-127).
- When an F-16 passes overhead at 500 feet, you will be unable to communicate with someone standing three feet away from you without shouting for approximately 20 seconds. This “Shout Zone” extends about 2.5 miles to either side of the flight path (decreasing shouting time period as you approach 2.5 miles to either side of the aircraft).
- The EA touts a “seasonal” flight restriction concession to help reduce the significant negative impact the noise of low altitude jet combat training will have on tourism along the shoreline. This is an admission of significant impacts from the high noise levels. However, it is an empty concession that does nothing for the full time residents along the shoreline or boaters/kayakers more than 1 mile offshore.
- The prior Foreign Military Sales pilot training Environmental Impact Statement quotes a 0.65% average decrease in property value for each dB increase in Day-Night Average Sound Level (DNL). This translates to about a 4% property value decrease for those areas showing a 6 dB DNL increase in noise in this EA.

- The Aircraft Owners and Pilots Association (AOPA) opposed the proposed changes as early as 2018 and more recently requested the more thorough Environmental Impact Statement (EIS) in July of 2019. These professional and amateur pilots and aircraft owners indicate the Special Use Airspace (SUA) changes will significantly affect the safety and economy of civilian air use.
- Particulates emissions from low altitude training (below the 3000' mixing level) will settle on our farms, yards, Lake Huron, and into the deepest parts of our lungs.
- Potential bird strikes are downplayed by mention of the Air National Guard's use of the BASH computer program yet there is no mention in the EA of the Sandhill Crane, one of the largest birds in North America, which routinely migrates in formations in the Military Operations Airspaces (MOAs) well above 500 feet and outside and above the "seasonal" flight restrictions. Nor is there any mention of Canada geese.
- This EA mentions that bringing jet air combat training down to 500 feet in the proposed MOA airspace would be a cost save to an organization with an annual budget of \$234 BILLION.

The points noted above are why a Finding Of No Significant Impact (FONSI) for this proposal is not only wrong, but an insult and an injustice to the people that live, work and play within the Alpena SUA.

Selfridge Air National Guard Base is wholly owned by the Air National Guard and does not share facilities or airspace with a civilian airport such as Burlington, Vermont or Madison, Wisconsin. The speculative next step, once the SUA is permanently changed, will be to base the Foreign Military Sales program Singaporean F-16s and F-35s at Selfridge ANGB. These won't be our US pilots learning valuable combat skills, but rather foreign "customers" using our environment for field testing their new equipment. The proposed SUA changes look to be a perfect set-up for this.

I urge you all to review and discuss the Draft EA and comment to your governing entities, including the County Board of Commissioners, your local and state elected representatives and Governor Whitmer.

Here is the link to the Draft EA:

[https://www.alpenacrtc.ang.af.mil/Portals/12/documents/AirSpace%20Documents/Draft%20EA\\_Alpena%20SUA%20Complex\\_MainBody\\_November%202022.pdf?ver=Ey56o\\_w9iSiyQBSEw-O16w%3d%3d](https://www.alpenacrtc.ang.af.mil/Portals/12/documents/AirSpace%20Documents/Draft%20EA_Alpena%20SUA%20Complex_MainBody_November%202022.pdf?ver=Ey56o_w9iSiyQBSEw-O16w%3d%3d)

EA and FONSI comments can be emailed to:

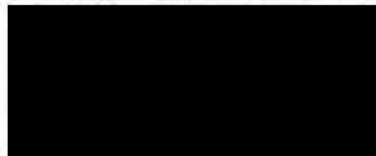
[NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with the subject line "ATTN: Alpena SUA EA" before December 15.

This proposal is expected to be approved and implemented late summer 2023.

Clifford Stuehmer is a retired Ford Motor Company Engineering Supervisor. He was the supervisor of the Advanced Powertrain Rear Wheel Drive Noise, Vibration, and Harshness Section for nine years. He was nominated for two Henry Ford Technology awards. He earned a Master's Degree in Mechanical Engineering from Oakland University in Rochester, Michigan. He currently lives in [REDACTED], in the Thumb.



William Collins, Executive Director  
Thumb Land Conservancy



**From:** [Catherine Boomer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 7, 2023 7:00:19 PM

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To whom it may concern:

I am a lifelong resident of [REDACTED]. We are currently in the Steelhead M [REDACTED] initially against this previous proposal, I understand how important it is to have regular, consistent airspace training.

***I am strongly against the current proposal.*** The increase in frequency, number of planes, low ceiling and the increase in use/discharging of chaff & flares would negatively impact the resort communities, the farm communities and the year round residents.

Please do not move forward with this proposal.

Respectfully  
Catherine Boomer  
MI

[REDACTED]



Alpena SUA EA Michigan 49738  
(Camp Grayling Expansion Plan)

METROPOLITAN MI 480  
5 DEC 2022 PM 15 L  
Vegas Series



Please Do Not expand  
Camp Grayling. Our lakes  
and streams, Air Space  
and Peaceful Outdoor Life  
already take a beating any  
more would be pollution  
in Addition to what I already  
witness every summer.

National Guard Bureau

Attn: Ms. Kristi Kucharek

3501 Fetchet Ave.

Joint Base Andrews MD

20762-5157

S. Booth, [REDACTED]

3-004-09000-1002

Space below reserved for U.S. POSTAL SERVICE

0762-515701



**From:** [Matthew Borke](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 10:54:56 PM

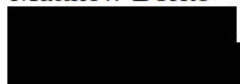
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## Public Comment for Air Space Expansion.

Greetings. I write today to discuss reasons why the air space should Not be expanded. When we look at allowing for greater use, it is important to look at previous history of accountability and protection of public safety. To understand public safety, one must be allowed to study pollution and how it affects the populous. When it comes to military issues, those studies or even what or how to study appear to be discussed behind a veil that many conclude as "national security." Whereas I am just an individual, I may have many terms that could be considered incorrect in the English language yet the facts are still the same. Presently, it has been discovered that the airports on military establishments are consistent with destroying water supplies. PFAS and PFOS, also known as forever chemicals because they never leave the body once ingested, have become a known outcome to military aerial habits. The habits have contaminated (poisoned) local water supplies and the response of the military has been nothing shy of telling the public that they are not accountable nor do they care. This expansion of airspace presently is to cover 1/4th of the lower peninsula of Michigan. And if they have already shown that they will freely poison the public, then why would anyone allow them to do it more. This should not even be a "me" and "them" topic as they are actually supposed to be "us." As "us," who would allow anyone to openly poison their neighbors. Michigan is home to 21% of the world's fresh water so we do not just have a responsibility as Michiganders but a responsibility to the US and the world to assure that our greatest natural resources are preserved for future generations. By expanding this airspace we will not only be allowing more poisoning of our water supplies but an overall peacefulness of life. Does one believe having jets fly over their house as peaceful? This is not just an outrage for humans but all of our ecosystems. The Bald Eagles have been on the rebound after near extinction. Expanding this airspace for military use which will allow for experimental testing seems outlandish. Who wants to live in a military test-zone? Does one think there will be no accidents? This expansion will make Lake Huron into a war zone. Michigan and the great lakes do Not deserve to be destroyed. PFAS/PFOS is only part of the issue. There is also sound pollution, air pollution, water pollution, and land pollution. We can't test for more and not because we are not smart enough but because we do not have the information nor the facilities to test for other destruction especially when information is considered classified. Will we have planes flying with nuclear warheads? Nuclear Materials? And what of those that find Michigan a threat on the world stage? Does creating more military airspace a target? The simple answer there is yes. For those that have a background in the military, it might make one feel at home having jets fly overhead but let's face it, that is not a vacation spot. Michigan is a place where serenity is still possible. If our public comments have no impact and this decision is already made, please notify the public and question why this is so. If not, maybe even extend the public comment period longer as many do Not even know this opportunity exists.

Please deny this airspace expansion and avoid turning Michigan into a warzone.

Sincerely,  
Matthew Borke



**From:** [george.borysowicz](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Au Sable guard flights  
**Date:** Saturday, January 14, 2023 7:43:30 PM

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ATTN: ALPENA SUA EA

I visit the Au Sable river near Grayling often and so far I had no problem with the low level flights. I am very concerned now that the proposed increase in those flights will be incompatible with our enjoyment of the river and of the town of Grayling. I am very concerned about the increase in the noise and the increase of the aluminum chaff cartridges dropped on the area and resulting pollution. The Au Sable river area is the national resource and not a desert and the National Guard is a welcome guest who should behave accordingly. Do not allow to increase the low level training.

Jerzy (George) Borysowicz  
Retired MSU

**From:** [RAY BOSWELL](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source]  
**Date:** Thursday, January 19, 2023 3:27:09 PM

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First I would like to thank every military member for their service. Second I would like to know if it would be possible to get a program or schedule of the flyovers so that I could be out there ready with a drink in hand to observe these flyovers. It's kind of hard sometimes once you hear them coming to be ready they go by so quick but with the schedule a person could be ready for these. Just schedule it all so help people who don't want to hear or see these flyovers to be ready they could go grocery shopping and miss out on all the a schedule of times and dates would also help or be helpful for tourists to observe these flyovers. I personally deal with tourists on a daily basis and have never had even one of them complain. again thank you

**From:** [Jim Bour](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Tuesday, December 13, 2022 2:45:27 PM

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Dear Ms. Kucharek,

I am writing to voice my opposition to the expansion of the low level training flight areas. These expanded flight areas are not at all good for northern Michigan. We are already subject to numerous helicopter and jet flights as well as ordnance explosions. The addition of very low flying jets will further disrupt the fragile environment as well as disrupt the daily routine of the many citizens that inhabit these areas of land. These low altitude aircraft will be too loud and will affect everything from wild life to tourism to home values.

Please consider not implementing these measures for northern Michigan.

Thank you,

James Bour

**From:** [Tom Bracken](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] in favor of proposed airspace changes  
**Date:** Thursday, January 5, 2023 11:42:00 AM

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Below is a comment I posted on a December 6, 2022 Detroit News article titled “Plan for low-flying military training riles residents in Grayling, Thumb”:

I'm a fisherman and value my peace and quiet on rivers and lakes, but I also value a strong and well prepared military. As a kid, I too remember fighters coming low right over the waterfront as our family was swimming at the beach. It used to really fire us up and we'd holler and wave at the jets. We got the occasional wing dip, which we were certain was just for us. Let's have our military trained in the best way possible and remember that our tranquility on rivers is made possible by our readiness when we need it.

This comment received the most “respect” clicks (17) of any of the comments posted for the article.

Best Regards,  
Tom Bracken

[Redacted]

[Redacted]

**From:** [Carol Brand](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, January 12, 2023 11:12:34 AM

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Dear Sir,

I am writing to you in strong opposition of the proposed expansion of the current military air space in Northern Michigan

My family comes from humble beginnings in the UP and Bay City region, who went on to become prominent businessmen. Both sides of my family purchased land near Lovells Michigan because of a love of the Outdoors, especially fly fishing. I now live full time in a cabin built a hundred years ago by Ed Kellogg on Shupac Lake. I grew up with traffic jams of troops, being shut out of roads and trails, window-rattling blasts and planes so low the pilots returned my wave. The adverse effects of all this on the health of my family, my neighbors, our local economy and our environment has been ignored by the National Guard for the last fifty years, including the legendary "dragging of feet" to clean up their PFAS mess.

After ruining the Crawford County tourist industry, poisoning our water, killing off our wildlife and disrupting us day and night with low planes and gunfire, do you really think it is "acceptable" to further decimate our property values?

We've done enough!

Sincerely,

Carol Brand

**From:** [kathy bremer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Sen. Curt VanderWall](#); [Jim Stamas](#); [Rep Ken Borton](#); [Rep Daire Rendon](#); [Sen Ed McBroom](#); [Sen. Rick Outman](#); [Sen Wayne Schmidt](#); [Sen Sean McCann](#); [Rep Gary Howell](#); [Rep Gregory Markkanen](#); [Rep William Sowerby](#); [Rep Beau LaFave](#); [Rep Gary Eisen](#); [Rep Rodney Wakeman](#); [Rep David Martin](#); [Rep Sara Cambensy](#); [Rep Abraham Aiyash](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 1:02:55 PM

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December 12, 2022

Ms. Kristi Kucharek

We are writing in regard to the expanded air space proposal in northern Michigan.

We already hear the bombings and planes flying overhead. The area of this proposal is NOT over vacant land. This area is used by hunters, trappers, fishermen, ATVers, snowmobilers, Nordic skiers, hikers, snowshoers, rockhounds, plant/fungi collectors, photographers, stargazers, backpackers, equestrians, canoers/kayakers and those that seek a quiet respite. These uses may be seasonal or periodic, but they in no way suggest that this area is vacant or abandoned. This is what personifies Pure Michigan, not a military operation. We have a cabin in this area and are not considered permanent residents. It is not right to assume that because much of the area is occupied by seasonal landowners, that it is vacant land. We come here to enjoy the peacefulness northern Michigan has to offer. And not **10 times more** the amount of air traffic that we currently experience.

Our understanding is that the expanded air traffic would also be flying below 5,000 feet and as low as 500 feet with aircraft that is much louder than what we currently experience. This is a totally unbelievable proposal and it must be stopped.

Michigan has an advertising campaign called "PURE MICHIGAN." Following are two examples:

1.

"A perfect summer has a voice.  
If we listen close enough, we can hear it.  
It whispers, one more day, one more swim, one more round (golf).  
And it speaks softly through the night murmuring, one more log, one more  
marshmallow, one more walk along the shore.  
The perfect summer is waiting.  
The perfect summer is PURE MICHIGAN."

2.

"Wish you were here.  
Words we often seen on postcards from family and friends.  
Luckily there is an entire state that whispers, "Wish you were here;" climbing my  
dunes, sailing on my breezes, walking along my beaches, and getting lost and found  
in my forest.



This is a postcard from Michigan, where wishing you were here is the heart of Michigan."

No where do I see Michigan advertising, "Come here and listen to aircraft flying 500 feet over head. Enjoy the sounds!"

The public comment period was for 30 days. We believe this has been in the making for years and we have 30 days to read through and decipher everything. The public comment period should be extended to allow the public adequate time to review the information at hand.

This air expansion is not good for people or wildlife and needs to stop. Please put an end to this now.

Regards,

Dave & Kathy Bremer



**From:** [kathy bremer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, January 8, 2023 2:01:35 PM

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January 8, 2023

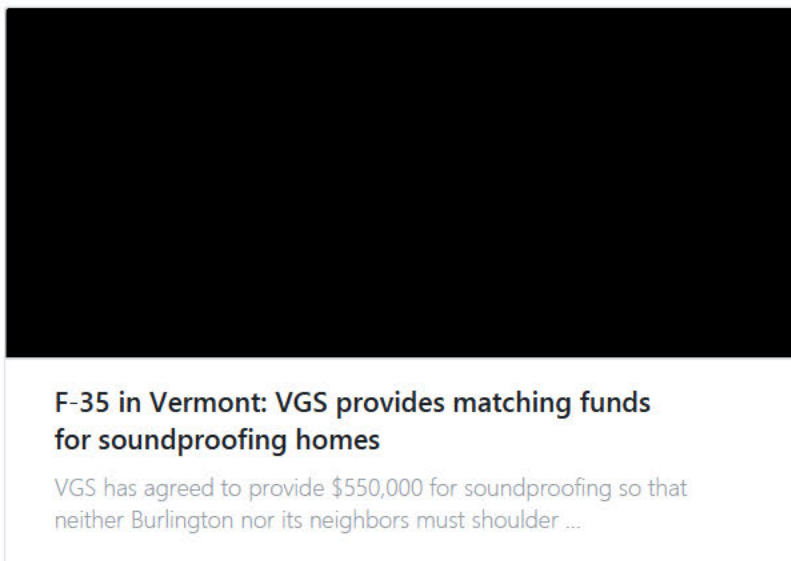
Ms. Kristi Kucharek:

An MLive article referenced the Air National Guard as saying, "the expansion would increase military flights and intensity beyond a narrower strip of restricted airspace, would occur over a *lowly populated area*." If there is one house that has to experience this noise, that is one too many.

Lowly populated is a misnomer. We have a cabin in this area and are not considered permanent residents. It is not right to assume that because much of the area is occupied by seasonal landowners, that it is "lowly populated." This area is used by hunters, trappers, fishermen, ATVers, snowmobilers, Nordic skiers, hikers, snowshoers, rockhounds, plant/fungi collectors, photographers, stargazers, backpackers, equestrians, canoers/kayakers and those that seek a quiet respite. These uses may be seasonal or periodic, but they in no way suggest that this area is lowly populated or vacant lands. We come to northern Michigan to experience the peacefulness northern Michigan has to offer. This is the PURE MICHIGAN experience. We do not want **10 times more** the amount of air traffic that we currently experience and at levels of 300-500'!

Read this article from the Burlington Free Press in Vermont.

[F-35 in Vermont: VGS provides matching funds for soundproofing homes](#)



There are over 2500 homes that have become unlivable due to the increased noise level of the F-35's. This is totally wrong, and now the Michigan Air National Guard and

Camp Grayling is intent on doing the same thing to northern Michigan. Grants are being offered in Vermont to assist in paying for the insulation to homeowners, however the community is to contribute 10% of the total bill, which could work out to be millions of dollars in the coming years. So, Camp Grayling and the Air National Guard now want us to sacrifice more in terms of unlivable conditions at the cost of the community in health, quality of life and finances. NO, NO, NO, enough is enough.

Emissions from the F-35's is another issue. Airspace expansion would increase the use of chaff and flares which deteriorate into magnesium oxide, chloride and fluoride in the water. The guard claims their expanded use would not have a significant impact on water resources. We would like to see an independent study on this.

Another issue is that this is "training." These are not seasoned pilots. What are the risks of crashes and accidents flying at these low levels? We believe the environment and our safety are at risk.

We do not support the airspace expansion and request that it be denied in its entirety.

Regards,  
Dave & Kathy Bremer

[REDACTED]

**From:** [kathy bremer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 8:51:26 PM

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Public Comment on the Michigan Air National Guard expansion:

We are all used to military aircraft using the Au Sable River headwaters for training missions. But now, the Michigan Air National Guard is proposing to expand these missions by ten-fold, using new, louder planes, flying even lower, dropping more chaff to simulate radar evasion war conditions which includes micro-glass fibers coated with a thin layer of aluminum. While we respect the importance of the National Guard, this is not the place to dramatically increase those activities

We see the following problems:

- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increased average noise; noise that will shatter the solitude of the population noted above with constant low over lights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.

<!--[if !supportLists]-->• <!--[endif]-->**Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

In conclusion, The Au Sable River and its surroundings is a vital national resource, one that needs to be protected, the more louder and low air training is not wanted in this area and it seems like there are other areas where this training could occur that would be less impactful to the environment.

We oppose the air space expansion and the lower levels of altitude it proposed.

Regards,

Dave & Kathy Bremer

**From:** [kathy bremer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 5:53:38 PM

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Michigan Air National Guard Expansion Public Comment:

We have a cabin in the Lovells area, which is the Grayling West MOA on your map. Currently, we hear the bombing and aircraft overhead, most prominently during the Northern Strike training in August. We have endured this, but also support this as part of our duty as U.S. citizens to assist in training our military. However, to go beyond the current level of air space regulations is unthinkable and irresponsible to the citizens of Michigan, our wild life and all natural resources.

The air space proposal would increase the Grayling West MOA area from 309 flights per year to 1600 flights annually and at an elevation as low as 500'. The aircraft flying would have a much higher decibel level than what we have experienced in the past. At take off the F-35's have a decibel level of 115dB. The safety range for people is as follows:

Safe 0-70dB  
Hazardous 71-100dB  
Highly Hazardous 101dB and over

This is not our idea of enjoying PURE MICHIGAN.

Contrary to the Air National Guard's opinion that these flights would be over a "lowly populated area," this is not only a residential area, but an area enjoyed by fishermen, hunters, trappers, ATVers, snowmobilers, Nordic skiers, hikers, snowshoers, rock hounds, plant/fungi collectors, photographers, stargazers, backpackers, equestrians, canoers/kayakers and those that seek a quiet respite. Many folks are tourists who enjoy these activities. Why would they come to a noise-ridden area for their peaceful get-away vacation? For sure, the tourism industry will be negatively impacted. The increase in NOISE levels alone is reason enough to stop this expansion.

Michigan is surrounded by 20 percent of the planet's fresh surface water in the heart of the world's greatest freshwater ecosystem ([www.michigan.gov/egle](http://www.michigan.gov/egle)). The use of chaff and flares deteriorate into magnesium oxide, chloride and fluoride in the water. Why do you want to put our watershed at risk, when fresh water is becoming increasingly scarce?

Automobiles have emission standards, yet while the F-35's consumption is 1,481 gallons of fuel per hour, the military is exempt from emission standards. Undoubtedly, our air quality will be impacted.

Between the increased noise level, the impact on our watershed and our air quality being at risk, the guard claims their expanded use would not have a significant impact on our PURE MICHIGAN natural resources. We disagree and would like to see an independent study on this.

We do not support the proposed Air National Guard expansion proposal.

Regards,  
Dave & Kathy Bremer  
[REDACTED]

**From:** [James Brennan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [James E. Brennan](#)  
**Subject:** [Non-DoD Source] ALPENS SUA EA  
**Date:** Wednesday, December 14, 2022 4:52:43 PM

---

I am opposed to the aerial expansion proposed for Camp Grayling, Michigan, by the National Guard.

J. Brennan  
Pennsylvania

National Guard Bureau  
Attn: Ms. Kristi Kucharek  
3501 Fetchet Avenue  
Join Base Andrews, MD  
20762-5157

December 5, 2022

Dear Ms. Kucharek,

First, please accept my appreciation for your service as a Program Manager for the National Guard. After reviewing your profile on LinkedIn, it's clear with your education and experience you likely have significant opportunities in the private sector, thanks for choosing to apply your talents in this particular role. I am a land and homeowner on the Au Sable River near Camp Grayling, Michigan. I am writing in hopes you'll consider my perspective on the proposed expansion of Camp Grayling & the more recent request to expand the low-level flight airspace above our river.

I live in Indianapolis, I'm a small business owner and father of five kids, ages 7 – 17. My family and I make the 7-hour drive 8 or 9 times a year to spend time together on the river. Teaching my children to fly fish has been one of my most rewarding experiences as a parent. Of equal importance, I have spent countless hours educating them about the ecology of our river system and ultimately our obligation to leave it for the next generation better than we found it.

The Michigan National Guard's has proposed a doubling in size of Camp Grayling, along with a recent request to expand the airspace above the river for low level training exercises for the A-10 and F-16. The Environmental Assessment advises we could see 10x the sorties that already disturb this extraordinary resource. Beyond the physical & environmental impact the expansion will bring to the watershed, we see the expanded flight proposal as an existential threat to our love of solitude while in the Northwoods.

Four or five times a year, I participate as a host for Project Healing Waters (provides physical and emotional rehabilitation of disabled active military service personnel). Many of my neighbors also host these visits - we believe a dramatic increase in low flying military aircraft will meaningfully end this program's presence on the Au Sable. The solitude veterans find on the river lies at the heart of that healing process. Almost every veteran we spend time with battles some degree of PTSD. I can't overstate how these noise from these flights negatively impacts these veteran's experience of being on the river. If you haven't heard of this program, I would encourage you to learn more.

My hope is you'll advocate against the expansion of Camp Grayling, especially the low flights. If you are ever in Grayling as part of this, I would be more than happy to make the trip to meet you, show you the river, and introduce you to some like-minded residents.

Thanks very much for your time and consideration.

Sincerely,



Michael Browning II



**From:** [Keith Bruhnsen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena sua ea  
**Date:** Sunday, December 4, 2022 8:20:42 PM

---

As a citizen of michigan and homeowner in the proposal to expand military air training i oppose the current plan and urge you to reconsider and provide more citizen input.

Keith bruhsen



Sent from my iPhone



**From:** [Keith Bruhnsen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Thursday, December 8, 2022 7:46:28 AM

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As a home owner in [REDACTED] i want to express my opposition to the expansion of air flight training in northern michigan. The plans need to be changed to limit the impact on wildlife, rivers, and the proper owners peace and quiet. The ground and air expansions of the national guard are excessive and unnecessary.

Keith Bruhnsen  
[REDACTED]

Sent from my iPhone

**From:** [Keith Bruhnsen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, January 10, 2023 7:32:22 AM

---

We the citizens and property owners of Grayling oppose the expansion of land for the National Guard. You have not demonstrated the need nor safety measures to protect property, the environment and recreation for everyone.

Sent from my iPhone

**From:** [Keith Bruhnsen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena sua ea  
**Date:** Saturday, January 14, 2023 12:05:02 PM

---

I oppose the expansion of your air training in northern michigan as a homeowner and recreational citizen. I hear the national guard bombs at night and now have to hear jets during the day??

Keith Bruhnsen  


Sent from my iPhone

**From:** [Clifford Burkholder](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Air space  
**Date:** Monday, December 5, 2022 2:49:26 PM

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Good afternoon

I'm little dismayed at the militaration of Northern Michigan. You need to understand that people live up here, there's already existing air space and over 200,000 acres of available. You got to stop this, the people don't want it. If you proceed with this you will turn the population against the military, which up to this point has good relation.

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**From:** [Clifford Burkholder](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Airspace  
**Date:** Saturday, December 10, 2022 11:06:42 AM

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I live in northern Michigan and have no idea why you want to expand the armies foot print on our state land that citizens have supported all these years. The army has shrunk in size, we went through a cold war. The defense budget has increased while human numbers have declined considerably. Now I hear the air force wants to increase airspace usage. Again, I am dismayed. Now the governor has switch directors! This whole thing is baffling and disturbing. The last president wanted to over throw our government, and now army, air force wants to take over Northern Michigan. The voters spoke last election, everybody I talk to up here does not support the expansion, and most still have no idea about the air corridor expansion. I'm not sure where you stand but I see lots of pressure to change the face of Northern Michigan, Increased industry, housing more more more. How about all the legacy issues of pollution, logging, internet, power. Switch to electric vehicles. The whole affair is a fiasco in the making, the planning and funds for everything you want to do just not there yet.

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**From:** [Clifford Burkholder](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Low level flight  
**Date:** Saturday, January 14, 2023 3:30:04 PM

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This military air warfare take over along with the camp Grayling expansion, will forever change northern Michigan. Please think of what you're doing. You have a reduced service that's been downsized, and with fewer planes. You did not need this during the cold war, so I don't understand why you want to terrorize the people of Northern Michigan now. There are plenty of wide open expansive out west or in Alaska, or Canada. there is no room for more military exercise in Michigan you have a great area right now. Expanding will just degrade the quality of life and raise the noise level that's already too loud

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**From:** [Joseph Burroughs](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling  
**Date:** Monday, December 5, 2022 10:17:36 AM

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Dear Ms. Kucharek,

As a property owner on the North Branch of the AuSable river in Crawford County, I am deeply concerned about the proposed expansion of Camp Grayling and the proposed changes for military aircraft flight levels. Camp Grayling has done more to harm wildlife, water quality, and the solitude so many people enjoy in the area than any other human impact. The proposed expansion is an outrage, and I am opposed to it.

Please pay attention to the various conservation groups who speak for the natural environment. The fauna and flora have no other voice.

Sincerely,

Joseph S. Burroughs



**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Saturday, December 10, 2022 12:14:11 PM

---

Please Don't.  
Environmental, local quality of life and an historic area for outdoor recreation should be sacred.  
Richard Capalbo  
Elliot Donnelley Chapter, Trout Unlimited  
Chicago, Illinois



**From:** [Cynthia Casillas](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Expansion of Military Air Space  
**Date:** Tuesday, December 13, 2022 12:25:26 PM

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The aircrafts are already too low near Ess Lake near Hillman. These aircrafts are at tree top level and below. Shakes everything around and has been going on for decades. Who's going to monitor this in an honest manner? I have no trust in your flight patterns.  
Cynthia Casillas

Sent from my iPhone

**From:** [John Chamberlin](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 5:28:12 PM

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Don't expand @ Grayling.

- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.
- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

John Chamberlin



**From:** [Steven Chappell](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 11, 2022 8:22:32 PM

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To Whom it May Concern,

As a part time resident of [REDACTED], I would like to voice my opposition to the expansion of the National Guard Camp near Grayling. There is far too much at stake with the added noise and pollution in the Au Sable River watershed, and we simply can't let that happen. We are lucky to have one of the finest areas in Michigan in which to enjoy the out of doors, and it would be far too easy to destroy this precious watershed. The National Guard camp, in its current area, has leaked PFAS chemicals into the watershed that have poisoned Lake Margrethe. We can't afford to have more of these "forever chemicals" polluting a larger area of Northern Michigan. Also, with the expansion of the airfield, the noise pollution will reach an undesirable level, hurting humans and animals alike. Please do NOT let the expansion go forward!

Sincerely,

Steven M. Chappell

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

**From:** [Libby Cheney](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Tuesday, December 13, 2022 5:21:24 PM

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I am writing in opposition to the military's proposal to expand Camp Grayling. From the public meetings I've attended and the independent research I've done, I believe that adequate acreage is already under lease for the military's planned activities. In addition, I strongly object to the restriction of use of Michigan public lands and risks posed to the delicate environmental balance of our treasured rivers. The Michigan Department of Natural Resources is in no way staffed, capable, or inclined to enforce the requirements of the proposed leases.

My suspicion is that a deal will be made to monetize the leased lands by allowing contractors to test their equipment on the newly leased acreage. That gives even less control to the citizens of Michigan who thrive on the access to state lands.

Count me as: **STRONGLY OPPOSED.**

Regards,

*Libby*

Libby Cheney  


**From:** [Karen Chorzel](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 7, 2023 9:51:47 AM

---

Dear Sir or Mam,

I am writing to ask that the Guard not be allowed to increase their flights and fly lower over Pointe Aux Barques, MI. I have been going there every summer since I was born, and I do not think the beach would be as enjoyable if the planes were buzzing over lower and more frequently. Please do not allow the increase of sorties to happen and leave the PAB residents to have some peace and quiet.

Thank you for your consideration in listening to my request.

Sincerely,

Karen Chorzel



**From:** [ChasPeps christensen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Saturday, December 10, 2022 9:23:03 PM

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Hello

This is the comment opportunity? I live in [REDACTED] in Huron county. Our family live in rural northern Michigan. Our family will be impacted severally with the intense noise from low flying aircraft. Who in \$%%^ would think it would okay to fly 125+ db aircraft in a county with tourism as one of the chief industries, home to 4 country schools and 5 school systems. Why not fly in a remote area without so many children, some many people dependent on tourism or have such population density!

Who are you? Why are you making criminally insane proposals on a population that deserves better!

If these are real comments, then do the right thing and put a fork in these proposed aircraft plans!

Sincerely C. Christensen

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:Alpena SUA EA  
**Date:** Friday, January 13, 2023 5:06:28 PM

---

Must strongly object to jet fly overs on Lake Huron. The noise and possible damage that may be caused by the jets is a going to be bad. I do not need shattered windows or cracks in my walls or home foundation.

Michigan is a peninsula, have the jets fly over Lake Michigan and over the upper peninsula if you must conduct your maneuvers. Why is Lake Huron always chosen for these maneuvers.

Why do you insist on destroying my little peace of heaven. I do expect a reply.

NO JETS OVER LAKE HURON!!!

Barbara Cieslak  
[REDACTED]



**From:** [Layton, Andrew B Capt USAF 110 ATKW \(USA\)](#)  
**To:** [KUCHAREK, KRISTI L GS-13 USAF ANGRC NGB/A4; NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** FW: [Non-DoD Source] Proposed Air Space  
**Date:** Tuesday, December 27, 2022 4:37:13 PM

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Here's another one.

---

**From:** CHRIS CLARK [REDACTED]  
**Sent:** Tuesday, December 27, 2022 3:44 PM  
**To:** ng.mi.miarng.list.pao@mail.mil  
**Subject:** [Non-DoD Source] Proposed Air Space

Dear Sir,

I am writing to express my concerns with your proposal to allow the increased area for flight training. I live on Sand Point and I can tell you every time one of your jets fly over, I don't know what height they currently fly but it's low enough to rattle the house, cause the entire neighborhood to duck and it sends our dog into a frenzy that sometimes takes days to get back to normal.

The proposed 1 mile buffer is much to close, sound travels extremely well across water and 1 mile out is the same as if they are right overhead. also the paper said you are looking for a 500' ceiling, that is absolutely unreasonable with the number of homes along the shoreline an aircraft flying at 500' off the ground having mechanical problems would pose a great danger to residents.

So I ask that you reconsider adding any of Huron County to your training area.

Thank you for your consideration,

Respectfully,

Chris Clark

Sand Point,

Point West Home Owners Association

**From:** [jon.clark](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:31:47 AM

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I am a landowner who will be impacted by the proposed expansion of flights and types of aerial activity. This email serves as notice of my strenuous opposition of this move. For such a major operational change at Camp Grayling it is quite disappointing to see it nested in some administrative documents.

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

**Promises Made, Promises Broken:** Let's just focus on one: PFAS. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

Docket (<https://www.regulations.gov/docket/FAA-2023-1972>) / Document (FAA-2023-1972-0001) (<https://www.regulations.gov/document/FAA-2023-1972-0001>) / Comment

 PUBLIC SUBMISSION

# Comment from Brianna Claypool

Posted by the **Federal Aviation Administration** on Oct 15, 2023

View More Comments 2 (<https://www.regulations.gov/document/FAA-2023-1972-0001/comment>)

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Comment

I believe that the pros very heavily outweigh the cons in this modification. The restricted airspace was originally made around the time of World War II. The aircrafts since then have become far more advanced. With the current ceiling at 9,000 the new aircrafts are not able to practice certain systems. Many of the newer aircrafts use their combat systems for the first time on the battlefield. With R - 4201A and R - 4201B now at a similar ceiling, they are able to practice going in and out of an active battlefield safely. This keeps the surrounding airspace and civil aircraft safe out of the hazardous area. Having the airspace expand from 9,000 to 23,000 makes the airspace meet the requirements for high angle artillery fires with high arching trajectories.

**Comment ID**

FAA-2023-1972-0002



**Tracking Number**

Ins-9mov-fkkh

**Comment Details**

(<https://www.regulations.gov/comment/FAA-2023-1972-0002#tab-document-details>)

**Submitter Info**

(<https://www.regulations.gov/comment/FAA-2023-1972-0002#tab-submitter-info>)

G-161

**Document Subtype**

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**From:** [Mark b Cleveland](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena EA  
**Date:** Friday, December 9, 2022 10:49:09 PM

---

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate

Sent from my iPhone

**From:** [Robin Cleveland](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 12:07:04 PM

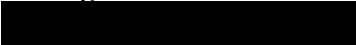
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To Whom It May Concern:

I am writing to give my thoughts about the proposed ability for flying military planes over the Michigan side of Lake Huron. Frankly, I couldn't believe it when I saw that they want to be able to fly as low as 300 feet above the land/water! This would absolutely destroy the recreation along Lake Huron, negatively impact the travel industry for that area of Michigan, and cause residents and businesses significant financial losses. Michigan relies heavily on its tourism industry. The Lake Huron shoreline area already struggles with this in comparison to other lakefront communities such as the Lake Michigan shoreline. Allowing the low-flying planes in this area would be so costly to the residents and businesses, not only in terms of lost tourism, but also lower property values and peace of mind for residents and visitors. I ask you to please not grant the military this option!

Sincerely,

Robin Cleveland  
Michigan resident



**From:** [Lance Climie](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Comment on Camp Grayling Expansion  
**Date:** Saturday, January 14, 2023 12:14:58 PM

---

To Whom It May Concern,

The expansion of Camp Grayling will be an ecological and economic problem. The economy of the area is based on hunting and fishing. The expansion will harm those economic activities.

The environmental concerns are obvious considering the military's track record. This should not be permitted

Lance Climie



**From:** [Jeffrey Clyma](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: Ms. Kristi Kucharek  
**Date:** Monday, December 5, 2022 2:46:27 PM

---

I live In Northern Michigan about 20 miles south of Camp Grayling.

Camp Grayling has been my Neighbor since I moved here. While I respect their function and need to have training grounds, This part of Michigan has been enduring artillery fire, Tanks and armored vehicles cruising around our public land. We have also been greatly affected by pollution of PFAS's in our ground water which the guard has been slow to react even as the plum spreads and we have been told we cant eat fish or wildlife from the area.

Guard has asked for more opportunity for low altitude training in northern Michigan, including throughout the upper Au Sable watershed.

The guard has also asked for a expansion of training grounds for an additional 250 square miles of Michigan state land.

I vehemently oppose both the expansion and the additional noise the additional low altitude training would bring.

Please help our local base be a good neighbor to the people and communities.

Best Regards,  
Jeff Clyma





**From:** [Ruth Coates](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling airspace expansion proposal, ATTN: ALPENA SUA EA.  
**Date:** Monday, December 5, 2022 10:28:19 PM

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Dear director, I would like to protest the proposed expansion plans for airspace/training at Camp Grayling. There are environmental, economic, and physical impacts that are being ignored in regards to noise, air pollution, and water pollution, should these plans be approved. Directly below the airspace in question are the headwaters of the AuSable and Manistee rivers, where trout and salmon spawn. The effect of these operations would disturb the ecology of the region. In addition, the economics of the tourism loss, the enjoyment of our rivers and streams, and the resulting loss of property values would be devastating to all concerned.

Please do not consider this plan. I am a USN veteran, and I understand the need for training especially in these tense times around the world. But the impacts outweigh the gains here. There are plenty of open lands out west that could serve for the purpose of the proposed training. Don't destroy our ecosystem while training pilots to protect it.

Turn down this proposal please.

Sincerely  
RuthCoates  
Veteran USN  
Fly fishing enthusiast  
Conservationist

Sent from my iPad

**From:** [Stephen Cohen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [DNR-Camp-Grayling@Michigan.gov](#); [gretchenwhitmer@gretchenwhitmer.gov](#)  
**Cc:** [arpoa.mi@gmail.com](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, December 29, 2022 4:11:15 PM

---

To Whom it may concern:

I have been a property owner on the "Holy Waters" of the AuSable River since 1972. We have faced late night firing, unnecessary pollution in and around the current National Guard facilities and firing ranges, protested the all night noise and ground shaking damage to local properties and have been required to live with other objectionable affects on the local environment for many years. I think over the past 20 years, the National Guard has attempted, in good faith, to modernize and make its activities more citizen friendly without losing its needs to prepare our troops for their important missions and to protect our country from those who may want to do us harm and to assist in times of domestic national emergencies.

However, It seems to be a total abuse of power and a terrible intrusion on the environment to expand the land used by the National Guard in Crawford and adjoining counties. I worked with Senator Levin's office to reduce firing time to one hour after sundown and to require a decibel monitoring mechanism at the base to protect property owners. It is unthinkable to expand the potential harm to the environment, destroy wildlife and make the community less appealing to the large number of visitors to our community. It is my hope that the proposed expansion of the Grayling National Guard Camp will be rejected by all responsible governmental authorities and the National Guard will voluntarily withdraw its potential damaging proposal. Michigan's governor has done terrific things for the citizens of Michigan, and I hope she will join in strongly objecting to the Expansion of the Michigan National Guard Camp. I believe the factual information and evidence of expert witnesses presented at the numerous public meetings on the current proposal overwhelmingly support my position. Thank you for your consideration.

Stephen Cohen  
Property Owner on the Mainstream of the AuSable River.

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 1:13:53 PM

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Good Afternoon-

I am writing to voice my opposition to the expansion of the military airspace expansion in northern Michigan and in Michigan's Thumb.

My family have been landowners in Crawford County, Michigan near Camp Grayling for nearly 100 years. I am not opposed to the current on-goings at the base but the current expansion is much too extreme in its disruption of the people that reside near the base and in the areas where military maneuvers will occur. The planes will fly much too low which will negatively impact those who come to northern Michigan for recreation. This part of the State's economy is dependent upon tourism and the military's plan will destroy economic opportunity for these areas as it will diminish the quality of recreational activities.

Additionally, the military has proven itself to be a poor neighbor in their handling of the PFAS contamination that they have wreaked on these communities. There has been little support for these communities and the devastation that has occurred due to the military's handling of the PFAS issue.

Please do not allow this expansion to occur. Thank you for your consideration.

James Collom  
[REDACTED]

**From:** [Nicholas Conklin](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [LAYTON, ANDREW B Capt USAF ANG 110 WG/PA](#); [REDACTED]  
**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA.....STOP CAMP GRAYLING!!!!  
**Date:** Tuesday, January 10, 2023 7:32:36 PM

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SAY NO TO CAMP GRAYLING....

Say yes to the DNR officers and people actually protecting the resource. Fund the DNR and its officers...throw you pretend army men and this bozo Tom Barnes into Lake Superior.

On Tue, Dec 6, 2022 at 10:36 AM Nicholas Conklin <[REDACTED]> wrote:  
Enough of the land grabs you greedy pigs! (and I hate to denigrate pigs).

We aren't buying your asinine claims. You don't care about the environment or the resource. You don't care about the citizens. You want to play army man, while destroying the land and taking advantage of an uneducated and often distracted populace.

You may have seduced the hayseed's and mental defectives at the beleaguered DNR, but you are not fooling the people. We don't buy it, and we don't want you.

As a former resident, and yearly visitor with property, I **strongly oppose** this land grab. Keep your greedy mitts off of our land! I eagerly await the public comment period and you can expect further spirited comments in opposition.

We don't care for your BS claims of safety and, "Enhanced pride and patriotism" You're all abusers and creeps. There is nothing to be proud of in what you do. Your Electronic Warfare (EW), and CYBER training sounds like a front, *Who will watch the watchers?* Another cloaked bill-of-goods by a government that abuses its citizens.

How much more can you squeeze from the people? After 20-years will you abandon this expansion and your mommy's will take you to "camp," elsewhere? Or, will you sniveling, petulant children continue to grasp at more land, you hungry, hungry hippos!

You're destroying the environment, a great resource and putting the state in jeopardy.

WE ALL SAY NO TO CAMP GRAYLING!!!!!!

--

Nicholas J. Conklin

[REDACTED]

--

Nicholas J. Conklin

[REDACTED]

[REDACTED]

**From:** [Nicholas Conklin](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [LAYTON, ANDREW B Capt USAF ANG 110 WG/PA](#); [Barnest2@michigan.gov](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.....STOP CAMP GRAYLING!!!!  
**Date:** Tuesday, December 6, 2022 12:10:29 PM

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Enough of the land grabs you greedy pigs! (and I hate to denigrate pigs).

We aren't buying your asinine claims. You don't care about the environment or the resource. You don't care about the citizens. You want to play army man, while destroying the land and taking advantage of an uneducated and often distracted populace.

You may have seduced the hayseed's and mental defectives at the beleaguered DNR, but you are not fooling the people. We don't buy it, and we don't want you.

As a former resident, and yearly visitor with property, I **strongly oppose** this land grab. Keep your greedy mitts off of our land! I eagerly await the public comment period and you can expect further spirited comments in opposition.

We don't care for your BS claims of safety and, "Enhanced pride and patriotism" You're all abusers and creeps. There is nothing to be proud of in what you do. Your Electronic Warfare (EW), and CYBER training sounds like a front, *Who will watch the watchers?* Another cloaked bill-of-goods by a government that abuses its citizens.

How much more can you squeeze from the people? After 20-years will you abandon this expansion and your mommy's will take you to "camp," elsewhere? Or, will you sniveling, petulant children continue to grasp at more land, you hungry, hungry hippos!

You're destroying the environment, a great resource and putting the state in jeopardy.

WE ALL SAY **NO** TO CAMP GRAYLING!!!!!!!!

--

Nicholas J. Conklin



**From:** [Brian C](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ALPENA SUA EA  
**Date:** Sunday, December 4, 2022 7:28:08 PM

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Ms. Kristi Kucharek - I object to the government's plans to expand Camp Grayling, especially any increase in flights.

I own property on the North Branch of the Ausable and frequently hear military flights and artillery. I can't imagine and don't want any increase.

According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

PFAS. The military doesn't get to avoid this one. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water. And you expect us to trust that anything the military does won't have an impact on the watershed? You lost everyone's confidence. You'll never get it back if you continue to refuse the golden rule: you break it, you clean it up.

Brian Considine





**From:** [Dian Conway](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Thursday, December 8, 2022 8:07:10 AM

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First of all thank you for including our little community in Northern Michigan. The biggest concern I keep hearing about is tourism, perhaps there could be a community outreach or special event to encourage local education.

**From:** [Linda Conzelmann](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Sunday, December 11, 2022 4:51:07 PM

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Dear Ms. Kucharek,

We want to register our comments about the proposed expansion of Camp Grayling in Grayling, MI. We are property owners in this area and avid lovers of the unspoiled Au Sable River, streams, and forests in the area. We already share the area with Camp Grayling and the various military exercises that we regularly hear, share roads with military vehicles, etc. Taking more of the natural acreage for military use would take land away from animal habitats, recreational use by back packers, hikers, anglers, canoers, kayakers and birders. Expanding the airspace would disrupt bird and animal habitats, raise the noise level for residents, and generate air pollution. We can think of no positives that could come from this massive expansion. We strongly disagree with this proposal. Please keep this beautiful natural area beautiful, quiet, free of more pollution, and a place that so many people can continue to come to enjoy.

No expansion of Camp Grayling.

Sincerely,  
Linda and Tom Conzelmann

**From:** [Dan Cook](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Wednesday, December 7, 2022 3:16:40 PM

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Just a note to tell you I, very much, oppose your aviation request plans!

I own 2 separate properties, in Northern Michigan, where you are planning to do this..One a home, another a cabin.. I also used to be the airport manager, on Mackinac Island.

I strongly object to your low levels of altitude. They are far too low, for the public, and public uses, of this area.

Also, the fact that it is a very heavily forested area, with hundreds of thousands of wooded acres...IT IS NO PLACE TO BE USING FLARES! Especially in the spring, summer, fall seasons! There literally are, not enough firefighters in Northern Michigan, if forest fires start. Tourists would add to the confusion, and there could easily be major property losses, as well as lives! The last couple years, the National Guard has burned off, at least 835 acres, by accident, of their own property..

Again, please reject the application!

Dan Cook



[Sent from Yahoo Mail for iPhone](#)

**From:** [Scott Cooley](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, December 10, 2022 10:40:15 AM

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To whom it may concern,

Michigan National Guard's proposal to expand Camp Grayling's airspace would be detrimental to the ecosystem of the Au Sable River and the protected forests that surround it. A fully unnecessary and selfish proposal that greatly threatens the way of life for many species of animals, plants and the livelihood of residents, tourists and sportsmen alike. This idea goes against everything we stand for as Michiganders.

Yes, Camp Grayling has a place in Grayling's history and its future but we have to keep it in check. If there is one thing that makes the Grayling area so special it's the Au Sable river. It is one of the most unique waterways in the world and certainly one of Pure Michigan's grandest. Continuing to destroy it is unacceptable. Continuing to destroy it as a result of military training expansion is idodic. Keep your planes flying but keep them well above our public lands. Keep your planes flying but fly them less frequently as opposed to more.

Don't destroy the Au Sable River. Please don't ruin Grayling. A city named after the fish that we humans destroyed should know better by now.

- Scott Cooley

*34 year-old (who hopes generations more can experience the magic of the Au Sable River)  
Outdoorsmen & frequent guest of the Oxbow Club  
Alcona County landowner  
[REDACTED] resident*

**From:** [Jay Copeland](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Monday, December 5, 2022 11:41:06 AM

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Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157  
Dear Ms. Kucharek,

I am writing to comment on the Camp Grayling Airspace expansion. I oppose the expansion.

My family has owned a cabin on the North Branch of the AuSable for 77 years. For most of my life coexistence with the Guard and its activities have been a part of my experiences at our place in the woods. I am accustomed to the occasional helicopters or A-10s flying overhead and the sound of firing from the ranges. However, from what I have read, the proposed expansion of low altitude flights is excessive and would be damaging to the environment. The environment includes, of course, sound and noise. The sound of aircraft flying low is distracting and frustrating. Some members of my family are quite sensitive to noise of this type. It feels like an invasion of privacy and makes you feel edgy and angry to have to endure loud noise when the main reason you are in the place is to enjoy nature, solitude, bird songs, the sound of wind in the trees, and the sound of the river. Our cabin was built where it was in 1945 to provide a refuge of peace and quiet, a sanctuary, a place of spiritual renewal.

As I mentioned before, the noise and sounds from the Guard have disturbed the peace and quiet of our river refuge for as long as I can remember. I have come to accept and adapt to the existing level of noise, as it has been for years. Nevertheless, it still is jarring and even a little shocking, especially for our guests and visitors, for the sounds of military aircraft to suddenly intrude upon an otherwise blissfully peaceful and quiet day by the river. Significantly increasing the noise low altitude flights is too much to ask.

Please do not ask us to bear even more of a burden of accommodating the Guard and its activities. Enough is enough.

Sincerely,

Jay Copeland  
[REDACTED]  
[REDACTED]

**From:** [Jay Copeland](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 8:52:14 PM

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To whom it may concern:

1. The Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. More, louder and lower air training is not wanted in the area.
3. There are other places where such training can be done.
4. I oppose the plan to increase low-level training

Specific concerns and comments:

- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.
- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

**From:** [Dale](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 11:14:08 AM

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I'm against the expansion of Camp Grayling. It will disrupt the whole ecosystem in the area.

Sent from my iPhone

**From:** [Pamela Daum](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 4, 2022 4:21:48 PM

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Dear Ms. Kristi Kucharek,

The Au Sable is a Heritage River that should be protected and enjoyed for the benefit of present and future generations. We have been longtime visitors to this area and are heartbroken to think that the sound and air pollution that has been an ugly byproduct of Camp Grayling will be amplified and ruinous to this fragile ecosystem.

I'm sure other areas of the U.S. would welcome having you in their backyard; however, the Great Lakes region prides itself on keeping our waters clean and safe.

I hope the military will realize how harmful this will be to the Northern Michigan ecosystem and, in doing so, will reconsider their actions.

Respectfully,

Pamela Daum



**From:** [pat\\_davis](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Alpena SUA Airspace Expansion Proposal  
**Date:** Saturday, December 31, 2022 6:31:30 PM

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To Whom it Concerns:

On July, 1950 a network of 28 "Air Defense Command Permanent Radar Network" stations were built by the Army Corp of Engineers. This government action was prompted by concerns regarding being "on watch" during the start of the Cold War between U.S., Communist China and the USSR.

The Korean War, later labeled a "proxy" war, began June 25, 1950 and ended July 27, 1953 when a truce was negotiated. President Harry Truman was advised, if South Korea was defeated, Japan would be next.

Because our trade interests were of vital concern, the President sent 1.5 million troops to assist and 37,000 gave their lives. It was agreed at the war's conclusion, the spread of communism was successful by the efforts made. (neoquestions.org)

The 754th Aircraft Control and Warning Squadron was built in April 1959 and occupied an excellent location atop an elevated area just south of Port Austin, MI. It was de-commissioned in April 1966 but not completely closed until 1988.

There were genuine reasons for concern during the eras described above but spreading false concerns during our current political climate is irresponsible. Our Air Force does indeed need to train to maintain its readiness but using an area that was useful 50 years ago is not a good enough reason to use it now.

The Thumb of Michigan, [www.thumbtravels.com](http://www.thumbtravels.com) has become a mecca for tourism on a year-round basis. Visitors are invited to leave the hustle and bustle of densely populated areas and visit a laid-back environment where they can fish, golf, sunbathe on beaches in summers and take to the trails for snowmobiling or skiing in winters along its 90 miles of shoreline.

Fighter planes flying at 500', firing at targets, will destroy the hard-won reputation of a great place to visit.

The Thumb area was considered a few years ago when F-35's were being discussed. There was heavy opposition to the idea, and it was abandoned.

Why is it being considered once again? I will look forward to your response.

Respectfully,

Pat Davis, Member Quiet Skies Coalition, Huron County

**From:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**To:** [pat davis; NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** RE: [Non-DoD Source] draft EA proposed SUA area  
**Date:** Tuesday, December 13, 2022 7:29:33 AM

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Good morning,

Comments received. Thank you!

v/r,

Kristi

**KRISTI L. KUCHARAK, GS-13, DAF**  
NEPA Airspace Program Manager  
NGB/A4AM Plans and Requirements

Air National Guard Readiness Center  
3501 Fletchet Avenue  
Joint Base Andrews, MD 20762

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**From:** pat davis [REDACTED]  
**Sent:** Monday, December 12, 2022 4:08 PM  
**To:** NGB A4/A4A NEPA COMMENTS Org <NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil>  
**Subject:** [Non-DoD Source] draft EA proposed SUA area

I request acknowledgement of my following comments.

The proposed SUA area and draft EA statement that a determination of FONSI has been announced. That is not possible. Jet fighter aircraft such as F-16's maneuvering at 500' will affect people's ability to "hear" for about 20 seconds in an area 2.5 miles on either side of their flight paths.

A cost savings was mentioned; why would savings be regarded as motive when a budget of \$ 230 billion is set?

It is a known fact particle emissions from flights below 3000' settle upon farmlands, threatening agriculture, a major economic contributor to the areas impacted. They settle on Lake Huron and wave action carries them ashore and into the lungs of wildlife aloft and those swimming or flocks gathered in near-shore waters.

In July 2019 the AOPA in continued opposition to the SUA proposed changes stating, "changes will significantly affect safety and economy of civilian air use."

Foreign military sales pilot training ELS quoted regarding DNL that about a 4% property value would occur if a 6dB increase in noise was experienced.

The statement in the EA regarding seasonal flight concessions is absurd, an outright

admission that low altitude jet combat training will negatively impact tourism and yet does not recognize the thousands of year-round residents who will suffer 12 months each year.

It must be clearly stated and understood, air combat training is done by aircraft passing over designated targets, climbing, diving and turning multiple times repeatedly in squadrons of as many as 8 to 12 planes.

An F-16 at 500' will generate a 115 dBA noise level. Most rural counties and townships, as a result of wind turbines, have set noise level ordinances of 85 dBA. The Secretary of the Air Force REQUIRES hearing protection to be worn, on and off base. (AF instructional AFI 48-127)

Submitted by:

Pat Davis

Member Safe Skies Coalition Huron County, MI

**From:** [Renaë Davis](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Thursday, December 15, 2022 6:57:03 PM

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I am not in agreement with the expansion of airspace. I live in [REDACTED] Michigan, a lake property owner. We already are bombarded with the noise and vibrations from the planes and maneuvers by the Army at Camp Grayling, including contamination of Lake Margarethe and who knows where else. This is my home not a war zone!

Sent from my iPhone

**From:** [kimberly day](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 4, 2022 4:36:04 PM

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To Whom it May Concern:

As if it's not bad enough that the State of Michigan continues to have a contract with the Province of Ontario, Canada to accept, ton after ton, of Canadian garbage daily, now our very own military is planning to cause even more distress than they are currently placing on our environment, the Au Sable River System, with the Camp Grayling Expansion.

I'm not sure what it is going to take for those in charge to really care about the status of the Great State of Michigan. As we all know, we have one of the world's largest fresh water systems. We are certainly putting it in jeopardy by allowing the above mentioned detriments to occur.

Have you not heard about the status and lack thereof of fresh water in our Western States? Do you want to be another cause of injuring MICHIGAN water systems and eco systems beyond repair? What does this do to those year round and seasonal persons living in the Grayling area?

The Grayling area is known worldwide because of that unbelievable river system. A flyfisher, hiker, bird watchers' Mecca.

I understand the need for military training, but really...ruining this river and fresh water system seems an extreme price to pay.

I implore you to not allow this to happen.

Kimberly A. Day  
Sent from my iPhone

**From:** [dbaxteradams](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 9:51:18 PM

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The beauty of this natural land is important to Michigan and more. Please reconsider.

**From:** [Christy DeBurton Wellness](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [eichingerd@michigan.gov](mailto:eichingerd@michigan.gov); [Gretchen.Whitmer@michigan.gov](mailto:Gretchen.Whitmer@michigan.gov); [donnalasiniski@house.mi.gov](mailto:donnalasiniski@house.mi.gov)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, January 5, 2023 10:08:57 AM

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I am writing to express my concern over the Michigan National Guard's proposed changes to its allowed airspace that would open up hundreds of square miles of forest land to training fighter jets as low as 500 feet above the ground. I understand the proposal would allow for low flights by some of the loudest Air Force jets, including the F-35, which has **generated numerous noise complaints in other locations.**

**I am strongly opposed to this proposed change as there are studies that show the loud noises, like the ones created by low flights, can disrupt natural ecosystems** (mating and other animal communication, distract animals from foraging for food and mating and lead to inappropriate and damaging threat management responses). But more importantly, **I know from firsthand experience how loud noises like this can harm the human nervous system, causing stress, anxiety and overwhelm.** These issues are already too common in our society today, and this would only make them worse.

**Northern Michigan is a place of peace and solace where people can have a connection with nature**—which research shows has a **positive** impact on mental and physical wellbeing. Please take this into consideration and do not allow the Michigan National Guard to make these changes.

Thank You,

Christine DeBurton

████████████████████  
████████████████████

**From:** [John DeLeon](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 9:15:46 AM

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To: Ms. Kristi Kucharek

I am a home owner in the proposed Air Space expansion and very disappointed and opposed to the expansion. This area of northern Michigan is sought out for its peaceful and natural surroundings by many tourists and homeowners alike. Recently the uptick in training has already impacted that sought after space. As I understand the proposal and consequences of more traffic I am afraid it will have a severe impact on the area's commerce and solitude that we all love about this area. I am in support of our military but feel there is an overzealous want without a true need for all that is being proposed in Crawford County Michigan.

John DeLeon





From: [Al DePolo](#)  
To: [NGB A4/A4A NEPA COMMENTS Org](#)  
Subject: [Non-DoD Source] ALPENA SUA EA  
Date: Tuesday, December 6, 2022 1:29:43 PM

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**Hello.**

**I live on the AuSable river near McMasters Bridge. I am seeing land clear cut of trees without the company cleaning up the debris left behind. That is bad enough but now I understand that the military airbase wants to annex, or steal, lands that would double the size of the base. I strongly oppose this plan and demand that it not move any further.**

**I currently have fighter planes fly over my location every day, especially during the warmer months. While I love the A10, I don't want to be able to see the faces of the pilots up close and personal. I hear the A10 nose cannon frequently on a daily basis. When artillery fires, I can see the ground shake at impact and see ripples in the water. I do not want this to become louder or more frequent.**

**The Grayling base already has a problem with chemicals that have leached into the river. My drinking water comes from the river basin and unlike the results of Camp Lejeune contamination, There is still an opportunity to correct the problem. The military has been directed to correct the problem, something they have blatantly failed to do.**

**I strongly oppose the proposed expansion of the Grayling military base.**

**Al DePolo,** 

**From:** [Al DePolo](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 28, 2022 4:02:03 PM

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**Folks -**

I am opposed to the possible expansion of the Grayling Base. I live on the river. My water comes from the river. I enjoy water based activities throughout the year. My place is already on the approach to the air to ground range. While the A10 is my favorite airplane, I do not want to see any of them closer up than I already do nor do I want to see more of them. I can feel the ground shake with artillery rounds impacting to ground.

I do understand the importance of a military reserve and the necessity of ongoing training. The Grayling facility is already the largest land mass in the country. I oppose seeing more land ruined by a military presence. Go bring other facilities up to the size of that in Grayling. Don't ruin my heaven on earth any further.

**Al DePolo**  
[REDACTED]  
[REDACTED]

**From:** [John Dickson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling expansion  
**Date:** Monday, December 12, 2022 6:54:01 PM

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I am a resident of Crawford County, having watched National Guard activities here for most of my life.

I support the National Guard operating in its current, large footprint in this area.

I DO NOT SUPPORT ANY EXPANSION OF GROUND SPACE OR AIR SPACE.

This area has absorbed more than its fair share of noise and toxic chemicals over the many decades, at the hands of Camp Grayling operations.

My well, near the airfield and the AuSable River, has to be regularly tested for PFAS contamination after fire-retardant chemicals were used there for training over the years.

My windows sometimes shake from overhead flights.

Please take any expansion plans to more rural areas or places that do not depend so heavily on outdoor recreation.

I strongly urge you to reconsider any expansion plans for Camp Grayling. I strongly oppose any expansion.

Sincerely,

John Dickson

[REDACTED]

[REDACTED]

**From:** [Boyd Dillon](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATT; ALPENA SUA EA  
**Date:** Wednesday, December 7, 2022 7:18:41 AM

---

As a property owner on the Au Sable River I am opposed to the Camp Grayling project. Boyd Dillon

---



Virus-free. [www.avast.com](http://www.avast.com)

**From:** [Boyd Dillon](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 6:47:52 AM

---

As an Au Sable River property I am against the Camp Grayling expansion. Boyd Dillon

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**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 2:45:43 PM

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Ms. Kristi Kucharek:

I promise to keep this short.

My family purchased a second home in [REDACTED] MI off of [REDACTED]...approximately 1 mile from your base. We purchased this in 2018 and the past 4 years have been amazing. The surrounding lake water is clear, the sand is soft, the night sky is crystal clear on many nights, with the trees & landscaping, the air is clean, and the occasional military fly-over is nice. Every time 'Pure Michigan' commercials come on, I smile as I know I made the right decision on purchasing a place in Michigan.

The recent proposals concern me. Lower fly-over ranges from 5,000 feet to 500 will certainly impact wildlife as that will disrupt their habitat. Less deer, less bald eagles.

Expanding your area will mean more military vehicles, less trees, less wildlife, and less Pure Michigan. When we travel near the current military base, I feel there is very little activity. So why expand? Especially when there are so many residential homes in the area? Why destroy the natural surroundings of Michigan?

I love our military. I also love Michigan. Please reconsider and take a 'people's vote', not a purely military vote. Let's hope you choose on the side of your state of Michigan and keep it as natural as possible.

Thank You,

**Tim Dippold** CFP® | CPM® | *Senior Vice President | Wealth Advisor | Senior Portfolio Management Director*

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**From:** [Scott Dito](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 5:58:26 AM

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Hello,

I would like to add my comment to the proposal to lower altitude for training sorties to 500 feet. I believe this would be disruptive to the recreation and wildlife in the area. I believe more can be done to find an area of the country to train in that will have less impact. This is a highly prized area for outdoor enthusiasts.

Please do what you can to reconsider this proposal.

Thank you,  
Scott Dito



**From:** [Ernest Domenick](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Please Stop this from happening does not comply with the NEPA policies  
**Date:** Monday, January 16, 2023 2:40:33 PM

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1. The Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. That more, louder and lower air training is not wanted in the area.
3. That there are other places where such training can be done.
4. That you oppose the plan to increase low-level training

- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.
- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.



**From:** [Richard Doney](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] low flights  
**Date:** Saturday, January 14, 2023 1:39:59 PM

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The AuSable valley is my place to heal and enjoy the quiet. Please don't turn it into a battle zone.

**From:** [Georgia Donovan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Wednesday, December 14, 2022 10:05:08 AM

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Dear Ms. Kucharek,

Regarding the expansion of Camp Grayling and further increased fly-zones, please know that many of us are surprised about this and against it. Especially coming after the unresolved problems of PFAS in the same area, why should we want more?

Yes, I like having a competent Air Force. To protect a Michigan that is WORTH protecting. Camp Grayling has a huge area already, and increasing it would multiply the pollution, the noise, and disturb woodland and wetland wildlife, and the humans who live there, or look for places to spend their money on fishing and other peaceful outdoor activities.

Serious precautions must be taken to defend what is left of Michigan's wild lands. This is our State land, and we should not hand it over to the USAF too fast.

I am on the board of the Izaak Walton League of America's Michigan chapter, a conservation group, and feel strongly that we must defend Michigan's woods, waters, and wildlife.

Georgia Donovan  


**From:** [Dan druia](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 1:05:42 PM

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Good afternoon.

I support our military and understand we need to perform these exercises. But!!!! At this time I believe we must hold on to expanding of this program until we can all agree on options so that would not disturb the surrounding wild life.

Dan Druia

**From:** [Martha Duby](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Airspace Expansion Proposal - Extend Public Comment  
**Date:** Sunday, December 11, 2022 10:53:43 PM

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First of all, I am disgusted by the way this proposal is being handled. The public comment period needs to be extended to 6 months at least. If the government has spent years preparing it, there is no reason not to allow the public to have time to process the report and ask questions.

Releasing a public statement on the eve of Firearm Deer Season in Michigan was no accident. Whoever chose that date appears to have done it intentionally in hopes that those who would oppose it most would likely miss it.

By opening public comment just before deer hunting season you caught Northern Michigan Citizens at what is the busiest time of year for most. Hunting, Thanksgiving, Christmas preparations, etc.

The proposed airspace changes would forever change the quality of life for the citizens who live and recreate in Northern Michigan. Increased flights and low flying altitudes are tolerable a couple of weeks per year for special trainings but this cannot become a year round practice over an expanded land footprint.

We live here because it is quiet and peaceful and abundant with wildlife. We also rely on tourism for local industry. This would eliminate both of those.

I don't know who reviews these comments or makes these decisions but put yourself in my house. A couple of weeks a year my windows rattle, things fall off my shelves, my dogs are traumatized, and it is impossible to enjoy being outside because the jets and helicopters are so loud. This happens mostly when my children are on school breaks so the interference with sleep doesn't impact their schooling much. If this were to increase or become year round, it would interfere with their ability to sleep and affect their learning capability. We would all suffer from negative mental health. My dogs would have to be medicated year round. Why would I stay here?

How can they say the impact on the environment is insignificant? Wildlife, insects, fresh water, wetlands, it is all significant. Pollution from jets, chaff and flares will negatively impact our watersheds, which feed the Great Lakes. This is 20% of the WORLD'S fresh water! What are we thinking? This not something that can be fixed by throwing DoD dollars at it. This has been proven across the county at contaminated military training sites. We may have freedom, but we can't drink our water without making ourselves sick. There has to be a better way or a location where pollution and accidents would have less environmental impact.

Low flying flights would be traumatic for wildlife. Have you ever seen how the flocks or birds or herds of deer or elk react when helicopters and jets are flying low? I have, and I am sad for them. If this is approved and becomes a normal occurrence, I believe we will lose a lot of our wildlife population here. Short periods of stress can be survived, consistent environmental stress is a different story altogether.

I implore you all, please reconsider this. It will forever change the heart of Pure Michigan. It will become Pure Military and become a deserted ghost of what was once one of the most beautifully nature rich and pristine areas of the world.

Thank you,

**Martha Duby**

[REDACTED]  
[REDACTED]

Citizen of Peaceful Northeast Michigan - For Now

**From:** [GUITARISTED](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA\*  
**Date:** Monday, December 12, 2022 8:54:20 AM

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**PUBLIC COMMENT RESPONSE TO MICHIGAN AIR NATIONAL GUARD'S ENVIRONMENTAL ASSESSMENT TO EXPAND MILITARY AIR SPACE IN NORTHERN LP AND THUMB OF MICHIGAN**

To whom concerned,

While I am in support of our troops this proposed expansion is **very disturbing**. I am NOT in favor of this expansion.

**Reasons not to expand:**

- (1) Public safety issues. Planes flying as low as 500 feet over resident's. Litigation will most likely follow.
- (2) PFAS pollution - chemicals tainting local drinking water supplies, fish and water bodies. More litigation
- (3) Chaff / flares, which deteriorate into magnesium oxide, chloride and fluoride and will pollute waters. More litigation
- (4) Harm to birds: Geese, bald eagles, etc. There are thousands of birds migrating / living in the Thumb (Huron City) and the risk of collision with planes is inevitable. Potential death to pilots increases. Not a very smart mix...
- (5) Noise pollution. What is an incredible area will decline in quality of life – for residents and tourists.

Whoever is making this decision needs to evaluate all the facts and be guided by common sense and values for the state – not by a political agenda. Be a leader.

Regards,  
Ed Duhalde



**From:** [Nancy Duhalde](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] PUBLIC COMMENT ON EXPANSION OF MILITARY AIRSPACE IN MICHIGAN  
**Date:** Sunday, December 11, 2022 9:43:18 PM

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## PUBLIC COMMENT RESPONSE TO MICHIGAN AIR NATIONAL GUARD'S ENVIRONMENTAL ASSESSMENT TO EXPAND MILITARY AIR SPACE IN NORTHERN LP AND THUMB OF MICHIGAN

My name is Nancy Caruso Duhalde and I have been a resident of the exclusively beautiful state of Michigan for over 50 years now. Blessed to be born and raised here, I have gone to school here, worked here, distributed city newspapers here, performed singing and dancing in state fairs and college ambassador show choirs here, competed in state vocal competitions here, served and worked in churches here, ministered to those in need here, worked in soup kitchens here, worked in hospitals here, got married here, raised two children here both continuing their education here, enjoyed great sports and music events here, celebrated life here, mourned the loss of life here.

My wonderful husband Ed and I are now entering the retirement phase of our lives and like many of our peers remaining in Michigan, have purchased our retirement property in a gorgeous rural county on one of Michigan's amazing Great Lakes - that being the quiet and picturesque [REDACTED] on Lake Huron for our final chapter! We chose this place because of its beauty and solitude, knowing we had been blessed with the stillness of God's nature in Michigan's Thumb, the absence of lifelong city and suburban noise and traffic, the awareness of a perfect blue sky above, a mesmerizing lake of dreams just steps away, tall beckoning trees and trails, gorgeous deer and soaring eagles, and quietness and deep breaths of fresh air, after decades of hard work and city life.

There are truly so many adverse effects of this expanded military airspace proposal on Michigan's beautiful northern LP and Thumb

regions of which we are sure you are aware — including the increased use of chaff and flares, which deteriorate into magnesium oxide, chloride and fluoride in our beautiful water, PFAS pollution from past use of firefighting foam, the chemicals which tainted local drinking water supplies, fish and water bodies (eg. Camp Grayling), beyond rock-concert level noise levels pounding the ears of many elderly, decreased safety and health, particle emissions, increased pollution, bird and geese strikes, the magnificent bald eagle flight and harm, and more.

For these and many more reasons, my husband and I, soon to be retirement residents of Michigan's beautiful ██████████ in Huron County, along with so many other Great State of Michigan residents and vacationers, **SUBMIT OUR VOTES AGAINST THIS MILITARY AIRSPACE EXPANSION PROPOSAL AND URGE YOU TO HALT THIS EXPANSION AND CONTINUE TO USE THE GRAND SPACES YOU ARE ALREADY USING!** Please, for the sake of Michigan's lifelong residents, golden-years seniors, young adventurers and vacationers bringing commerce to the region enjoying boating, kayaking, swimming, hiking, fishing, camping, riding, star and light gazing and more,... **PLEASE DO NOT CONTAMINATE AND RUIN THESE BEAUTIFUL AREAS OF MICHIGAN FOR THE PEOPLE ENJOYING THIS GREAT STATE! THANK YOU!**



**From:** [Glen eberly](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Neil Wallace](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Tuesday, December 13, 2022 3:34:28 PM

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Attn: Ms. Kristi Kucharek

Dear Ms. Kucherak,

I am angered by the proposed plan for modification and expansion of the air space at the Alpena Special Use Airspace Complex.

This 99 page draft has been in the development stage for many years and it is deceitful and devious to provide a 30 day public response period to a proposal that has significant impact on the tax paying residents and the environment. At least Director Exchanger expanded the Camp Grayling Expansion public review period when it became obvious to him that there was heavy resistance by property owners, community governments, conservation organizations and recreational users of the area. I ask the NGB to show the same courtesy to the publican this program.

**We are adamantly opposed to this modification and increase in Air National Guard activity over our property.**

Please consider these points - just 2 of many to be raised in opposition to this expansion.

### **Increased flight activity**

The draft defined the increase in the number of sorties to be flown in the Grayling area where we live is as follows:

Proposed in Grayling West MOA	1,603 per year
Proposed in Grayling East MOA	1,528 per year

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Proposed Total Sorties	3,131 per year
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Existing	309 per year
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That is a ten fold increase and totally unacceptable, especially when they can fly below 500 feet, which they are already doing!!! This increase in flight activity will be an intolerable reduction in our quality of life! Further, we have loons on our lake and every spring they are terrorized by low flying jets buzzing the lake below 500 feet and disturbing their nesting. These pilots are actually in violation of a federal law which makes it illegal to harass a loon. This coming spring, we will be looking for offender's tail numbers and seek their prosecution.

### **Noise**

The military uses Day-Night Average Sound Levels to measure noise created by their activities (artillery, bombing and jet flights). This is an absolute joke and a self serving means by the military to try to convince the public that severe noise events (well above the government safe standard) should not be a problem when averaged over the rest of a 24 hour period.

There are millions of square miles in this country for military aircraft training and scores of military bases where this training can and is being done. It does not have to be done in the environmental treasure of northern lower Michigan!

Sincerely,  
Glen A. Eberly

**From:** [Glen eberly](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Subject: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 5:54:13 PM

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Attention: ALPENA SUA EA,

We live in [REDACTED] on Shupac Lake. Our quality of life is already negatively impacted by low flying fighter jets at all times of the day and night. Now you want to dramatically increase the frequency and noise level by flying more sorties with even louder fighter jets (Navy Growlers). Your fighter pilots that currently fly less than 500 feet over Shupac Lake terrorize loons during their nesting season and all summer. It is a federal offense to harass a loon and these pilots are in violation of that law. This spring we will be making videos and identifying tail numbers and seeking prosecution of the offending pilots!

We are adamantly opposed to the proposed modification and increase in Air National Guard activity over our property and the already stressed environmental treasures of this area.

The military use of Day-Night Average Sound Level to measure noise created by their activities (artillery, bombing and jet planes) is an absolute joke. It is a clear self serving attempt to convince the public that severe noise events (well above the government safe standards) should not be a problem when averaged out over a 24 hour period.

I haven't even touched on chaff, the dangers to people and animals from electromagnetic warfare training, and deterioration of property values.

This modification is a bad idea for taxpaying property owners and the environment. Cancel this proposed plan!!!

Glen Eberly  
[REDACTED]

**From:** [Nate Eldred](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Tuesday, December 13, 2022 11:04:47 AM

---

Good morning,

I am writing to voice my opinion that I AM NOT in favor of any expansions to Camp Grayling.

Thanks,

Nate Eldred | Senior Sales Engineer

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 9:59:36 PM

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Good evening,

I am writing to express my opposition to the expansion of Camp Grayling in Grayling, Michigan. Please understand that I fully support our troops. Without them, I would not have the freedom to write this email and express my opposition.

The main source of my opposition stems from the delicate and unique ecosystem in which the expansion will occur. As Aldo Leopold said, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." Clearly, this expansion is not a step towards preserving and protecting the public lands, streams, rivers, and wetlands that define this area of the state. The expansion will in fact be a step in the opposite direction.

As a member of The Anglers of the AuSable, I will take the liberty of quoting our President, Mr. Joe Hemming.

"With little notice, the Michigan National Guard on Nov. 14 unveiled a proposed expansion to current military airspace that will be, in terms of impact, as big or bigger than the proposed doubling of Camp Grayling....This "Secret Expansion" dovetails right into the doubling of Camp Grayling, occupying both land and air for hundreds of new square miles. Together they would create an atmosphere that cannot coexist with outdoor tourism, outdoor economy or real estate values in our communities." unquote

So why expand here? Surely, the training that will take place in the expansion areas can take place almost anywhere in the United States. Camp Grayling is already the largest camp of its kind. And as far as I know there is no organized opposition to the existing camp.

In closing, the existing camp of 230 square miles is the largest National Guard land commitment of any state in the nation. Please do not expand this footprint. Grayling has made its commitment. As stewards of these unique lands and resources we can surely locate other less sensitive lands to conduct the training at issue.

Sincerely yours,

Scott Engerson  
[REDACTED]

**From:** [Dana Farrell](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Stop the Camp Grayling expansion!  
**Date:** Wednesday, December 7, 2022 7:52:49 AM

---

Hello,

I would like my voice to be heard. I am an avid hunter/fisher who uses the proposed expansion area for recreation. I am against the proposed Camp Grayling expansion. I feel it will adversely impact the environment and quality of life for residents and recreationalists who use the area.

--

Thank you --

Dana Farrell



**From:** [Tom Fauntleroy](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, January 5, 2023 9:49:53 AM

---

Good Morning,

As a voting, property tax paying citizen, and first responder, of Crawford County Michigan, I and all of my many friends and constituents, strongly oppose the expansion of Camp Grayling.

Our opposition is for several important reasons; Environmentally, Camp Grayling is situated in the important and fragile Au Sable River drainage - home to many important, and some endangered species of flora and fauna.

The noise and chemical dispersion of bombing exercises, further upsets the animals and humans of the area for miles around. Although we all support a strong military, Camp Grayling is already one of the largest military camps in the US. Despite it's request, it still has square miles of unused land for it's exercises.

Decisions by politicians of this importance affect voters and can raise their ire against the politicians that ignore them. I assure you this is one of those bell weather cases. I urge you in the strongest language possible to halt the expansion of Camp Grayling and not be swayed by what President Eisenhower cautioned us was the military industrial complex. If you have any questions, please feel free to contact me. Tom Fauntleroy

Tom Fauntleroy



**From:** [Tom Fauntleroy](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, January 29, 2023 8:15:15 PM

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To Whom It May Concern,

I strongly oppose the proposed fly over plan. Due to the environmentally sensitive nature of the AU Sable Rivershed, the proposal is disruptive to the ecology, residents, and overall quality of life of the area. Despite being a strong supporter of our military, this proposal offers nothing but harm to the AU Sable Rivershed. Please abandon thsi misguided proposal.

TomFauntleroy

Tom Fauntleroy



**From:** [Gary Fedus](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] No National Guard Expansion  
**Date:** Saturday, January 14, 2023 6:33:30 PM

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To whom this concerns,

I have great concern over our state and nation considering the expansion of our current US National Guard Base located in Grayling MI. The area being considered is not appropriate for the current uses in place, let alone an expansion. The area under consideration is highly ecologically sensitive and this expansion would undoubtedly cause irreparable harm to not only the environment but it's uses as a national resource.

The Au Sable River and the areas surrounding are a vital national resource and must be protected for future generations. Further, more, louder and lower air training in the area of consideration would dramatically impact it's uses as a natural resource for many in our state and those who visit from around the country. There are far more suitable locations outside of this area that are more fitting for the training needed.

I greatly oppose the proposed expansion.

Sincerely,  
Gary W Fedus



**From:** [Michael Ferrera](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 8:16:06 AM

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Once again an over step of our Government to steal "Public Land" that belongs to the citizens of Michigan. This will be a tragedy for the entire area, fishing industry and the residence. This *can not be allowed* and should not be permitted to continue.

**From:** [Kate Fort](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena Sua EA  
**Date:** Tuesday, January 3, 2023 11:18:28 AM

---

Good morning,

I write to **STRONGLY OPPOSE** any expansion of airspace. We currently live part time next to Range 40, and I would not wish that on anyone. The noise of the planes is overwhelming. On more than one occasion, the planes have broken the ceiling over our road while letting loose on their guns. Once I was on a walk with our puppy when it happened and she is now permanently terrified of the sound of planes—it also terrified me.

We knew the range was there when we moved, but I oppose any expansion or increase of airspace for other communities. Northern Michigan is a beautiful place, the sounds and views of the wildlife and nature are why we come up and pay taxes and spend our money there. An increase in airspace will only devalue the beauty.

Please do not approve this expansion.

Thank you,  
Kate Fort



Sent from my phone

**From:** [Brent Fortier](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp grayling expansion  
**Date:** Wednesday, December 7, 2022 6:02:34 PM

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I am against the expansion of camp grayling. I will be bad for the tourism of Grayling and the residents. The noise is already bad and really takes away from the experience of being up north.

**From:** [Sharon F](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, January 1, 2023 2:42:30 PM

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I am opposed to the proposed military airspace expansion in northern Michigan. As a property owner and advocate for the environment, low flying aircraft be detrimental to people and to wildlife.

The proposed changes will negatively affect wildlife and outdoor recreation for hikers, paddlers, hunters and anglers because of the added noise of planes flying as low as 300 feet (they currently are not permitted to fly below 5000 ft). In addition, airspace expansion would increase the use of chaff and flares, which deteriorate into magnesium oxide, zinc, chloride and fluoride.

Military planes flying as low as 300 ft will be disruptive and detrimental to both humans and wildlife. Nests will fail. The feeling of a sense of place is important when we're spending time at the lake or anywhere "up north". We want to be and feel like we're at a pristine, tranquil northern Michigan lake and enjoy nature at its finest. During this time of climate crisis we need to be protecting our natural landscapes not disrupting them.

Thank you for your time.

Sharon Fortner

**From:** [Kim Fortune](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, January 12, 2023 12:50:07 PM  
**Attachments:** [Letter to Michigan National Guard.odt](#)

---

To Whom it May Concern:

Attached is my letter of opposition to the proposed change of flights over the Thumb of Michigan. This is a resend of an email I sent earlier but didn't have the appropriate title in the subject area. Therefore I am resending this to ensure it is sent properly and is read by the appropriate people.

Signed,  
Kim Fortune

**From:** [Kim Fortune](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Letter of Objection to Proposal of Change of Flights over the Thumb of Michigan  
**Date:** Monday, January 9, 2023 9:27:45 AM  
**Attachments:** [Letter to Michigan National Guard.odt](#)

---

To Whom It May Concern:

Attached is a letter of opposition to the proposed change of flights over the Thumb of Michigan including the areas of Caseville, Port Austin, and others. I have sent a hard copy of this letter through the postal service, too.

Signed,  
Kim Fortune

January 4, 2023

To the National Guard Bureau,

The intent of this letter is to inform the National Guard Bureau and all other parties affiliated with the decision to start low level flights over the Thumb area, including my residential area of [REDACTED], of my opposition to this ill conceived idea. The following paragraphs will address the valid concerns of this unacceptable agenda to destroy the livelihood, beauty, and residents of the targeted areas.

### Transparency and Ethics

If it hadn't been for the Huron Daily Tribune informing the area that this was underfoot, the residents of the target area would still be uninformed as to the irresponsible decision to bring such a devastating action to the area. The timing of this announcement was very suspicious as many people have left to winter in other places being unaware of what is transpiring. Those who have summer cottages are also being left out of the equation and uninformed. Therefore neither group are being given the consideration and opportunity to voice their opposition to this travesty. It is also very suspicious that the holiday time was chosen to try and ram this through, knowing full well people are so involved in travel and holiday plans it could just be pushed through without any resistance. It is seemingly an underhanded maneuver to be able to state there was little opposition and therefore by default state that most people must be accepting of this. That is an improper and an invalid judgment. Your lack of ethics and transparency is abominable. No one from the National Guard addressed any of this with the local towns affected. No one took a survey. No one wants a negative response so therefore it seems the tactic was to try and slip it by the residents after it would be too late to comment. Such blatant disregard of the residents only deepens the resentment that the people in this area have for the National Guard.

### Truth

I was an ex-fighter pilot's wife who knows exactly how loud and horrid the noise of these plans are when flying low level. This is not the purring of a kitten, it is the roar of a rock concert amplified 1,000 times. This is not some harmless noise. It is ear piercing, heart shaking, nerve wrecking noise, and has no place in a tourist and agricultural area. If I had wanted to retire around an air base, that's where I would have retired. However, my husband and I decided that Port Austin was a beautiful, quiet, serene place to retire and live out the rest of our lives. We have lived here three years. Had we any idea that this preposterous idea would even be considered, we would not have moved here. We wanted to be away from all the hustle and bustle of life in the city and move to a more

rural area. Now our dream is in jeopardy because of some ill thought out, irresponsible maneuver to save money in training under the disguise of more training being needed to keep the pilots battle ready. There are other places to do this type of training, and if it costs the National Guard money that is just the way it is, but to do this retched plan on the backs of the residents and destroy our lives is unjustifiable.

### Economic Impact

The towns that are to be marred by this impact rely on the tourists during the summer and to some extent the winter for their livelihoods. No one will want to come here if they have to be subjected to such ear splitting, obnoxious noise. Tourists come for the peacefulness offered in the parks, lake, as well as the many festivals that go through the Christmas season. No one wants to be sitting on a beach and have a bomb go off in their ears and body with a low flying plane creating an unbearable noise. I know that noise and holding your hands over your ears doesn't accomplish much. No one wants to go to a farmers market and have a plane make such insufferable noise. No one wants to go to a festival and be subjected to such body jarring noise. No one wants to be sitting outside at a restaurant only to drop their plate because of the sudden noise thrust upon them. The economic impact will be unmistakable.

We will not be able to sell our homes or cottages because no one will want to purchase a residence in an area where the peace is constantly shattered. Is the National Guard willing to buy our homes when we are unable to sell them if this contemptible plan is activated?

Many farmers have dairy farms. The noise level can disturbed cows and all farm animals in radical ways. Horses, cow, chickens, hogs can all be negatively impacted by this type of noise. If the hens don't produce eggs, the cows stop giving milk, and horses become nervous that all becomes a negative impact on the farmers' livelihood.

### Environmental Impact

I have witnessed the reaction of deer, raccoons, and other forest animals when subjected to such noise. They are stunned and then run for someplace to shelter to avoid the hurt they are experiencing in their ears. This nervous and tense behavior is also exhibited in pets such as dogs and cats. Dogs are especially sensitive to the piercing sound and will tremble, hide, cower, and even try to escape their homes trying to run from the thunderous sound. This also transcends to humans. Anxiety, nervousness, depression and other health issues can manifest due to constant exposure of such unnerving noise, let alone the hearing and other physical issues that can arise. We should not have to medicate our pets and ourselves due to the unconscionable act of subjecting this area to such ear splitting sounds.



## The Declaration of Independence

The Declaration of Independence of the United States states we are entitled to “life, liberty, and the pursuit of happiness”. That is exactly the reasons we moved to this area, why tourists visit this area, why families choose to raise their children here, and why people buy summer cottages here. It is the pursuit of a healthy lifestyle, the liberty to chose a pleasant place to reside and to remove ourselves from the “noise” of cities, while pursuing the things that bring happiness into our lives. This horrific plan to bring this intentional disruption and noise and violating our rights, seems to be the standard operational procedure in today’s society.

## Conclusion

From the lack of transparency, the resolve to bring in an extremely unnecessary maneuver when there are other options available, and total disrespect and disregard of the residents of this area speaks to why people distrust the government and the military. Years ago the military tried to be a good partner with communities and alleviate issues that arose, but instead, the National Guard wants to create ill will and disharmony within our communities. We have faced unprecedented times and are still walking through them. We do not need or want more chaos in our lives due to this ludicrous scheme. This proposal was not acted upon in good faith on the part of the National Guard. These communities do not deserve to be trampled upon and our lives put into tatters. Men and women have fought and died to protect our freedoms of “life, liberty, and the pursuit of happiness”, and now the National Guard wishes to undermine it all.

Signed,

Kim Fortune

**From:** [John Franzen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling  
**Date:** Sunday, January 15, 2023 3:44:38 PM

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To Whom it May Concern,

I may be too late but want to register my disapproval of the range expansion proposal.

Much of this is a pristine wildlife area. As a life-long Crawford County visitor and birder I believe the increased activity and noise will have a very negative effect.

Sincerely,

John P. Franzen



**From:** [Willy Franzen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 3:21:20 PM

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Hello,

I am concerned about the proposal to dramatically increasing very low-level flights, flares and chaff explosions over the Au Sable. I am opposed to the plan to increase low-level training. The Au Sable River and its surrounding area is a place for quiet enjoyment, and this increase in activity would be severely detrimental to residents, tourists, and wildlife. There are many suitable areas for this type of training, and the Au Sable River area is far too important to be ruined by excess noise and pollution.

Thank you.

Willy Franzen

**From:** [Damion Frasier](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:36:08 AM

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My wife and I own a resort in the Grayling area on the Au Sable River. We are writing to express our opposition to the proposed expansion of Camp Grayling, as well as the expansion of restricted airspace being proposed. I am a pilot and utilized the airspace in the Grayling and Northeast Michigan area for business and pleasure purposes. The increase in military traffic, both in terms of airspace as well as ground movements, will be detrimental to the Grayling economy. All of our business is tourist based and people go to the Grayling area to enjoy the outdoors. That enjoyment is disrupted by the existing military training in the area, which will only worsen with the proposed expansion.

In terms of the proposed increased airspace restrictions impact on general aviation pilots, the proposed expansion effectively creates a no fly zone for all of Michigan's northeastern lower peninsula for IFR flights using normal cruising altitudes.

**Damion Frasier, Esq.**



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**From:** [Damion Frasier](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 10:19:15 PM

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**My wife and I own a resort on the Au sable and the proposed expansion would dramatically impact our business for the reasons described below. But in general, almost all of our business is from people who go to the Grayling area for peace and solitude of the outdoors. More specifically:**

- 1. The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas.
2. The proposal will result in a dramatic increase in noise. The proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the people trying to enjoy the outdoors with constant low overflights of ear-splitting jets.
3. The proposal will result in an increase of pollutants. This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is world renowned. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. We in the Grayling area are well aware of the PFAS mess which National Guard activities created.
4. The deployment of chaff. The proposal is that a total of 6,103 chaff cartridges will be used for training purposes, which represents an approximate 20% increase over previous periods. This means that every year a total of 33,306,000,000 micro-glass/aluminum coated fibers will be released into the atmosphere.
5. Flight Floors: The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. Aircraft flying at these levels WILL interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

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**From:** [Paul frost](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 11:17:31 AM

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My wife and I have been property owner on the North Branch of the AuSable for over ten years. We have enjoyed year round recreation there with family and friends and are very concerned this will come to an end with the additional activities that come from expansion of military activities.

We understand and support the need to have a strong well trained military. Our feeling is the this base is already one of the largest of its kind and that other military training areas would have less impact on private property owners and our fragile ecosystem.

We feel that the desirability to live and recreate in the Lovells will be greatly impacted. This part of Michigan relies heavily on tourism as its economic driver. The current plan will have a huge negative impact on that.

For all these reasons we are strongly opposed to the current expansion plans.

Paul Frost

Sent from my iPhone

**From:** [Fred Fuller](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Saturday, December 10, 2022 12:22:06 PM

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I am opposed to the expansion of the Michigan Air National Guard Michigan Air National Guard Alpena Special Use Airspace Complex over the Thumb, where I live, and over the part of northern Michigan where I have a second home.

I am concerned about how the increased low-altitude sound levels will affect humans and animals, as well as property values. I am also concerned about particulate pollution from the jet engines, the potential for fuel spills and accidents, and the release of decoy chaff and flares by the aircraft.

Fred Fuller



**From:** [Tom Geilfuss](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 3:59:09 PM

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Public comment:

It is a horrible waste of energy during a time of high energy costs that the Michigan Air National Guard plans to conduct training exercises in the air space above the area near Grayling, Michigan. The ANG will be spending taxpayer money when prices are high and taxpayers are already stressed.

And for what? They might say they are practicing for war. Against what enemy? We are at peace, and in Michigan war is vastly unlikely. We don't need any more noise pollution in the skies, air pollution from plane exhaust, or excessive chaff dispersal to spread across the peaceful lands and waters of Michigan.

In fact, the National Guard is showing that it is committing war against a peaceful place. It is a war crime. Its pollutants can kill. There is no enemy. The Michigan Air National Guard is committing murder.

We don't need murderers flying over Michigan. Animals, plants, fungi are all under attack by these people. The flying murderers may not see the killing and fly away like boys with toys that make noise, but they are raining down death, slow, unnecessary death on defenseless living beings. There is no enemy. It is murder.

The Michigan National Guard also seems to be breaking the law. It fails to comply with Air Force, FAA and CEQ regulations that require compliance with the National Environmental Policy Act. Their Alpena proposal is incompatible with recreational values, the outdoor economy, real estate values and attempts by the government, which the Guard purports to serve, to fight inflation.

The deployment of chaff by military aircraft is one of several countermeasures used to evade radar detection. It is an inflationary act. The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. Their claim means that every year a total of 33,306,000,000 micro-glass/aluminum coated fibers will be released into the atmosphere, harming the invertebrates, wildlife and fishing. This stuff kills. It is a murderous act.

It is inflationary, wasteful, harmful, and unlawful for the Michigan National Guard to do the unneeded activities they propose.



**From:** [William Gephart](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, January 9, 2023 12:08:08 PM

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We oppose Michigan Air National Guard's proposal to reconfigure charted airspace. We have owned property along the AuSable river for many generations and have always supported a strong military. In light of the fact that past usage of this Michigan land has resulted in significant pollution including chemical and noise over the years we can not support further use.

Respectfully,  
William J Gephart & Family

**From:** [O'Day Manual and Movement Therapy](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Air Space Expansion  
**Date:** Monday, December 12, 2022 8:45:00 AM

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To Whom It May Concern,

I write to you regarding the National Guard's proposed expansion of Camp Grayling. When will the myopia of our institutions end? We grow ever closer to the tipping point of climate change that is already devastating much of the world and still our politicians—whose charge is to protect the public good for all—play unfairly.

The public and their precious resources are being bulldozed over this air space expansion, as with so many other things that the military and government officials deem it their right to take. I can only imagine that you count on your fellow citizens apathy and cynicism to clear the path for the enrichment of a few over the many. And sadly, what never seems to be realized is that even the few will lose eventually. There is only ONE planet, and the more we abuse it, the more we will all suffer.

Please pull back from this egregious use of public lands. Consider that whatever momentary gain you envision receiving from pushing this deal through will lead to permanent impoverishment of the lands and peoples of Michigan.

Sincerely,  
Julie Gibbs

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*'To pay attention, this is our endless and proper work.'* Mary Oliver

**From:** [Monica Goble](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Sunday, January 1, 2023 8:57:41 PM

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To Whom It May Concern:

As Higgins Lake landowners we strongly oppose the Camp Grayling military expansion. It's already the country's largest National Guard training facility at 142,000 acres.

Meanwhile, Camp Grayling has contaminated surrounding bodies of water; giving it more land will only open the door to more environmental damage. PFAS cleanup should come before expansion. That needs to be priority #1.

We see it as a land grab. US military funding grows exponentially each year. This doesn't give license, though, to funding harmful projects that further encroach on our backyards, skies, recreational areas, rivers and lakes.

Monica Goble

**From:** [JAMES GODLEWSKI](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Thursday, December 8, 2022 8:45:42 AM

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To whom it may concern.

I am addressing my opposition to the Camp Grayling Expansion Plan.

I am an avid user of the blue ribbon Au Sable River watershed and see this usage to be detrimental to this area. I'm also very concerned what will happen to property values in the area due to noise and other disruptions to our pristine area. I'm strongly opposed to this plan. I do not support.

Thank you.

James Godlewski

The Anglers of the Au Sable Member

**From:** [Mark Goebel](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Wednesday, December 7, 2022 7:41:38 AM

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Ms. Kristi Kucharek  
National Guard Bureau

I hope this email finds you well and I thank you for serving our country.

I am hoping we can find a better solution to the expansion of military air training operational space in Northern Michigan. As a past cadet of the United States Air Force Academy and recipient of the Rickover Nuclear Scholarship and a member of a family with many veterans and current service members (a Navy Captain, an Air Force Colonel, several WWII veterans, WWI veterans, one Green Beret and West Point Graduate soon to deploy to Eastern Europe, one Air Force Major recently tasked to Air Force One, one junior officer now deployed to the Middle East ... ) I fully understand and support the training needs of our military - but I wonder if we could find a solution to the proposed expansion of Camp Grayling and the general training areas of Northeast Michigan.

There is a known and accepted balance between the needs of our domestic military base operational areas and our environment. We serve and protect this environment as well as the many needs of our great country. A balance.

The AuSable river basin is a unique, one of a kind environmental area deserving of some special recognition. The river is considered one of the best brown trout fisheries east of the Rocky Mountains and is designated a blue ribbon trout stream by the Michigan Department of Natural Resources. The road along the river is designated a National Scenic Byway. The upper section of the river is referred to as the "Holy Waters" for good reason. Fisherman have come worldwide for over one hundred years to test their skills and now release the fish they catch. Endangered species such as the Kirtland Warbler as well as our national bird find refuge there. Outdoorsman, including kids, come here to swim, tube, hike, camp, collect mushrooms, race canoes, mountain bike, hunt, fish .... you get the idea, an outdoor paradise, and one of the few remaining in Michigan with only one AuSable. One citizen and early General Motors investor, Mr. Mason, left his castle and land holdings (miles of land holdings) to the people of Michigan so no one could build on the south branch between Chase Bridge and Smith Bridge. Gave it away - which tells us something of how the people love this place. Another citizen I know started a group to plant trees along the river banks to preserve the quality of the stream and fishing. There was such a response to the work, over 10,000 trees are planted as of today. I personally have fished it, canoed it. played in the woods, sung hymns right out loud while hiking, spent summer weekends with my cousins, and loved it for over sixty years, my family for over one hundred years.

And now we propose to fly military jets at low altitude 500 feet over the heads of these citizens loving God's creation? Surely we are smart enough, good enough, creative enough to find a better way.

Please consider a better alternative to military training. After all, what is the sense of "serve and protect" if we compromise or perhaps even destroy the very thing we defend?

Mark Goebel

**From:** [Cheryl Gracie](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 13, 2023 3:14:32 PM

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Below is my comment to the MIANG proposal to expand training operations at the Alpena CRTC. Please acknowledge receipt of this comment by reply to email address listed above, [REDACTED]

\*\*\*\*\*

We all want to do our part to support our military and the training needed by those who serve. We also want to support economic development in Michigan so that citizens can enjoy a comfortable, sustainable, quality of life.

The Michigan Air National Guard (MIANG) wishes to expand air combat training operations at the Alpena Combat Readiness Training Center (Alpena CRTC) to further its vision to “be the premier ANG training environment”. This expansion would subject the area known as Michigan’s Thumb to air traffic that far exceeds what has occurred in the past. Jets (specifically the F-16) would be allowed to fly at just 500 feet over land and adjacent shores more frequently and in complex maneuvers that involve more flight paths than what the Thumb has previously experienced.

The noise generated by jets such as the F-16 at 500 feet is quite loud, (peaking at 115 dBA), and can last 20 seconds or more depending on the type of flight involved. According to National Institute on Deafness and Other Communication Disorders damage to hearing occurs when sounds are greater than 85 dBA, depending on how long the sound is experienced (1). Huron County does not allow continuous noise to be emitted from wind turbines in excess of 50 dBA for any inhabited structure (2). Noise from these jets would interfere with the Huron County Zoning ordinances that promote and protect “the public health, safety, ... and general welfare of the inhabitants of the County of Huron; by protecting and conserving the character and social and economic stability of the ...[area]” (3).

Recent studies have shown noise, as well as air pollutants, emitted from these jets can cause health concerns not only in the form of hearing loss, but can affect heart conditions, cognitive dysfunctions, learning disabilities, hypertension, and other medical conditions (4) (5). Articles about these risks have appeared in local papers (6).

The economy of the Thumb has become increasingly dependent upon tourism and retirees moving into the area. Between 2011 and 2019 (before the COVID pandemic) visitor spending in Huron County had increased by 18.3% (7). Visitors and retirees wish to escape the noise and chaos of the city to enjoy the peace and quiet and natural beauty of the Thumb’s shores and countryside which will be disturbed by this proposed expansion.

The MIANG claims in its Environmental Assessment (EA) that this expansion will have no significant impact on the Thumb’s environment while failing to address the above health and economic concerns despite the wealth of scientific information and data available. The MIANG has also failed to indicate why this training must take place at the Alpena CRTC and not at some alternative location where there is less negative impact on the environment.

An Environmental Impact Statement (EIS) needs to be prepared that will address the above health and economic concerns.

Governor Whitmer has made it clear that “the quality and health of Michigan’s environment and natural resources are important to residents and tourists alike, who enjoy recreating and living in the Great Lakes State” (8). As commander-in-chief of the Michigan National Guard, the governor needs to require that a decision to adopt this proposal only be made after relevant data and information has been collected and analyzed through preparation of an EIS.

The people of the Thumb have a right to understand how the proposed actions of the MIANG at the Alpena CRTD will affect their lives, an understanding backed by an examination and consideration of the relevant and current science.

Cheryl Gracie  
[REDACTED]

### References/Footnotes

(1) *National Institute on Deafness and Other Communication Disorders, Too Loud, Too Long*, May 28, 2019 <https://www.noisyplanet.nidcd.nih.gov/parents/too-loud-too-long>

(2) *Huron County Zoning Ordinance of 2010 as amended, Section 5.3, Paragraph E:Sound*, [https://www.co.huron.mi.us/\\_files/ugd/f69a3e\\_945501db2aa0410886ed03dc88e5488d.pdf](https://www.co.huron.mi.us/_files/ugd/f69a3e_945501db2aa0410886ed03dc88e5488d.pdf)

(3) *Huron County Zoning Ordinance of 2010 as amended Section 1.02 Preamble*, [https://www.co.huron.mi.us/\\_files/ugd/f69a3e\\_945501db2aa0410886ed03dc88e5488d.pdf](https://www.co.huron.mi.us/_files/ugd/f69a3e_945501db2aa0410886ed03dc88e5488d.pdf)

(4) *Noise as a Public Health Hazard*, American Public Health Association, Oct. 26, 2021, <https://apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2022/01/07/Noise-as-a-Public-Health-Hazard>

(5) *Endangered Health*, by the Stop-the-F35 Coalition, 2013, <https://www.stopthef35.com/wp-content/uploads/2013/06/Endangered-Health-Threat-From-F-35-Basing.pdf>

(6) *Thumb Residents Express Concern over Air National Guard Proposal*, Huron Daily Tribune, S. Robinson, Jan. 4, 2023, <https://www.michigansthumb.com/news/article/County-residents-comment-on-Michigan-Air-National-17685849.php>

(7) *Michigan Economic Development Corporation - MEDC - County tables - MI - 2020 - updated Feb 2022 FINAL.xlsx*, See Timeline for the East Michigan Region, (“EM Timeline” from the menu at the bottom), where it shows visitor sales for Huron County in 2011 at \$84.16 million and in 2019 at \$91.23 million. <https://medc.app.box.com/s/yzwmtxdxngkq8syaxy5dc55ttkjsjg0cet>

(8) September 19-25, 2022: *Pollution Prevention Week*, <https://www.michigan.gov/whitmer/news/proclamations/2022/09/19/september-19-25-2022-pollution-prevention-week>



**From:** [Bob Grant](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Airspace Expansion  
**Date:** Wednesday, December 14, 2022 11:04:12 AM

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I am writing this to state my opposition to the proposed Camp Grayling Airspace Expansion. As a year-round resident who chose this area to live because of the solitude and natural resources it offers, I am against this proposed expansion for the negative impact it will cause. Several weeks ago, I had an A-10 fly over my home at low altitude and it was very upsetting. I cannot perceive what it would be like if this became common practice. More sorties will create more noise and with lower flight paths, this will become completely disruptive to our local natural resources and those of us that enjoy them. I urge you to reject this expansion.

Sincerely,

Robert F. Grant

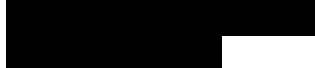
**From:** Bob Grant  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Opposition to Camp Grayling expansion  
**Date:** Monday, February 6, 2023 9:02:39 AM

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As a full time resident of Crawford County, I wish to express my concern and opposition to the proposed Camp Grayling expansion. It will have a devastating effect on our local economy, recreation, and natural resources.

Sincerely,

Robert Grant



**From:** [Jim Graves](#)  
**To:** [Rich Vander Veen](#)  
**Cc:** [Frederick Baker](#); [NGB A4/A4A NEPA COMMENTS Org](#); [whitmer.g@michigan.gov](mailto:whitmer.g@michigan.gov); [ELIZABETH KIRKWOOD](#); [Lisa Wozniak](#); [Josh Greenberg](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 3:29:34 PM

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Hooray, Fred!!

James F. Graves  
Sinas, Dramis, Larkin, Graves & Waldman, P.C.  
[REDACTED]

On Jan 14, 2023, at 3:12 PM, Rich Vander Veen [REDACTED] wrote:

Fred

May the Guard, the MDNR, EPA, EGLE & all concerned Citizens read your thoughtful epistle and get engaged in protecting the environs where trout are found!

Rich Vander Veen  
[REDACTED]

On Jan 14, 2023, at 2:33 PM, Frederick Baker [REDACTED] wrote:

Dear Sirs:

Michigan is almost as large as several European countries (Germany, France, Spain, Poland, Sweden) and larger than some (each of the Benelux countries, Denmark, Austria, the Czech Republic). Each of these countries – all NATO members -- maintains a robust military without destroying its environment. They choose training alternatives that protect their small nations from irreversible damage, not only for the benefit of their citizens, but because tourism is an important part of most of their economies.

Michigan should be no different. Tourism and recreation are the third largest component of the Michigan economy. The citizens of Michigan

are privileged to live in a unique corner of the world: there is no other place on earth – and this is the literal truth – virtually surrounded (both peninsulas) by fresh water seas containing twenty percent of the world's fresh water and teeming with more miles of river and streams per square mile than any place on earth except Canada. We, too, have alternatives to the terribly thoughtless low flight training plan our own Michigan National Guard has proposed for Camp Grayling.

Whatever would possess you to think it is appropriate to send planes at altitudes as low as 300 feet over what some believe to be the finest trout stream in the world?

What are you thinking?? You are the **MICHIGAN NATIONAL GUARD**.  
**Please guard Michigan!**

You know the arguments – the Growler, a low altitude ground support aircraft, is named that for a reason. It is loud!

People come to the Au Sable to renew themselves, not to be buzzed by weekend warrior flyboys who think it is great fun to drop chaff on holy waters. Why would anyone think it is acceptable to deposit the 33,306,000,000 micro-glass aluminum fibers contained in the 6,103 chaff cartridges the Guard plans to drop annually over an expanded training area that includes the Au Sable?

If you adopt this plan, we – the Anglers of the Au Sable, and the citizens of Michigan -- can promise the Guard litigation. Ultimately, the Guard will not succeed in implementing this hare-brained scheme, because this plan violates NEPA, and you know it.

Don't you care??

The Au Sable was already destroyed once, when Michigan was stripped of its timber and the grayling that once teemed in it not were decimated.

The Au Sable has recovered from that devastation as a trout stream of the highest quality. This recovery took over a century.

*We should learn from history: Do not pollute and jeopardize the fragile balance of one of Michigan's most delicate and valuable natural resources.*

The Guard's mission is to protect Michigan. We appreciate what you do, and you deserve our support and our thanks.

But remember that the Guard also have a duty – as all Michiganders do – to protect our state’s beauty and resources. After all, they are an important part of what makes our state worth defending.

Please, amend your plan. Protect the Au Sable.

Frederick M. Baker Jr.



**From:** [Greenberg, Adolph](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Comment on ALPENA.SUA EA  
**Date:** Monday, January 2, 2023 6:38:46 PM

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To Whom it may concern:

My family has owned property on the mainstream ("Holy Waters") of the Au Sable River for 28 years. We are adamant in our opposition to the proposed expansion of military air space as discussed in your environmental assessment. We have already endured the intensification of military activities at Camp Grayling with additional noise pollution from bombing, range activities and jet flights. We have already voiced our opposition to the expansion of Camp Grayling, an action that is not necessary nor welcomed by local communities. If the air space expansion goes through, we will be confronted with the increased spread of pollutants from chaff and flare releases, and increased noise pollution. The impact that this will have on the fragile ecosystem of the Au Sable and Manistee Rivers will likely be devastating as will the impact on human health and on our future enjoyment of this precious environment. None of these concerns was addressed in any substantive, scientific way in the environmental assessment. Nor were pertinent stakeholder groups contacted in the first go around with the EA. This whole process has trivialized environmental issues and stakeholder concerns which is appalling. There are other places for the testing of and training for electromagnetic warfare, either on vast areas in the West e.g. Pacific Northwest or at simulation sites of which there are many. Crawford and surrounding counties have already done our patriotic duty.

Adolph and Sandy Greenberg  
Property Owners on the Mainstream of the Au Sable River

**From:** [Greenberg, Adolph](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Michigan Air National Guard Air Space Reconfiguration Draft Environmental Assessment  
**Date:** Wednesday, December 7, 2022 2:12:33 PM

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Dear Ms. Kucharek:

I would like a list of all the recipients of the draft EA for the first comment period.



Thank you,

Adolph Greenberg, Ph.D.  
President  
Au Sable River Property Owners Association

**From:** [Adolph Greenberg \(via Google Docs\)](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ARPOA COMMENT OF AIR SPACE EXPANSION  
**Date:** Monday, December 12, 2022 1:34:09 PM  
**Attachments:** [ARPOA COMMENT OF AIR SPACE EXPANSION.pdf](#)

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## Adolph Greenberg attached a document

 Adolph Greenberg  has attached the following document:

Please find attached the official position statement by the Au Sable River Property Owners Association (ARPOA) on the proposed expansion of military air space in Northern Michigan as presented in the draft Environmental Assessment.

 ARPOA COMMENT OF AIR SPACE EXPANSION

Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

You have received this email because  shared a document with you from Google Docs.







December 12, 2022

National Guard Bureau  
ATTN: Ms. Kristi Kucharek  
3501 Fetchet Avenue  
Joint Base Andrews, MD 20762-5157

To Whom It May Concern:

The Au Sable River Property Owners Association (ARPOA), an incorporated, non-profit (501 (C)(3) organization with a growing membership of 239 households, is strongly opposed to the proposed expansion to the current military airspace in northern Michigan. Our members either own riparian property located in the watershed of the upper Au Sable River system and/or are interested in the protection and preservation of the natural resources of this area. The proposed expansion is completely in opposition to our mission and will have negative impacts to the immediate and future environmental health and enjoyment of the Au Sable, Manistee and Muskegon River systems by residents and the yearly and significant influx of recreational users. Clearly, there will be negative impacts to the local economy with ten times more flights below 5,000 feet above ground level with an accompanying increase in noise pollution. Please note that all summer and during portions of the winter, bombs and planes rattle our windows, cause objects to fall off shelves, dry wall nails to pop out, and pets to cower. The adverse impact this has had and will have on the health of residents and the natural environment is a concern that we believe has not been taken as seriously by the military as it warrants. The same can be said for the pollution caused by increased chaff and flare releases on the headwaters of the most famous and iconic trout streams in the country. There is no reason for us to trust that the military will do the right thing here given its history of dragging its feet regarding the clean up of the mess caused by PFAS releases from Camp Grayling. The callous disregard shown by the military in this proposal for the welfare of the citizens and for the health of the environment and ecosystems of northern Michigan is reprehensible and appalling. Michigan does not need more military colonization. We have already done our duty for the military.

Sincerely,

Adolph M. Greenberg, Ph.D., President, ARPOA



**From:** [HURON CO. MEMORIAL AIRPORT](#)  
**To:** [9-NATL-CSA-Public-Notice-Airspace \(FAA\)](#)  
**Subject:** AIRSPACE STUDY 22-AGL-361-NR, Alpena Airspace Complex  
**Date:** Tuesday, July 11, 2023 10:55:36 AM

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Greetings. This message is from Huron County Memorial Airport in Bad Axe, MI. Our airport is located directly under the current and proposed Steelhead MOA. I am writing to you to inquire about information which I note doesn't seem to be included in the Proposed Establishment/Modification Airspace Study 22-AGL-361-NR.

I received a letter – a Proposed Action and the last one I had received - back in June of 2021 from Ms. Kristi Kucharek of the NGB at Joint Base Andrews MD. Within that letter was a section that discussed measures that would be incorporated into the Proposed Action upon implementation. The following was of the utmost importance to us:

**“Michigan ANG would enter into a Letter of Agreement with Minneapolis Center and Cleveland Center to establish procedures for real-time separation and use of the airspace to allow civilian Instrument Flight Rules aircraft access through the MOAs.”**

We were told when this first began that the new MOA would not impede our operations here at KBAX. This particular measure was the most important to us; the ability of IFR aircraft to be able to access the airport at any time as is the case now. This is especially true since we have three corporate aircraft on the field. This particular company also has a copy of the letter that stated the LOA would exist to establish the procedures for real-time separation. To us, this was the main selling point to the proposed MOA and why we have supported the changes these past few years.

Our worry and cause for concern is that the new Proposed Establishment/Modification Airspace Study 22-AGL-361-NR I received last month does not mention the LOA at all. Furthermore, we have never even seen or heard of a draft copy of the LOA and yet we know this MOA modification will be taking place soon. We'd like assurances that the LOA which was proposed to us back in 2021 – and the reason we have been supportive of this process - is indeed part of the modification. Please let us know. If possible or if need be, we would like to speak or meet about this - whether in person or via zoom - to make sure this issue is resolved. Thank you.

Very Respectfully,

**Chris Jackson**

Airport Manager  
Huron County Memorial Airport  
352 Thompson Rd  
Bad Axe, MI 48413  
989-269-6511

**From:** [Stephen Habash](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source]  
**Date:** Saturday, January 14, 2023 3:20:03 PM

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Sent from my iPad

I have been coming to Grayling from Ohio for about thirty years. I have fished both the Au Sable and Manistee Rivers. The personal seclusion and serenity of fly fishing is what initially attracted me to the area. That attraction still holds true today.

Over the years I have heard the effects of air training. That noise certainly was at odds with the quiet solitude I was seeking. The proposed program, particularly with low flights, will result in my re-evaluation of the Grayling area for fly fishing.

Many years ago some very influential and powerful titans had the foresight to set aside land to create the Mason Tract. They recognized the ability of nature, in its unvarnished majesty, to heal souls and to replenish human spirit. You should emulate their wisdom and withdraw the proposal.

Steve Habash

**From:** [jhallbr](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: Alpena SUA EA  
**Date:** Friday, December 16, 2022 3:33:52 PM

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I would like to voice my opposition to your "proposed" low flying aircraft & military maneuvers, over the recreational areas of Michigan from Camp Grayling to Oscoda, & Alpena, & anywhere else over Mi., except maybe Detroit? I'm as Patriotic as any, & love seeing our Military Jets buzzing the treetops, ripping by at their loud & fast speeds, or at Airshows. It does make one's Patriotic Blood flow a bit quicker. It's spectacular to be sure. Especially when 911 occurred, during the no fly zones & times, knowing we were protected by Our Military Air Patrols. When they would scream by, we would drop everything we were doing, while laying concrete, & cheer them on with raised Patriotic fists & goosebumps! God bless America! But when I've been fishing The Au Sable River for salmon or steelhead, or hunting in areas that this occurs, it really sucks! Many a time, I've fished or hunted with game plentiful or many fish hitting, when suddenly, a jet swoops down low, following the river, screaming by at 400 knots, & that's it for fishing or hunting that day! The loud jets spook the fish & game, for the rest of the day or night. Not to mention lakes, streams, woods, & residents. Absolutely disruptive! These jets have no business coming that low over us like that! It greatly disturbs everything, including resident's homes? We buy fishing & hunting licenses to recreate unmolested, with quiet solitude expected? Laws are on the books defending Mi. Sportsmen from being harassed by anti hunters, etc , or anyone else disrupting us, including The Military. You are not exempt from terrorizing us. This proposed military behavior, & past, falls under the same harassment categories. We expect quiet & solitude. Roaring jets & aircraft prevent that. Many sportsmen are on time constraint schedules to have valuable time off to do it. Loud aircraft would make this precious time off fruitless & a waste of time, resulting in extreme resentment! This excessive noise would completely ruin a planned trip to fish or hunt, especially on a weekend? These tactics are in direct conflict with Sportsman's Rights to not be harassed by this type of Gov't Overreach. The Military does not have the right to infringe upon our rights of enjoyment of quiet solitude & Our Constitutional Rights to be unfettered or harassed, in the pursuit of happiness. An absolute for success to harvest wildlife & fish! There are many other parts of our Nation that this could be accomplished in? Such as our deserts, offshore oceans, etc. Not the pristine waters & woods of Michigan, or any other State, for that matter, with the same conditions? As a sportsman, I consider this an invasion of privacy & vehemently oppose aircraft terrorizing wildlife, fish, sportsmen, & residents. You ask too much to put up with, of The Citizenry! Please find somewhere else to impose your noise pollution! Like perhaps Mexico, over all the illegals, terrorists, & cartels scampering to, & across Our Borders, during this man made political invasion, & a matter of National Security, by inept power hungry politicians, who have no regard for our safety or way of life? Jets buzzing our borders, would be a better use of taxdollars, & maybe act as a bothersome deterrent to the illegals, terrorists, & cartels flocking to the US, looking for US victims, sponging off taxpayers, & killing our Citizens with Fentanyl? Or better yet? Go buzz Biden! He would notice that, while filling his diapers! It's preposterous, that you are even considering this, with no regard for the peacefulness of The Taxpayers who pay your wages! We are not The Military's Subjects, to do as you please? Please do not attempt this folly? It's not fair to people looking for some peace & rejuvenation, away from intrusive noise, & The Rat Race? 300' above us, screaming by, is not relaxation. Nor is it good for wildlife! And now I hear, The Military is after more Mi. Airspace to attempt this? These items are not right, & a matter of respect for all Mi. State Inhabitants! Please do the honorable & respectful thing, & abandon this folly? Thank you. J. Hall. (67yrs of "mostly

peaceful", hunting & fishing)!

Sent via the Samsung Galaxy S7 edge, an AT&T 4G LTE smartphone

**From:** [Mortgage Guy](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:28:51 AM

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Dear **Ms. Kristi Kucharek**,

I am writing to express my concern and disapproval of the proposed changes to the National Guard training.

The areas impacted by the low level flight training and additional bombing training would negatively impact the recreational fishing, camping, trail riding and tourism industry as well as decrease the property values of residents in this area, especially along the historic Au Sable river.

I am also opposed to the proposed expansion plans for camp Graying for the same reasons. I can speak for the many family and friends that also share my views on this as well. Please keep the natural beauty of the proposed impacted areas and find another solution to the guard's need for more space.

Sincerely,  
Keith Hall

**From:** [Deb Hansen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, January 10, 2023 3:52:06 PM

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To whom it may concern:

As clergy, I am deeply concerned about increased militarization of Michigan and beyond and do not support the Michigan Air National Guard's Proposal. I also do not support the expansion of Camp Grayling.

The United States military is understood to be the greatest polluter on the planet. The Great Lakes states have a particular responsibility when it comes to protecting fresh water as a sacred source of life. We are failing in that. Lake Margaret and the Au Sable River are already contaminated with PFAS the forever chemicals. To pretend that life is compatible with militarism and endless war is ridiculous and irresponsible.

The amount of money the United States invests in war, calling it "defense," is obscene. It is clear that we are protecting the U.S. empire and the empire is crumbling. We have a responsibility to invest in life and not further destruction.

I work for peace. Peace comes through building relationships of trust, conflict resolution, and a commitment to equality and respect for the sovereignty of other nations and peoples. Power is currently understood as domination, violence, control, and the exploitation of resources. What we need is the to shift to a model of power as the capacity to create in a global community -- the power to create, to imagine, to fulfill our responsibilities to life and one another in a circle of life that extends well beyond the fictional borders of the nation state.

Increased militarism is incompatible with life and health. It exacerbates climate destabilization. Enough. I ask that you not betray your responsibility to life and to the children.

Respectfully,  
Rev. Deb Hansen  
Levering

**From:** [Mark Harvey](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 12:13:00 PM

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1. The Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. That more, louder and lower air training is not wanted in the area.
3. That there are other places where such training can be done.
4. That you oppose the plan to increase low-level training

Signed,

Mark Harvey



**From:** [Tina Harvey](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 5, 2022 7:09:59 AM

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12/5/2022

ABSOLUTELY AND EMPHATICALL NO! We do not need the noise nor the traffic in our beautiful northern Michigan wilderness. Not for one month or for our future generations! All of our children will suffer for this as the military destroys and polutes everywhere it goes! Just look at Oscoda!! No good drinking water and the animals are all toxic to eat! Seriously as a long time home owner and resident of this gorgeous area an emphatic NO!! To the expansion and air traffic plans for our community! I don't care about any monies you think it will bring to our area the noise alone from one of your black hawk helicopters sends animals running for cover and fishermen in our lake loose valuable stability as they fly over! NO NO NO NO NO and many of us feel helpless to stop this in it's tracks! Governor Whitmer has to take a stand and NO to the expansion!

It will destroy our state and why we live here. Like the non stop cutting of our natural forests this all has to stop. Our military has gotten out of control with their spending and their over running all of our homes with their maneuvers.

PLEASE NO TO THE EXPANSION OF CAMP GRAYLING OR WE WILL BE A WASTELAND UP HERE WITH NO RECOURSE! HORRIBLE DECISION! ABSOLUTELY HORRIBLE!

Tina M. Harvey

[REDACTED]  
[REDACTED]

Avid fishing, hunting, hiking and long time resident of this town and our beautiful north country.

**From:** [Joyce Haxton](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Expansion of airspace and land grab  
**Date:** Monday, December 5, 2022 9:13:23 AM

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Dear Kristi Kucharek

Just voicing my opposition at any type of expansion of airspace and well as camp grayling!!! NO EXPANSION OF ANY KIND IN OUR STATE...

Joyce Haxton

<\*)\*))\*><( wishin I was fly fishing :):)  
from Joyce's IPad!!!!

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 11, 2022 8:40:52 AM

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From the “Draft Environmental Assessment for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex”, I read the following:

“Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL. The only current “low” airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions prohibit overwater flights.”

I have a home within a couple of miles of the Grayling Air Gunnery Range. The military air traffic and bombardment in our area is disruptive (and sometimes terrifying) to both humans and wildlife. I am against any efforts which would result in more air traffic, lower flight altitudes, or more frequent/disruptive air traffic or bombardment.

Northern Michigan is a unique and fragile ecosystem which deserves care and preservation. The people of Michigan struggle to deal with the negative impacts of the existing Camp Grayling. The proposed expansion will undoubtedly lead to worse outcomes – for the environment, for wildlife, for landowners, for tourism, and more. Please hear our voices, that the proposed expansion should be denied.

Bill Hayhow  
[REDACTED]  
[REDACTED]

**From:** [Wayne](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 20, 2023 1:28:31 PM

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To whom it may concern.

With regards to the expansion of military airspace for "training" purposes, allow me to say I am against it.

As a USAF veteran ('78-'82) I understand the need for exercises and Operational Readiness Inspections. But at the same time I also understand the needs of the civilian population for land that is available for living, for farming, for recreational uses and for allowing Nature to exist unencumbered and undisturbed by the encroachment of mans machines of warfare.

Michigan is an absolute gem of Nature's beauty at its finest; our forests, fields, rivers and streams make us a sportsman's paradise as well as a bountiful home for all our wild creatures. They do not need jets screaming overhead at a hundred yards above the deck.

One of the most commonly well-known abilities of our United States military machine is its ability to "do more with less"; let our ANG fliers continue to use the airspace allotted for training purposes.

Thank you for letting me voice my concerns.

Sincerely,

George Wayne Heath Jr.



**From:** [Dave Hellman](#)  
**To:** [Dave Jankowski](#); [RICHARD SCOTT](#)  
**Cc:** [Rod Jenkins](#); [NGB A4/A4A NEPA COMMENTS Org](#); [Tim Tobias All](#); [Nial Raaen](#); [Gary Marquardt](#); [Gary Moyski](#); [Rusty Kalmbach](#); [Craig Swenson](#); [Tom Roberts](#); [Steve Taylor](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 8:25:37 PM

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Thank you. Dave, thoughtful and eloquent points and logic. Well done sir!

[Sent from Yahoo Mail for iPhone](#)

On Saturday, January 14, 2023, 4:52 PM, Dave Jankowski [REDACTED] wrote:

You are welcome. Most just express outrage and I don't think that goes far!  
Dave

On Sat, Jan 14, 2023 at 3:49 PM RICHARD SCOTT [REDACTED] wrote:

Dave: thank you for expressing these well organized, well conceived thoughts. I agree with you whole heartedly.

Sent from my iPhone

On Jan 14, 2023, at 12:17 PM, Rod Jenkins [REDACTED] wrote:

Dave,  
Well written, excellent points. As a former Air Guard pilot and an avid fly fisherman I agree with your assessment.  
Sincerely,  
Rod Jenkins

Sent from my iPhone

On Jan 14, 2023, at 10:03 AM, Dave Jankowski [REDACTED] wrote:

Attention Alpena SUA EA

My name is Dave Jankowski. I am a retired Michigan Air National Guard Lt. Col. and F-4/F-16 pilot. I have actually worked the air-to-ground range within R4201A/B. Today, I have a cabin on the North Branch of the Au Sable River and am a member of the Au Sable North Branch Area Foundation Board, and

recognize how valuable the river is to so many people.

I oppose the Alpena SUA Modification – not in total but in part. That part is the proposed Grayling West MOA’s minimum altitude of five hundred feet. I understand the need to safely separate military and civil aircraft that Grayling West and East MOAs will provide. I also understand and support the need for realistic aircrew training that the entire SUA package seeks to achieve.

However, I think that the proposed five-hundred-foot-minimum-altitude floor in Grayling West is unrealistically too low. I fear that high-speed jet fighters will use the Au Sable North Branch as a navigational channel to the air-to-ground range. I know that I would have in my flying days. When that happens, the entire river channel will experience noise levels similar to what the area around Shupac Lake experiences, as that is a frequent ingress and egress corridor for jets working the range today. The Environmental Analysis lists the Shupac Lake Lmax noise level to be 128 dBa (page 66 of the Environmental Analysis). That would represent an increase from the existing DNL of <35 dBa (page 62) to 128 dBa Lmax. Since the dBa scale is logarithmic that is a multi-fold increase in noise level. Also, the EA lists the Grayling West MOA Proposed DNL to be 45 dBa vs existing of <35 dba (page 62). On a logarithmic scale that is twice as much – and that is the DNL not Lmax! The EA obviously anticipates significantly more noise.

Another potential use of a five-hundred-foot-floor airspace is close air support training. In this scenario we could have flights of two to four aircraft making multiple ground passes anywhere in the Grayling West MOA. Once a flight of aircraft enters the Grayling West MOA they have license to operate at five hundred feet anywhere within the MOA. And, I emphasize flights of 2-4 aircraft because fighters rarely operate single ship, they always fly in flights of 2-4 aircraft.

Another concern that I have is the recently described National All-Domain Warfighting Center (NADWC). As described on the Michigan National Guard website: “the NADWC includes the nearly 148,000 acres of training space at the [Camp Grayling Maneuver](#)

[Training Center](#) and 17,000 square miles of special use military airspace at the [Alpena Combat Readiness Training Center](#). The arena offers training for entities across the Department of Defense to prepare for the battlefield of the future. The training provides units with training capabilities across all five warfighting domains.”

The NADWC does not have a headquarters or a command structure. It is merely a concept, a “rebranding” of the National Guard training opportunities available in Northern Michigan. It is part of an open invitation for guard, active military, even foreign military forces to come and train in Michigan. And, it clearly shows the intent of the Michigan National Guards intent on expanding operations in the Grayling/Au Sable area.

The Au Sable River system is a designated Michigan Natural River, and a part of the Au Sable is also a National Wild and Scenic River. Every list of the top-ten-trout-fishing rivers in the country includes it, and it is arguably the best trout stream east of the Mississippi. The Michigan DNR recognizes that and has even afforded it special use regulations. Its economic value to Crawford County is immense. It is also vulnerable and environmentally sensitive. It and its creatures cannot withstand the assaults that increased military activity will bring. Fishermen and other recreational users will not return to an area of frequent loud noise activity, such as frequent five-hundred-foot fly overs.

As members of various Au Sable environmental groups, we should probably be demanding the deactivation of the Grayling Air-to-Ground Range altogether, having it moved to a less sensitive and more remote location, further up the lower peninsula or to the upper peninsula. Instead, we only wish to reasonably limit the activity here. A five-hundred-foot floor is not reasonable!

**From:** [christopher\\_henke](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 12:52:08 PM

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My camp is a stones throw from the Ausable. It is my place of peace, relaxation and restoration. The proposal is not compatible with what this place is for people. Please do NOT allow this expansion! This place is one in a million. Train somewhere else!

Best regards,  
Chris Henke

Sent from my iPhone



**From:** [John Heritage](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:24:52 AM

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To Whom It May Concern,

I'm writing to urge you to reconsider the plan to expand the Camp Grayling military airspace and associated activities. I have been visiting the AuSable river and spending money in that area for the better part of 30 years. The peace and tranquility it provides is priceless. The impact of additional flights, noise, pollution and traffic would have a negative impact on Michigan's natural resources and tourism economy. Please reconsider this decision and protect the crown jewel of midwestern trout streams along with the economic impact from Grayling all the way to Oscoda.

- John Heritage

**From:** [Barbara Herman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:Alpena SUA EA.  
**Date:** Thursday, December 8, 2022 2:19:14 PM

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Today I read the Traverse City Record Eagle and saw the article about the Air National Guard wanting to increase air space here in northern Michigan. I was shocked. Why? Because I've been so focused on making sure the expansion of the National Guard footprint at Camp Grayling would NOT go forward that I didn't think that those of us who already put up with a LOT of military noise (A-10 strafing, and bombs that shake our houses) would get hit with a double whammy. We have been appealing to the Air National Guard to stop flying so low over our houses, and this fall they said they would comply. But then they changed their minds. After meeting with a group of board members of our HOA at the air towers east of Guthrie Lake in Otsego County, military personnel assured us that Guthrie Lake is in a "no-fly" zone. A few weeks later, they changed their tune. They said planes could go as low as they want over our roofs and they can fly wherever they want. We can be kayaking in our lake and a plane could be right over our heads shooting at a target south of Guthrie Lake. (I'm not making that up...it happened to me!). It is not only loud, but frightening. And it's dangerous. And it's polluting our lakes with flares and chaffs raining down.

There are so many places in the US where there are no houses for miles. It seems to me those should be the places for the Air National Guard to practice. If the military does these expansions, we have wasted a LOT of money on our "Pure Michigan" slogan and advertising. "Pure Military" will be our new slogan. "Up North" will no longer be a destination for those wanting to commune with nature.

Barbara Herman,



**From:** [Barbara Herman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Public comment  
**Date:** Saturday, January 14, 2023 9:15:22 AM

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**NO to the military expansion of airspace over the state of Michigan!!!**

**We do NOT want the Air National Guard to add to the noise and potential accidents over our state. Go to Wyoming where there are large areas of uninhabited lands.**

Barbara & James Herman



**From:** [Barry Hill](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena air space  
**Date:** Thursday, December 8, 2022 10:08:36 PM

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We live in Waters . Opposed to increasing air space although we agree with training our aviators using the existing air space! Barry and Karen Hill

Sent from my iPhone


**From:** [Jody Hinkle](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena Suaeaa  
**Date:** Monday, December 5, 2022 10:30:07 AM

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Hello,

I am writing this letter to reject any and all plans to expand at Camp Grayling. NO EXPANSION OF CAMP GRAYLING! Crawford County and the surrounding areas have supported the military community and training for years. I have lived in Grayling most of my life. The community and environment have made years of sacrifices for the training of the guards from Michigan, Ohio and Illinois and beyond. This has come at a cost of water pollution with PFAS contamination, and noise pollution with the bombing and aircraft. We have dealt with the extra traffic, the road destruction, the noise and the pollution for many years with very few accommodation requests. The expansion of the camp seriously jeopardizes the quality of life in the area and the property values for the current land owners. It will add additional noise and more pollution. The PFAS contamination from the camp are already out of control and now this new plan will inevitably contribute more. The noise from the planes, bombs and helicopters is at times deafening, not to mention earth shaking. This community has sacrificed enough and will continue to make those sacrifices. However, this expansion is beyond ridiculous and the community and surrounding areas do not welcome it. Residents along the AuSable River Valley greatly value nature, solitude, serenity and the preservation of that equality of life. NO EXPANSION OF CAMP GRAYLING!! Find another spot!

Very concerned,

Jody Hinkle  


**From:** [Hans Hintzen](#)  
**To:** [Greg Prosen](#)  
**Cc:** [NGB A4/A4A NEPA COMMENTS Org](#); [Mark Wortsman](#); [Dan Postelnick](#); [Doug Conover](#); [REDACTED]; [Dr. Bryan Burroughs](#); [Jon Ray](#); [Richard Augustine](#); [Ann Miller](#); [John Dallas](#); [Josh Greenberg](#); [Carl Hueter](#); [Doug Agee](#); [Steve Moyer](#); [Chris Wood](#); [Art](#); [Carol Hennessy](#); [Dale McDonald](#); [Dan LaFave](#); [David Carlson](#); [David Lunardini](#); [Doug Vanerka](#); [Ed Michael](#); [Jack Potts](#); [Jim Dickens](#); [Joe Hammon](#); [Joe Vitti](#); [Ken Krueger](#); [Keven Graham](#); [Lisa Gilmore](#); [Marvin Strauch](#); [REDACTED]; [Rtworek](#); [Stephen Carlson](#); [Steve Shapiro](#); [Tom Wilhelm](#); [Willie Beshire](#); [Bill Wobbekind](#); [Bob Becker](#); [burvalb@gmail.com](#); [Darwin Adams](#); [Douglas Conover](#); [Evelyn Adams](#); [REDACTED]; [Jeff Goad](#); [Jeff Hoffman](#); [Jeffery Reinke](#); [Jerry Sapp](#); [Matt Jennings](#); [Meg Gallagher](#); [Peter Koenig](#); [REDACTED]; [Prof. Barry Coddens](#); [William Wigoda](#); [REDACTED]  
**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 10:50:29 AM

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Ms. Kucharek,

Very well said, Greg. On behalf of our members, I would add that:

- 1) The Au Sable is an irreplaceable resource that is and remains under tremendous stress. Most of us have experienced firsthand the decrease in wild trout populations in this magnificent river. The situation is already critical and there is no margin for error.
- 2) Visiting anglers make very important contributions to the local economy in the Grayling area. Any threat to the fishery is also a threat to the livelihood of many residents of the region.

Like Greg, I appreciate the need for training and maintaining the readiness of our armed forces. My father was a 19 year old sailor stationed at Pearl Harbor on December 7, 1941. I am truly lucky to even exist, let alone experience the thrill and beauty of catching a wild trout on a fly. But I would respectfully request that this training not be done at the expense of the Au Sable River.

Thank you,

Hans Hintzen  
President  
Elliott Donnelley Trout Unlimited

On Dec 11, 2022, at 2:28 PM, Greg Prosen [REDACTED] wrote:

National Guard Bureau  
Attn: Ms. Kristi Kucharek

Ms. Kucharek,

As a retired Army veteran, in this day and age I can really appreciate the need for keeping our armed forces highly trained for deployments worldwide. I'm sure this is what is currently motivating

the stated need for both airspace as well as the ground space expansion of Camp Grayling, MI. On the other hand, I am a member of both Trout Unlimited and the Anglers of the Au Sable and strongly support their objections for such expansion for the reasons they state and of which I'm sure you are by now fully aware. I personally have spent many decades on the Au Sable River for my personal pleasure of fly fishing, camping and canoeing as well passing on those delights to our youth and the disabled. Much of my time there has been in the company of fellow veterans and I trust I speak for them as well in raising my objection to the proposed Camp Grayling expansions. I have witnessed the awe and excitement of youngsters hearing the roar then seeing A-10s and F-16s fly over the North Branch of the Au Sable, but that has always been far outweighed by the thrill they show in holding a small native brookie in their hands in the quiet solitude of those hallowed waters. Surely, we can and must find alternative ways to keep our forces fully trained while maintaining what has become a painfully slow shrinking of our pristine waters and forests.

Gregory Prosen, LTC (USAR Ret)

**From:** [John Hiitt](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: Alpena SUA EA  
**Date:** Monday, January 16, 2023 5:50:39 PM

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As an Au Sable River property owner, I join the Anglers of the Au Sable in opposing the expansion of Camp Grayling. Here are the main reasons why:

- The Au Sable River and its surroundings is a vital national resource, one that needs to be protected
- More, louder and lower air training is not wanted in the area
- There are other places where such training can be done
- I oppose the plan to increase low-level training



**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] National guard base - low level flights  
**Date:** Saturday, January 14, 2023 12:18:32 PM

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Under no circumstances should expansion of current base/flight changes , etc. be allowed. The AuSable & Manistee river are the crown jewels of Michigan and nothing should be allowed to cause issues for this world renowned rivers.

Stephen R. Howard

[Sent from the all new AOL app for iOS](#)

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 1:58:57 PM

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There is more to the health and safety of Northern Michigan than the desires of the National Guard. This smacks of another over-reach of governmental authority. Remembering the devastating results of government seizing the lands of the Dakota tribes of the middle west and the Trail of Tears in the Carolinas, We should be able to avoid such power grabs and resolve the issue together. Give it a try, boys!

Patty Hridel  
AuSable River property owner

**From:** [Jim Hughes](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Oppose National Guard Expansion  
**Date:** Tuesday, December 6, 2022 10:50:04 AM

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Sir or Madame,  
As a citizen of Michigan and the USA,  
I believe sufficient resources are currently available to defend the Nation.  
I firmly oppose expansion of Camp Grayling; the natural resources of northern Michigan are too valuable to threaten any more.

The Au Sable should be protected and supported as a resource for fishing, recreation and exploration.

Sincerely,  
Jim Hughes

[REDACTED]

--

**Jim Hughes**

[REDACTED]

"You are a light. You are the light. Never let anyone — any person or any force — dampen, dim or diminish your light ... Release the need to hate, to harbor division, and the enticement of revenge. Release all bitterness. Hold only love, only peace in your heart, knowing that the battle of good to overcome evil is already won." --John Lewis

**From:** [Nathan Hukill](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Tuesday, December 13, 2022 12:40:47 PM

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To whom it may concern,

As a property owner in Grayling, Michigan I stand with the countless other residents and conservation groups in opposing the airspace expansion at Camp Grayling.

The reasons are obvious and have been very well summarized by ARPOA and Anglers of the Au Sable. I don't need to repeat their words.

Do the right thing. Do not expand Camp Grayling on the ground or in the air.

Thank you,  
Nathan Hukill

**From:** [Sybil Hunter](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, December 16, 2022 9:27:58 PM

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December 16, 0222

Ms. Kristi Kucharek  
3501 Fetchet Ave  
Joint Base Andrews, MD 20762-5157  
<mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil>

ATTN: ALPENA SUA EA

I am opposed to the Air Space Proposal for the Alpena Combat Readiness Training Center.

This proposal would move limited temporary airspace for training to a permanent larger airspace designation, which would negatively impact a large portion of the State of Michigan. The permanency of the proposal implies a general lack of future reassessment opportunities which is not acceptable.

This proposal would also lower the flight ceiling from 5,000 feet to 500 feet and even 300 feet depending on the area and the time of the year. Regardless of the time of year and number of tourists present, practicing bombing exercises would increase noise levels and vibrations to the detriment of people, animals, insects and plants alike. It would also increase chaff and flare effects on the land breaking down into chemicals that eventually end up in the ground water. While these are things which have been publicly disclosed, I am certain there are likely additional plans to use more chemical based items in the future which would affect the environment in cumulative ongoing basis.

Visitors to the natural wilderness areas of the State of Michigan, many of which are State owned, go there for quiet and solitude. The increased Air Space Proposal would shatter this solitude. There are fewer spaces for quiet and solitude in nature - why would you take away what little natural solitude area is afforded the tax paying citizens of Michigan? Particularly over such a large swath of the northern State? This is not a Camp Grayling issue, this is a western side, "thumb area," and "up north" issue.

Increased noise pollution negatively impacts animals and people alike. There is a tremendous difference between temporary limited exposure and permanent long term exposure effects and their implications. The exposure is not lessened merely by the fact it would occur during decreased tourism times.

My concerns are:

- Solitude spaces with Natural Quiet are scarce and of importance to survival of wildlife and humans alike.
- The lowered ceiling areas coincide with nature-based tourism recreating areas, thus negatively impacting the economic stability of those areas, as well as The State of Michigan overall.
- The per capita population findings are misleading – realistically, what humans live in a park or rural recreation area? People travel to these areas, but are unlikely to stay long enough to be counted in a census.
- Extreme noise pollution effects humans and animals alike, raising cardiovascular rates that lead to stress reactions and morbidity according to scientific studies.
- Stress in all animals, including humans, leads to uncharacteristic, negative behaviors.
- Noise pollution of military flight magnitude disrupts normal animal communication, thus decreasing survival rates.
- The sheer decibel level of fighter jets far exceeds even normal city levels that can already negatively impact plant and wildlife.
- There is a reason President Truman issued Executive Order 10092 establishing an airspace reservation over Superior National Forest, restricting flights below 4,000 feet above sea level – to protect the natural resources of plants and wildlife within those boundaries. EO 10092 was also incorporated into the Boundary Waters Canoe Area Wilderness act to protect “untrammelled, natural, undeveloped, providing of solitude or primitive and unconfined recreation, and preservation of natural features” sites. There is precedent for the importance of Natural Quiet, rural recreation areas.

There is no proven need to increase the air space usage in this area other than to support the proposed land expansion of Camp Grayling in light of the National All Domain War Fighting Center engagement, which is in and of itself built on an unsubstantiated, unproven basis of need.

Please do not go forward with this proposal. It is based on misrepresented data and does not consider the detriment to the multitude of wildlife, aquatic and terrestrial, that it negatively affects.

Very sincerely yours,

Sybil Hunter



Docket (/docket/FAA-2023-1972) / Document (FAA-2023-1972-0001) (/document/FAA-2023-1972-0001) / Comment

 PUBLIC SUBMISSION

## Comment from Danielle Hurtt

Posted by the **Federal Aviation Administration** on Nov 1, 2023

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The proposed modification of restricted areas, particularly the elevation increase of R-4201B to 23,000 feet mean sea level (MSL), signifies a significant step towards enhancing aviation safety, streamlining airspace management, and bolstering vital U.S. Army training. This adjustment is designed to align R-4201B with the adjacent R-4201A and establish a standardized framework for airspace management. By raising the restricted area ceiling, we create an environment conducive to advanced combat aircraft, modern weaponry, and high-angle artillery exercises. This heightened flexibility is essential for aircrew training and preparing military forces to meet the evolving challenges of contemporary warfare.

As aerial warfare continues to evolve, so too must the tactics employed by aircrews and military forces. Advanced fighter aircraft with extended standoff capabilities and advanced sensors require a broader range of maneuvering airspace for comprehensive training. The elevation increase of R-4201B accommodates these capabilities, enabling more realistic training scenarios, including abrupt and unpredictable changes in flight conditions. In doing so, it reinforces aircrew readiness and improves the effectiveness of military operations.

Beyond the immediate training benefits, this modification enhances air dominance over the battlefield. By connecting R-4201A and R-4201B with the proposed Alpena CRTC Military Operations Areas (MOAs), the airspace complex becomes a strategic asset for hosting Department of Defense Large Force Exercises. These exercises are crucial for tactical combat maneuvering and align perfectly with the proposed airspace changes.

Standardized and efficient airspace management is another advantage. By aligning the ceilings of R-4201A and R-4201B and introducing administrative changes, the proposal streamlines airspace scheduling and utilization. This not only minimizes the potential for confusion but also enhances overall safety and efficiency.

Importantly, the FAA's commitment to public engagement and feedback on this proposal underscores the

importance of transparency and accountability in airspace management decisions. By inviting comments and participation, the FAA ensures that the concerns and interests of all stakeholders, including local communities and the aviation industry, are considered. This commitment to open dialogue reflects responsible governance and respects the principles of informed decision-making.

In conclusion, the modification of restricted areas, specifically the elevation increase of R-4201B, offers numerous advantages. It enhances aviation safety, supports military readiness, and aligns with the evolving tactics of aerial warfare. By considering public feedback, the FAA demonstrates a commitment to responsible governance and the well-being of all stakeholders. This proposal is an essential step forward in modernizing our airspace and ensuring it meets the demands of contemporary military training and operations.

**Comment ID**

FAA-2023-1972-0003



**Tracking Number**

log-skpb-umjh

**Comment Details**

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**Document Subtype**

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**From:** [Julie](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 1:39:40 PM

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National Guard Bureau  
Attn: Ms. Kristi Kucharek  
3501 Fetchet Avenue  
Joint Base Andrews, MD. 20762-5157

Dear Ms. Kucharek,

I am a lifelong resident of Michigan and a proud supporter of our military, with several generations of family members who have proudly served. I am also a licensed fly fisher, a member of FlyGirls of Michigan and supporter of Anglers of the AuSable. These clubs promote fly fishing and raise funds for conservation efforts in our state and the greater AuSable River ecosystem. I am against the expansion of military airspace at Camp Grayling.

The proposed expansion would cause great harm to the AuSable River ecosystem, raining pollution from increased chaff and flare releases onto the headwaters of our vulnerable trout streams. Louder and lower altitude flights would destroy the solitude that is treasured by hikers, bikers, hunters, birders and nature lovers who bring tourist dollars from around Michigan and the world.

Michigan has given more of its public land to the National Guard than any state in The Union. The National Guard training site at Camp Grayling (230 square miles/148,000 acres) is the largest in the nation. Crawford County and the State of Michigan have supported Camp Grayling for over 100 years. I do not wish this aerial expansion proposal to proceed.

The public land in Michigan belongs to all of us as citizens, and allowing this expansion is a great disservice to us. I urge you to prevent the expansion of Camp Grayling airspace before irreversible damage is done to public land, waters and air of Michigan.

Sincerely,

Julie A Hynes  


Sent from my iPad

**From:** [D. Alexander Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Au Sable river watershed national guard expansion  
**Date:** Monday, December 5, 2022 11:54:22 AM

---

To whom it may concern:

Im writing in opposition to the proposed expansion of the National Guard training grounds at Camp Grayling. These expansions would negatively effect the Au Sable river fishery, the natural beauty and peace of the area and the economic situations of the local community who rely on the scenic natural beauty of northern Michigan to bring in important tourist dollars. Camp Graylings training grounds are already expansive with machines of war crossing active highways and roadways, bombing runs being conducted which can be heard for tens of miles around. The introduction of low altitude training airspace (under 5,000ft) would only serve to exacerbate these problems.

Please do not expand camp grayling. My family has been enjoying the peace and quiet of the Au Sable for well over 70 years and I'd like to see it remain the same for decades and centuries to come.

Thank you for your time.

Sincerely,  
D. Alexander Inman


**From:** [Joe Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:44:59 AM

---

To whom it may concern,

Please stop the expansion of any airspace use, military facility expansion, or other expansions as it will lead to absolute and definite destruction of Michigan wildlife, habitats, ecosystems and environments alike.

Thank you,

Joe Inman  


Joe

**From:** [Joe Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:45:03 AM

---

To whom it may concern,

Please stop the expansion of any airspace use, military facility expansion, or other expansions as it will lead to absolute and definite destruction of Michigan wildlife, habitats, ecosystems and environments alike.

Thank you,

Joe Inman  


**From:** [Joe Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 1:22:54 PM

---

To Whom it May Concern,

## DO NOT EXPAND MILITARY AIRCRAFT TRAINING

Protect our natural resources and Michigans beauty, don't destroy habitat by expanding military training and airways.

Joseph Inman

1. The Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. That more, louder and lower air training is not wanted in the area.
3. That there are other places where such training can be done.
4. That you oppose the plan to increase low-level training

Here are some key points that will be included in Angler's detailed response:

- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that

every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.

- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

Joe

**From:** [Michael Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling expansion and proposed expansion of military airspace.  
**Date:** Monday, December 5, 2022 11:39:23 AM

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My wife and I have owned a cabin on the North Branch of the Au Sable River for 20 years. We have willingly put up with excessive noise levels caused by military weaponry and low aircraft fly overs. But no longer. We have had it. We vehemently oppose the proposed Camp Grayling expansion and the proposed new military airspace expansion. You should be ashamed of yourselves for trying to sneak these proposals through. I attended and spoke at the first Camp Grayling expansion meeting held for area conservation groups. The shameful and collusive conduct exhibited by the military and the DNR was stunning. This our land, not the DNR's or the NG's. Stop what you are doing to the people you are supposed to be serving.

Respectfully submitted but greatly disappointed,  
Mike and Sue Inman

Sent from my iPhone



**From:** [Michael Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Fwd: Camp Grayling expansion and proposed expansion of military airspace.  
**Date:** Monday, December 5, 2022 11:44:25 AM

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Attention SUAEA

Sent from my iPhone

Begin forwarded message:

**From:** Michael Inman [REDACTED]  
**Date:** December 5, 2022 at 10:36:01 AM CST  
**To:** NGB.A4.A4A.NEPA.COMMENTS.org@us.af.mil  
**Subject:** **Camp Grayling expansion and proposed expansion of military airspace.**

My wife and I have owned a cabin on the North Branch of the Au Sable River for 20 years. We have willingly put up with excessive noise levels caused by military weaponry and low aircraft fly overs. But no longer. We have had it. We vehemently oppose the proposed Camp Grayling expansion and the proposed new military airspace expansion. You should be ashamed of yourselves for trying to sneak these proposals through. I attended and spoke at the first Camp Grayling expansion meeting held for area conservation groups. The shameful and collusive conduct exhibited by the military and the DNR was stunning. This our land, not the DNR's or the NG's. Stop what you are doing to the people you are supposed to be serving.

Respectfully submitted but greatly disappointed,  
Mike and Sue Inman

Sent from my iPhone

**From:** [Ted Inman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 11:42:13 AM

---

I am very much opposed to the expansion!

Ted Inman



**From:** [Rob J](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] I am opposed to air space proposal  
**Date:** Wednesday, December 7, 2022 10:26:11 PM

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I am OPPOSED to to air space as well as OPPOSED to expanding Grayling base... My dog already goes insane when the helicopters fly over. I will be forced to sell my property. Why was all this kept a secret with only 30 days to comment. The change in air space was just made public December 7, 2022 and now allowing comment until December 25, 2022

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] I am OPPOSED to to air space  
**Date:** Wednesday, December 7, 2022 10:35:39 PM

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I am OPPOSED to to air space My dog already goes insane when the helicopters fly over. I will be forced to sell my property. Why was all this kept a secret with only 30 days to comment. The change in air space was just made public December 7, 2022 and now allowing comment until December 25, 2022

[Sent from Yahoo Mail on Android](#)

**From:** Stephenie Jacobson  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] My family opposes the expansion of both military airspace and Camp Grayling  
**Date:** Friday, January 13, 2023 10:59:59 PM

---

Hello,

My family of 6 lives in [REDACTED], Michigan. We own a business here dependent on tourism, specifically golf. There are many beautiful courses that tourists enjoy here, as well as pristine state land that is supposed to be FOR PUBLIC USE. Golf is a sport that takes concentration - something not compatible with low flying planes and large booms.

We feel we have a good relationship with the existing military base. The community has always supported Camp Grayling and worked with the National Guard even though that sometimes means additional noise, pollution, and restriction of public lands in our area. That being said, enough is enough - this is our home. It is not a huge military base!

We oppose all plans to expand Camp Grayling and the airspace around it.

Thank you,  
Stephenie and Tony Jacobson  
[REDACTED]

**From:** [Dave Jankowski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, January 5, 2023 11:32:24 AM

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Dear Ms. Kucharek,

My name is Dave Jankowski. I'm a retired LtCol with the Michigan Air National Guard. I have a cabin on the Au Sable River, so am conflicted with the airspace modification. I certainly want our aircrews to have the training opportunities they need, but high speed jet fighter traffic flying river corridors that the Grayling West MOA would allow is unacceptable to me. Having said that, I hope that you would answer a few questions that I have on the subject:

Who is the approving authority for the Airspace Modification before it goes to the FAA?

Who authored the Airspace Modification?

What is the intended use of Grayling West MOA?

How did you make the noise assessment?

Thank you!  
Dave Jankowski

**From:** [Dave Jankowski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Alpena SUA EA  
**Date:** Saturday, January 14, 2023 10:04:21 AM

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Attention Alpena SUA EA

My name is Dave Jankowski. I am a retired Michigan Air National Guard Lt. Col. and F-4/F-16 pilot. I have actually worked the air-to-ground range within R4201A/B. Today, I have a cabin on the North Branch of the Au Sable River and am a member of the Au Sable North Branch Area Foundation Board, and recognize how valuable the river is to so many people.

I oppose the Alpena SUA Modification – not in total but in part. That part is the proposed Grayling West MOA’s minimum altitude of five hundred feet. I understand the need to safely separate military and civil aircraft that Grayling West and East MOAs will provide. I also understand and support the need for realistic aircrew training that the entire SUA package seeks to achieve.

However, I think that the proposed five-hundred-foot-minimum-altitude floor in Grayling West is unrealistically too low. I fear that high-speed jet fighters will use the Au Sable North Branch as a navigational channel to the air-to-ground range. I know that I would have in my flying days. When that happens, the entire river channel will experience noise levels similar to what the area around Shupac Lake experiences, as that is a frequent ingress and egress corridor for jets working the range today. The Environmental Analysis lists the Shupac Lake Lmax noise level to be 128 dBa (page 66 of the Environmental Analysis). That would represent an increase from the existing DNL of <35 dBa (page 62) to 128 dBa Lmax. Since the dBa scale is logarithmic that is a multi-fold increase in noise level. Also, the EA lists the Grayling West MOA Proposed DNL to be 45 dBa vs existing of <35 dba (page 62). On a logarithmic scale that is twice as much – and that is the DNL not Lmax! The EA obviously anticipates significantly more noise.

Another potential use of a five-hundred-foot-floor airspace is close air support training. In this scenario we could have flights of two to four aircraft making multiple ground passes anywhere in the Grayling West MOA. Once a flight of aircraft enters the Grayling West MOA they have license to operate at five hundred feet anywhere within the MOA. And, I emphasis flights of 2-4 aircraft because fighters rarely operate single ship, they always fly in flights of 2-4 aircraft.

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train in Michigan. And, it clearly shows the intent of the Michigan National Guards intent on expanding operations in the Grayling/Au Sable area.

The Au Sable River system is a designated Michigan Natural River, and a part of the Au Sable is also a National Wild and Scenic River. Every list of the top-ten-trout-fishing rivers in the country includes it, and it is arguably the best trout stream east of the Mississippi. The Michigan DNR recognizes that and has even afforded it special use regulations. Its economic value to Crawford County is immense. It is also vulnerable and environmentally sensitive. It and its creatures cannot withstand the assaults that increased military activity will bring. Fishermen and other recreational users will not return to an area of frequent loud noise activity, such as frequent five-hundred-foot fly overs.

As members of various Au Sable environmental groups, we should probably be demanding the deactivation of the Grayling Air-to-Ground Range altogether, having it moved to a less sensitive and more remote location, further up the lower peninsula or to the upper peninsula. Instead, we only wish to reasonably limit the activity here. A five-hundred-foot floor is not reasonable!



**From:** [Dave Jankowski](#)  
**To:** [RICHARD SCOTT](#)  
**Cc:** [Rod Jenkins](#); [NGB A4/A4A NEPA COMMENTS Org](#); [Tim Tobias All](#); [Nial Raaen](#); [Gary Marquardt](#); [Gary Moyski](#); [Rusty Kalmbach](#); [Craig Swenson](#); [Dave Hellman](#); [Tom Roberts](#); [Steve Taylor](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 4:47:43 PM

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You are welcome. Most just express outrage and I don't think that goes far!  
Dave

On Sat, Jan 14, 2023 at 3:49 PM RICHARD SCOTT [REDACTED] wrote:

Dave: thank you for expressing these well organized, well conceived thoughts. I agree with you whole heartedly.

Sent from my iPhone

On Jan 14, 2023, at 12:17 PM, Rod Jenkins [REDACTED] wrote:

Dave,  
Well written, excellent points. As a former Air Guard pilot and an avid fly fisherman I agree with your assessment.  
Sincerely,  
Rod Jenkins

Sent from my iPhone

On Jan 14, 2023, at 10:03 AM, Dave Jankowski [REDACTED] wrote:

Attention Alpena SUA EA

My name is Dave Jankowski. I am a retired Michigan Air National Guard Lt. Col. and F-4/F-16 pilot. I have actually worked the air-to-ground range within R4201A/B. Today, I have a cabin on the North Branch of the Au Sable River and am a member of the Au Sable North Branch Area Foundation Board, and recognize how valuable the river is to so many people.

I oppose the Alpena SUA Modification – not in total but in part. That part is the proposed Grayling West MOA's minimum altitude of five hundred feet. I understand the need to safely separate military and civil aircraft that Grayling West and East MOAs will provide. I also understand and support the need for realistic aircrew training that the entire SUA package seeks to achieve.

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Mississippi. The Michigan DNR recognizes that and has even afforded it special use regulations. Its economic value to Crawford County is immense. It is also vulnerable and environmentally sensitive. It and its creatures cannot withstand the assaults that increased military activity will bring. Fishermen and other recreational users will not return to an area of frequent loud noise activity, such as frequent five-hundred-foot fly overs.

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**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling flights  
**Date:** Thursday, December 8, 2022 6:04:03 PM

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I live in Chicago, right next to OHare airport. Flights and high noise every two minutes all day long each day of the week. I travel to the AuSable River to fish in tranquility. Trips are essential for well-being. I oppose an increase in flights, including low-elevation flights, over the AuSable watershed. Steve Jann.

Sent from my iPhone

**From:** [REDACTED]  
**To:** ["Rich Vander Veen"](#)  
**Cc:** ["Frederick Baker"](#); [NGB A4/A4A NEPA COMMENTS Org](#); ["Jim Graves"](#); ["whitmer.g@michigan.gov"](#); ["ELIZABETH KIRKWOOD"](#); ["Lisa Wozniak"](#); ["Josh Greenberg"](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: ATTN: ALPENA SUA EA.  
**Date:** Sunday, January 15, 2023 10:13:34 AM

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Bravo, Fred!

-----  
From: "Rich Vander Veen"  
To: "Frederick Baker"  
Cc: "NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil", "Jim Graves",  
"whitmer.g@michigan.gov", "ELIZABETH KIRKWOOD", "Lisa Wozniak", "Josh  
Greenberg", "Rich Vander Veen"  
Sent: Saturday January 14 2023 1:12:26PM  
Subject: Re: ATTN: ALPENA SUA EA.

Fred

May the Guard, the MDNR, EPA, EGLE & all concerned Citizens read your thoughtful epistle and get engaged in protecting the environs where trout are found!

Rich Vander Veen  
[REDACTED]

On Jan 14, 2023, at 2:33 PM, Frederick Baker [REDACTED] wrote:

Dear Sirs:

Michigan is almost as large as several European countries (Germany, France, Spain, Poland, Sweden) and larger than some (each of the Benelux countries, Denmark, Austria, the Czech Republic). Each of these countries – all NATO members -- maintains a robust military without destroying its environment. They choose training alternatives that protect their small nations from irreversible damage, not only for the benefit of their citizens, but because tourism is an important part of most of their economies.

Michigan should be no different. Tourism and recreation are the third largest component of the Michigan economy. The citizens of Michigan are privileged to live in a unique corner of the world: there is no other place on earth – and this is

the literal truth – virtually surrounded (both peninsulas) by fresh water seas containing twenty percent of the world’s fresh water and teeming with more miles of river and streams per square mile than any place on earth except Canada. We, too, have alternatives to the terribly thoughtless low flight training plan our own Michigan National Guard has proposed for Camp Grayling.

Whatever would possess you to think it is appropriate to send planes at altitudes as low as 300 feet over what some believe to be the finest trout stream in the world?

What are you thinking?? You are the **MICHIGAN NATIONAL GUARD**.  
**Please guard Michigan!**

You know the arguments – the Growler, a low altitude ground support aircraft, is named that for a reason. It is loud!

People come to the Au Sable to renew themselves, not to be buzzed by weekend warrior flyboys who think it is great fun to drop chaff on holy waters. Why would anyone think it is acceptable to deposit the 33,306,000,000 micro-glass aluminum fibers contained in the 6,103 chaff cartridges the Guard plans to drop annually over an expanded training area that includes the Au Sable?

If you adopt this plan, we – the Anglers of the Au Sable, and the citizens of Michigan -- can promise the Guard litigation. Ultimately, the Guard will not succeed in implementing this hare-brained scheme, because this plan violates NEPA, and you know it.

Don’t you care??

The Au Sable was already destroyed once, when Michigan was stripped of its timber and the grayling that once teemed in it not were decimated.

The Au Sable has recovered from that devastation as a trout stream of the highest quality. This recovery took over a century.

*We should learn from history: Do not pollute and jeopardize the fragile balance of one of Michigan's most delicate and valuable natural resources.*

The Guard's mission is to protect Michigan. We appreciate what you do, and you deserve our support and our thanks.

But remember that the Guard also have a duty – as all Michiganders do – to protect our state's beauty and resources. After all, they are an important part of what makes our state worth defending.

Please, amend your plan. Protect the Au Sable.

Frederick M. Baker Jr.



**From:** [Rod Jenkins](#)  
**To:** [Dave Jankowski](#)  
**Cc:** [NGB A4/A4A NEPA COMMENTS Org](#); [Tim Tobias All](#); [Rick Scott](#); [Nial Raaen](#); [Gary Marquardt](#); [Gary Moyski](#); [Rusty Kalmbach](#); [Craig Swenson](#); [Dave Hellman](#); [Tom Roberts](#); [Steve Taylor](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 12:17:26 PM

---

Dave,

Well written, excellent points. As a former Air Guard pilot and an avid fly fisherman I agree with your assessment.

Sincerely,

Rod Jenkins

Sent from my iPhone

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Attention Alpena SUA EA

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**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 6:54:55 AM

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Please do not approve this expansion! I'm a Michigan tax payer and this plan will not keep me safer.

Thank you

Jennifer

**From:** [Bruce Johnson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA | Oppose the change in airspace usage at Camp Grayling  
**Date:** Saturday, January 14, 2023 12:12:16 PM

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1. Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. More, louder and lower air training is not wanted in the area.
3. There are other places where such training can be done.
4. I oppose the plan to increase low-level training

- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.
- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

**From:** [Don Johnston](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] New MOA  
**Date:** Wednesday, December 14, 2022 9:32:57 AM

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Hello My name is Don Johnston and I'm the manager of the airport at Sandusky Mi. The airport is Sandusky City (Y83). We are in the process of finalizing our approaches for runway 28 & 10. We attended a meeting last year in Bad Axe (KBAX) and had discussions with the representatives handling the new proposed MOA and it was discussed that the new MOA was moved a little to the north in a straight line instead of dipping down to a point into Y83 approach. I seen the new proposed chart that was revised back then and with the changes I seen would satisfy both Y83 and the changes made to protect the approaches for KBAX. I have received the current proposed chart via email but it was showed in shaded areas and being the area that was discussed was supposedly moved to the north I was using a cross road for referenc point. I was thinking it was north of Deckerville Rd. Is there anyway you could email me a current chart and maybe over lay it in map style or show roads? Thank You and we sure support military exercises and we hope in the future are airport can help out as a midway destination this would help us in a much needed runway extension.

Don Johnston



**From:** [John Jones](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Michigan Thumb Area Airspace Reconfiguration  
**Date:** Wednesday, December 14, 2022 9:29:51 AM

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I support the reconfiguration to accommodate the training of larger, faster and more modern military Aircraft. The inconvenience for some is far out weighed by our National Defense interests. Anything we can do to accommodate training of our defense forces to face the mounting challenges of this world is fine by me. I would include private lands in the Northern Lower and Upper Peninsula too.

Our nations defense team should not have seek the permission of hikers, boaters, recreational flyers etc...I guarantee that the Russians, Chinese, North Koreans and others in the Axis of Evil will not seek our permission to rip our freedoms away. John Jones, Jr.

Sent from my iPad

**From:** [Lorrie Jorgenson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 8:35:39 AM

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On behalf of all of our Jorgenson/Stephan family, we place on record our strenuous objection to any further expansion of the National Guard in Crawford County, on land or in air. Our ancestors, the Stephan family, came to Michigan and settled the AuSable River Valley. Soon after the Jorgenson family came and stayed also. The river and land here are 'in our blood' and we have chosen to live and retire here. Generations of our family have lived and worked here, enjoying the beauty and serenity of the river valley.

We have invested all we have to be able to live here in peace. This is our land.

We are no longer able to eat the fish from our beloved AuSable due to National Guard PFAS. We are no longer able to enjoy constant peace and serenity as jets fly overhead. We are no longer able to enjoy the forests as they have been clearcut. The noise from bombing frightens our pets and children, and wakes us in the night. We need to be left alone to enjoy the fruits of our lifelong labors.

We have been told the government is pro-environment. The National Guard is DESTROYING our environment. NO! STOP! We want not only no expansion, we want the current disaster and rape of our county to STOP.

Sincerely,

Jim and Lorrie Jorgenson  
Jim and Melissa Jorgenson  
John Jorgenson  
Paul and Amanda Jorgenson

**From:** [KEVIN KANE](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Monday, December 5, 2022 11:53:48 AM

---

I am opposed to the Grayling base expansion.

Kevin M Kane D.D.S.

**From:** [KEVIN KANE](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Low level flights  
**Date:** Saturday, January 14, 2023 6:20:29 PM

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Please minimize low level flights

Kevin M Kane D.D.S.



**From:** [Melissa Kelley](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 7:56:04 AM

---

Good day,

It has come to my attention that the National Guard wants to amend it's airspace and flight patterns over Camp Grayling.

As a full time resident in [REDACTED] Michigan I am fully opposed to this. And honestly, outraged by the way this was purposed. Not only was this buried a in draft Environmental Assessment (EA), the draft if full of cherry picked facts. It doesn't take into account how the lands are used for recreational use.

The National Guard has already polluted our rivers with PFAS and has not been cleaned up. The noise pollution will damage local wildlife as well.

I am also opposed to the Camp Grayling expansion, which is a separate issue.

**From:** [Layton, Andrew B Capt USAF 110 ATKW \(USA\)](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [KUCHAREK, KRISTI L GS-13 USAF ANGRC NGB/A4](#)  
**Subject:** FW: [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 27, 2022 1:31:30 PM

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Here is one comment received through MING channels.

-----Original Message-----

From: Robert Kennedy [REDACTED] >  
Sent: Tuesday, December 27, 2022 12:15 PM  
To: [REDACTED]  
Subject: [Non-DoD Source] ATTN: ALPENA SUA EA.

To Whom It May Concern:

As a property owner and full time resident along the Lake Huron shoreline in Alcona County I am urging you not to lower the altitude at which training aircraft are allowed to fly. Training exercises conducted over Lake Huron in the summer of 2014 and 2015 in front of our home caused the walls on our home to rattle and windows to shake for hours on end. Our family doesn't want anything like this repeated in the future. Please decline the request for lower altitude training flights and other activity in this quiet pristine area.

Respectfully,

Robert Kennedy

[REDACTED]

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Sunday, December 11, 2022 7:55:51 AM

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I submit my objections and concerns about the

## Michigan Air National Guard Alpena Special Use Airspace Complex

### Including Huron, Tuscola, and Sanilac Counties

for the reasons posted below.

These points noted below by Clifford Stuehmer are why a Finding Of No Significant Impact (FONSI) for this proposal is not only wrong, but an insult and an injustice to the people that live, work and play within the Alpena SUA.

I have lived in St. Clair County for 69 years, worked on behalf of nature preservation throughout the state, and have much experience exploring and enjoying Michigan's great outdoors.

Kate Kenney  
Goodells MI

## Can You Hear Me Now?

By Clifford Stuehmer, Alpena Special Use Airspace resident Port Hope, Michigan

A brief summary of the things the Michigan Air National Guard's Environmental Assessment is not saying out loud.

- Air combat training includes climbing, diving, turning, and multiple passes over the same area.
- F-16s at 500 feet generate 115 dBA noise levels. That is eight times louder than an A-10 ("Warthog"), louder than the maximum level in the audience at a rock concert, at the threshold of "uncomfortable" for people and eight times louder than your typical

County/Township noise ordinance (85 dBA). This comparison can be found in the Environmental Assessment (EA) on page 39, Figure 3.1. This is also the level at which the Secretary of the Air Force requires hearing protection for all Air Force personnel ON or OFF base (Air Force Instruction AFI 48-127).

- When an F-16 passes overhead at 500 feet, you will be unable to communicate with someone standing three feet away from you without shouting for approximately 20 seconds. This “Shout Zone” extends about 2.5 miles to either side of the flight path (decreasing shouting time period as you approach 2.5 miles to either side of the aircraft).
- The EA touts a “seasonal” flight restriction concession to help reduce the significant negative impact the noise of low altitude jet combat training will have on tourism along the shoreline. This is an admission of significant impacts from the high noise levels. However, it is an empty concession that does nothing for the full time residents along the shoreline or boaters/kayakers more than 1 mile offshore.
- The prior Foreign Military Sales pilot training Environmental Impact Statement quotes a 0.65% average decrease in property value for each dB increase in Day-Night Average Sound Level (DNL). This translates to about a 4% property value decrease for those areas showing a 6 dB DNL increase in noise in this EA.
- The Aircraft Owners and Pilots Association (AOPA) opposed the proposed changes as early as 2018 and more recently requested the more thorough Environmental Impact Statement (EIS) in July of 2019. These professional and amateur pilots and aircraft owners indicate the Special Use Airspace (SUA) changes will significantly affect the safety and economy of civilian air use.
- Particulates emissions from low altitude training (below the 3000’ mixing level) will settle on our farms, yards, Lake Huron, and into the deepest parts of our lungs.
- Potential bird strikes are downplayed by mention of the Air National Guard’s use of the BASH computer program yet there is no mention in the EA of the Sandhill Crane, one of the largest birds in North America, which routinely migrates in formations in the Military Operations Airspaces (MOAs) well above 500 feet and outside and above the “seasonal” flight restrictions. Nor is there any mention of

Canada geese.

- This EA mentions that bringing jet air combat training down to 500 feet in the proposed MOA airspace would be a cost save to an organization with an annual budget of \$234 BILLION.

**From:** [John Kile II](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Military Air Space Change in the Thumb Area of Michigan  
**Date:** Tuesday, December 13, 2022 12:15:13 PM

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To the Michigan Air National Guard in regards to the changes purpose for the Thumb region. I am against the changes of expanding and lowering the flight heights. This area is a huge recreational area, with hundreds of Cabins, several County Campgrounds, State Parks, many Scenic Road Side Parks and tons of Passive Use Options like Biking, Hunting, Hiking Kayaks and the Beach Enthusiasts just to name a few. Including in this it is a Natural Migration Flight Path for thousands of Birds. I believe this expansion will affect and be an intrusion to the Million plus visitors who come to this area for Rest, Peace and Quiet. Please do not expand.

Kind Regards  
John Kile



Sent from my Verizon, Samsung Galaxy smartphone

**From:** [Brian and Jeanne King](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 6, 2022 9:35:45 AM

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We are property owners on the North Branch of the Ausable River and are also very pro-American and pro-military. However, **we do not support military expansion of any kind along the Ausable River and reject your proposal to expand the Camp Grayling Military Airspace Expansion.**

We already have military jets flying almost daily closely following the Ausable River and causing severe noise and total disruption. Most of the time we hear them coming but all too frequently there is no indication they are coming. The jets are extremely loud to the point our windows rattle and trees shake. We put up with the current noise because we are proud of our military and recognize that training is necessary, but to expand Camp Grayling on Land and Air is just asking too much of all residents.

This is not the place for expansion! The land is owned by the citizens and needs to be kept that way....not leased to other parties or expanded.

The proposal is the total opposite of Gov. Whitmer's pledge to promote a Pure Michigan.

**The proposed expansion is:**

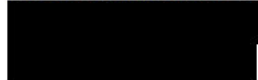
**-Too Loud**

**-Too Low**

**-Too Dirty**

We remain extremely upset over this proposed expansion.

Brian and Jeanne King



**From:** [Brian and Jeanne King](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 5:36:55 PM

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As a resident of [REDACTED] Michigan), I would like to express my opposition to the expansion of 1) Camp Grayling's National Guard request for additional training area and now 2) the Michigan Air National Guard's proposal to expand their missions in this same area ten-fold - using new, louder planes, flying lower, dropping more chaff to simulate radar evasion war conditions – micro-glass fibers coated with a thin layer of aluminum.

My family's precious use of these national resources is being put second to war planning and testing by the National Guard and it disgusts me since Camp Grayling National Guard has already destroyed the beautiful Lake Margarethe. There are too many natural resources and ecosystems in this area to play war.

The Au Sable River and its surroundings is a vital national resource, one that needs to be protected. It is a fragile ecosystem and more, louder and lower air training will destroy this environment. There are other places where such training can be done.

The United States Government claims to "go green," but this military land and air grab **does not reflect this.** It's totally hypocritical. Camp Grayling National Guard needs to stop destroying this area and Michigan National Air Force need to stop this proposal. This is not the area to do military exercises.

Jeanne King  
[REDACTED]



**From:** [Al Kish](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Thursday, December 8, 2022 5:43:56 PM

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Recently a letter was posted in the Huron County View about the noise levels of the F-35's that fly overhead. I love to hear them, have always loved having them fly over and I feel a sense of security having them practice their maneuvers over our county.

I sincerely hope you don't eliminate this activity just because someone wants to have something to complain about. Keep up the good work! Every time I hear those jets coming I run out of the house to see them. My 2 year old grandson has begun to do the same thing.

Thank you!

Sincerely,  
Betsy Kish, 

Sent from my iPhone

**From:** [Pat Kish](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, January 3, 2023 1:09:09 PM

---

This message is to again strongly protest the expansion of airspace to be used by the military in the northern Lower Peninsula. Over the past four decades, my family has invested a great deal of time and financial resources to have a quiet place to gather throughout the year. We don't mind the occasional flight overhead (the sound of freedom!), but any increase in noise would be detrimental to not only everyone's enjoyment of Pure Michigan, but also detrimental to the environment due to pollution from flares and chaffs in several key watersheds.

Furthermore, please consider the cost of these flights (along with the proposed expansion of Camp Grayling) in terms of the loss of revenue and jobs for the travel and tourism industry in northern Michigan. No one wants to vacation next to or directly below military bases of operations.

Respectfully,  
Patricia J. Kish

**From:** [KMK](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] Alpena: SUA EA  
**Date:** Tuesday, December 6, 2022 6:47:07 PM

---

Dear Ms Kristi Kucharek,

As a property owner of [REDACTED], I am writing to you in opposition of the proposed expansion of the National Guard airspace. Together with the proposed land expansion of Camp Grayling, this is a very bad idea for the following reasons.

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

**Promises Made, Promises Broken:** Let's just focus on one: PFAS. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

Reject this proposal. To not do so will surely damage not only the gem that is northern Michigan, but most certainly the good will between Camp Grayling and the community. The relationship has already been so damaged, that the new generation of soldiers may get to experience the same disregard that was experienced by soldiers in the vietnam era.

NO CAMP GRAYLING EXPANSION.  
NO INCREASED AIR SPACE.

Katie Kloosterman  
[REDACTED]

**From:** [dennis knapp](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [dennis knapp](#)  
**Subject:** [Non-DoD Source] ATTN:ALPENA SUA EA  
**Date:** Friday, December 9, 2022 12:28:53 PM

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Thank you for this opportunity to comment on the Draft EA for Modification and Addition of Airspace at the Alpena Special Use Airspace Complex. As a full-time resident living near Port Hope MI along Lake Huron in the proposed Steelhead Low East MOA, I have concerns and opposition to the Proposed Alternative A.

Current military use of this airspace along Lake Huron in eastern Huron County is quite noticeable and disruptive. As planes fly and maneuver turns in this area the noise gets quite loud. I DO NOT support lower flight altitudes and the commensurate increase in decibels as proposed in Alternative A.

I do acknowledge a need for military readiness and training and could accept Alternative B which meets a majority of the military needs without the significant degradation to quality of life for residents and the many tourist users of our many state, county and municipal parks and campgrounds in this area.

Dennis Knapp  


**From:** [Herb Knowlton](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attention: Alpena SUA EA  
**Date:** Monday, December 5, 2022 8:50:36 AM

---

Please do not increase the activity around the Alpena-Grayling airspace. This proposed expansion will negatively impact the AuSable River area. I have owned river property for 47 years. The noise pollution and increased military activity will have a significant negative impact on this unique area.

Sincerely,  
Herb Knowlton

Sent from my iPhone

**From:** [Herb Knowlton](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 12:29:28 PM

---

To whom it may concern:

Please do not increase the low level flights in this area. The AuSable watershed is a fragile resource and this activity will have a negative on the area.

Noise levels are already too loud.

There are certainly other less fragile areas for this activity.

I have owned AuSable river property for 45 years and put up with enough military training exercises.

Herb Knowlton

**From:** Les Koltvedt  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Low level flights over the AuSable River  
**Date:** Saturday, January 14, 2023 12:02:37 PM


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I'm just expressing my concerns with extended area of low level flights over the "Holy Waters" that support the Grayling area with financial support over the sportsman's seasons.

**From:** [Keith Konvalinka](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 11:28:16 AM

---

I oppose the expansion of Camp Grayling, especially the expansion of the low [below 5,000 feet above ground] level training area. I live part-time in Grayling and recreate year-round in the area and this expansion would negatively impact me.

Keith Konvalinka  





**From:** [Keith Koonmen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena Sua EA  
**Date:** Tuesday, December 6, 2022 2:03:04 PM

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Good afternoon,

I am writing to express my opposition to the proposed doubling of camp grayling. As a lifelong Michigander, environmentalist, father, treasurer of the ADAMS Chapter TU I have a personal connection to this land. I want to see it protected for future generations, including my daughter and son. Please do what is best for the residents of Michigan and do not expand camp grayling.

Regards,

Keith A. Koonmen  
Attorney at Law  


**From:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**To:** [Marcia Koppa](#); [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** RE: [URL Verdict: Neutral][Non-DoD Source] On Draft EA - Alpena Complex Michigan  
**Date:** Monday, November 21, 2022 12:35:37 PM

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Good morning Ms. Koppa,

The press release provided on the main project website, only provides a very brief overview of the proposed project.

A detailed description of the Steelhead Low MOA can be found in the Draft EA. Here is the direct link to the Draft EA:

[https://www.alpenacrtc.ang.af.mil/Portals/12/documents/AirSpace%20Documents/Draft%20EA\\_Alpena%20SUA%20Complex\\_MainBody\\_November%202022.pdf?ver=Ey56o\\_w9iSiyQBSEw-O16w%3d%3d](https://www.alpenacrtc.ang.af.mil/Portals/12/documents/AirSpace%20Documents/Draft%20EA_Alpena%20SUA%20Complex_MainBody_November%202022.pdf?ver=Ey56o_w9iSiyQBSEw-O16w%3d%3d)

Please let me know if you have any additional questions.

V/r,

Alicia Treece  
Airspace NEPA Specialist  
Air National Guard Readiness Center  
NGB/ A4AM Plans and Requirements Branch  
3501 Fetchet Avenue, Joint Base Andrews, MD 20762  
Colorado State University Center for Environmental Management of Military Lands



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**From:** Marcia Koppa [REDACTED]  
**Sent:** Saturday, November 19, 2022 12:50 AM  
**To:** [NGB A4/A4A NEPA COMMENTS Org <NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil>](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)  
**Subject:** Re: [URL Verdict: Neutral][Non-DoD Source] On Draft EA - Alpena Complex Michigan

Dear Ms. Treece,

Thank you for your response. While reading this link, there is a term which needs clarification. Please explain "Steelhead Low MOAs"

Thank you,

Marcia Koppa

## Grayling Michigan

On Thu, Nov 17, 2022 at 10:27 AM NGB A4/A4A NEPA COMMENTS Org  
<[NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)> wrote:

Good morning Ms. Koppa

The Draft EA, Appendices and the Draft FONSI can be found at the following link, on the right hand side of the page under "Additional Documents":

<https://www.alpenacrtc.af.mil/Resources/Air-Space-Proposal/>

Please let me know if you have any additional questions or have trouble accessing the documents.

V/r,

Alicia Treece

Alicia Treece  
Airspace NEPA Specialist  
Air National Guard Readiness Center  
NGB/A4AM Plans and Requirements Branch  
Colorado State University Center for Environmental Management of Military Lands

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**From:** Marcia Koppa [REDACTED]  
**Sent:** Wednesday, November 16, 2022 4:37 PM  
**To:** NGB A4/A4A NEPA COMMENTS Org <[NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil)>  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] On Draft EA - Alpena Complex Michigan

Dear Ms. Kucharek,

I am on the Camp Grayling Restoration Advisory Board (RAB) in which our Michigan EGLE representative, Christiaan Bon. Mr. Bon forwarded your letter "Memorandum for Draft Environmental Assessment Distribution" to me to distribute to affected parties.

You make reference to the Draft EA online. It isn't clearly

presented on that web site. Would this be what I should be sharing? [Draft FONSI: Modification and Addition of Airspace at the Alpena Special Use Airspace Complex](#)

Your quick response would be greatly appreciated.

Thank you.

Marcia Koppa  
Communications Chair  
Camp Grayling RAB

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Marcia Koppa

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Marcia Koppa

**From:** Jonas Kubina  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 3:45:55 PM

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Hello - I am writing to oppose the Michigan Air National Guard expansion at camp Grayling. As a longtime fly fisherman, Hunter, hiker and kayaker I have been visiting the AuSable river in the Grayling area for over 20 years in the pursuit of outdoor recreation and to renew my spirit and soul in the beauty and tranquility of the northern Michigan outdoors. It's a very special place for myself, friends and family. However, during our last stay on the north branch of the river near Lovells, we were surprised by the very noticeable increase in artillery shelling noise and low level flights over head as we kayaked. It was not very peaceful at times to be sure.

As a proud Michigander and American I have great respect for our Armed Forces and the solemn duty they are committed to in protecting our freedoms and our country, however;

1. The Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. More, louder and lower air training is not wanted in the area.
3. There are other places where such training can be done.
4. I oppose the plan to increase low-level training

\* The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA). The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below

\* The proposal will result in a dramatic increase in noise. The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.

\* The proposal will result in an increase of various pollutants. This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.

\* The deployment of chaff by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of 33,306,000,000 micro-glass/aluminum coated fibers will be released into the atmosphere.

\* Flight Floors: The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

Sincerely,

Jonas Kubina

Sent from my iPhone

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Airspace Training  
**Date:** Wednesday, December 14, 2022 10:41:45 AM

---

Hello, I do not agree with the use of air space over Tuscola County. If my peaceful enjoyment of my home and property is violated, I will be forced to move. The wind turbines are encroaching on my property, and now the threat of military vehicles (which practice everyday) encroaching on my space is enough for me to leave this area.  
Sincerely, Tracey LA

[Sent from Yahoo Mail on Android](#)

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Low flying F 16's  
**Date:** Thursday, January 12, 2023 11:50:09 AM

---

500 feet is way to low and extremely loud to be flying over our houses in the Thumb in Huron County. We already have them way too loud now and now you want to fly them lower and longer. The sound and vibrations already shake our windows and scare our dogs and cats and wildlife. The Thumb is supposed to be a quiet nice atmosphere to live in and the terrible jet sounds will definitely destroy any peace here. Cindy Lagarde Huron County [REDACTED]  
[REDACTED]

Sent from my iPhone

**From:** [Joseph Lagarde](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Air space fly overs  
**Date:** Wednesday, January 11, 2023 9:07:23 AM

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I'm against the low flyovers, it's way to loud. I live in the northern part of the thumb between Caseville and Port Austin, there has to be somewhere not so populated you can do your practice maneuvers day and night besides here.



**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 12:30:25 PM

---

Hello, I am writing to expressed my concerns regarding Camp Grayling expansion. I am prior military and strongly support the US military. I have lived in [REDACTED] Michigan, close to the "bombing Range" and have had things fall off my wall due to the explosions. That did not bother me, we called at the sound of freedom. In fact, I lived on the same street where a house was hit by one of the rounds almost 30 years ago. However, I feel that this expansion is not in the best interest of our community. Our rivers need protection. I support and stand with the Au Sable river property owners association. I support all the people in this community and surrounding areas that enjoy all northern Michigan has to offer as it stands. Thank you.  
Della Lambert

Sent from my iPhone

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, February 3, 2023 6:59:11 PM

---

To whom it may concern, as a resident of [REDACTED], I strongly oppose the expansion of Camp Grayling. This will change life as we know it in northern Michigan. Please listen to the people and do not allow this expansion. Thank you.  
Della Lambert

Sent from my iPhone

**From:** [Vanessa Lasceski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 20, 2023 10:42:31 AM

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To whom it may concern

I realize this email has come after the time for public comments about this issue.

I want to say I am completely in support of your proposal.

I like the sounds of all the military aircraft's (especially the ones that break the sound barrier)

**From:** [Marsha LaRue](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 7:53:13 PM

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This change will not only have a negative impact on tourism, outdoor recreation for local residents and visitors, and overall enjoyment of privately owned property, but it will reduce property values at a time when Michigan residents are barely able to make ends meet. The lack of notice is almost equally concerning. I do not want any aircrafts flying over my home at altitudes so low that I will need ear plugs in my own back yard. I know this email, like all the others, will go unnoticed ... thanks for sticking it to the people who sign your paychecks, once again!

**From:** [Bob](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Saturday, January 14, 2023 6:21:11 PM

---

I am writing to oppose the proposed increase to the Grayling National Guard training facility and to the proposed increase in training flights. I currently live in [REDACTED] MI and my house currently feels the consequences of the current training facilities with windows that shake from bombing and planes and helicopters that fly low over our house.

I treasure the ability to fish on the AuSable and Manistee rivers and do not believe that it is reasonable for the Guard to expect to double their footprint and not have a negative impact on these invaluable and unique natural resources.

I support our countries military. My father and my uncles all served in the military during WWII. My Dad's brother was KIA during the Battle of the Bulge, in Belgium. There most certainly is a place for the National Guard to further their training but it shouldn't be amongst the AuSable and Manistee river ecosystems.

Respectfully,

Bob Lathrop  
Sent from [Mail](#) for Windows

**From:** [Duncan Lawrence](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Kathy Lawrence](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion -- Firmly Opposed  
**Date:** Monday, January 16, 2023 5:48:58 PM

---

Good afternoon,

We are current property owners on Higgins Lake and the AuSable River. I along with many others oppose the Camp Grayling expansion. While I appreciate a potential expansion of revenue for the area, the costs and risks are too great for our waterways. These include:

- PFAS – Little has been done about the problems created at Camp Grayling due to excessive use of PFAS. We have polluted wells in the area and little/no action is being taken.
- Lack of commitment to follow guidelines – based on past activities, Camp Grayling has not demonstrated a commitment to following agreed upon rules. So, we have little confidence in any commitments they will make.
- Waterways are too valuable to put at risk – the reason people come North and use our areas is due in no small part to the great fishing and clean water in the area. Why would we put these at risk?

Thank you for your consideration.

Regards,

Duncan & Kathy Lawrence

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:ALPENASUAEA  
**Date:** Friday, December 9, 2022 12:43:36 PM

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Please do not irreversibly destroy the public lands, water and air of northern Michigan. We need to do everything we can to protect the Au Sable ecosystem and angling experience. Respectfully submitted, Mary Jane Layman, [REDACTED] resident for over 60 years,

.

**From:** [Walter Lehman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Tuesday, December 6, 2022 1:18:37 PM

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The proposed expansion will disrupt the peace and quiet of people like me that have a place on the AuSable River to enjoy in our retirement. I oppose this expansion.

Walter D. Lehman  
Sent from [Mail](#) for Windows

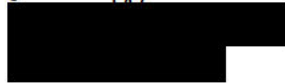


**From:** [John Legg](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Thursday, December 8, 2022 4:13:22 AM

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I am against the expansion of the proposed bombing range. While I am a USAF veteran, I stand firmly against the expansion. We drive from Indiana and pour literally thousands of dollars into the community every year with our family's multiple trips to Grayling to enjoy the fantastic scenery and outdoor activities. It's our second home. Please protect the environment. I want my grandchildren's grandchildren to enjoy the beauty of the region.

Thank you,  
John Legg



**From:** [Landon Lewandowski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Please do not expand Air Space!  
**Date:** Monday, December 12, 2022 10:42:15 AM

---

Hello,

I'm writing to implore you not to go through with the proposed expansion of air space around the Au Sable River area. I've spent my entire life hunting and fishing Up North and it is a place of rest, relaxation and solitude for me and my family. Please do not ruin this beautiful landscape with low flying jets and noise pollution.

Thank you,  
Landon Lewandowski

**From:** [Tom Lewarne](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 7:11:31 PM

---

Hello Camp Grayling,

Please understand that we stand with many of my neighbors here in [REDACTED] MI & we all firmly oppose the expansion of Camp Grayling. Not because we don't support the great military presence our great country offers, but the potential of polluting our Great North Branch of the Ausable River, along with noise pollution, land and water contamination.

We have invested our life savings in this slice of heaven to enjoy fishing and the peace and quiet the woods offer.

This expansion will surely destroy the essence of what we have strived to achieve in a lifetime. Lastly, our tax dollars have been spent on a slogan to attract tourists and residents to experience what Michigan has to offer, it's called

"Pure Michigan". I'm sure that this did not mean the sounds of artillery fire, and jets flying over at low altitudes scaring children, dogs, and wildlife, polluting our trout streams, lakes, and woods. Let us all experience what "Pure Michigan" really means: clean waters, quiet lands, and peaceful forests.

Respectfully,  
Thomas and Laura Lewarne

[REDACTED]

**From:** [Eric Linnevers](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN MS. KRISTI KUCHARAK  
**Date:** Sunday, December 4, 2022 8:12:02 PM

---

Hello Ms. Kucharek,

I am writing you today in opposition to the proposed air space expansion in Northern Michigan. The Grayling area is an escape for outdoor enthusiasts and those who like peace and quiet. The proposed expansion would infringe on these pursuits and bring a myriad of problems with it. Below is a list of reason I, and countless others, oppose the expansion of the air space.

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

**Promises Made, Promises Broken:** Let's just focus on one: PFAS. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

**From:** [dave lockwood](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion and Lowering of Flight Requirements  
**Date:** Wednesday, December 14, 2022 11:57:37 AM

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Dear Ms. Kucharek-

I am a taxpayer and property owner in [REDACTED] Crawford County, Michigan. I own a vacation home on the Au Sable River, in addition to a home in [REDACTED], MI. I'm writing to express my disapproval of any actions to expand Camp Grayling or change air flight parameters over the area cited above. Even with current flight regulations, when jets come out from hidden angles, it causes people to literally jump in fear. The enormous sound is disassociated with the visual because the jets travel so fast, further inducing an involuntary behavioral response. In addition to aircraft noise, we have to endure the sounds of seemingly endless war drills with machine gun fire and bombs being dropped - even though it is taking place miles away from us. We have to explain to visitors that it's not about to rain (despite the sound of thunder rumbling) - it's only another round of tank target practice.

My wife and I bought our Au Sable River home as a place to escape the stresses of society. We quickly learned that is an impossible task given the presence of Camp Grayling 20 miles away. Please don't make the sacrifices we endure with the current geography exponentially worse by an expansion plan that in no way values nature, quiet, peacefulness and recuperation. Any expansion, whether it be in land or air space, will negatively affect property values, quality of life, and the future viability of the city of Grayling and its surrounding space.

We already pay a price for being near Camp Grayling. Please don't add to that by bringing the camp next door to us and as little as 500 feet above us.

Sincerely,

David G Lockwood

[REDACTED]

[REDACTED]

**From:** [dave lockwood](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Dave Lockwood](#)  
**Subject:** [Non-DoD Source] Possible Expansion of Camp Grayling  
**Date:** Saturday, January 14, 2023 2:50:37 PM

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To Whom It Concerns Regarding the Possible of Camp Grayling:

I am writing to express my disapproval of the proposed expansion of Camp Grayling, here in Michigan. I feel this way for a variety of reasons, some of which I will try to convey here:

- First and foremost: It's too loud already! I -- as well as members of my family and guests to our home on the AuSable River approximately 18 miles east of Grayling -- have all been "scorched" by training aircraft that may be missed visually initially, but are unmistakable audibly. Their sound scares the cr\*p out of you because you usually can't see them coming. The sound attacks/startles you so much that you want to "hit the deck" — until you realize that means diving in the river.

I understand the need for training, but I believe adding to the low-altitude supersonic noise is the wrong thing to do in Grayling. It should be done in areas where the civilian population does not live in sizable quantities. There are many of these areas nearby. Most of the civilians I know who live and visit here chose the greater Grayling area because it was quiet/peaceful/beautiful and provided easy, access to spend our time outdoors in a fun/relaxed way. That concept, that you can live your life in the outdoor splendor of "Pure Michigan," is one the state has spent millions of our taxpayer dollars to convey as a benefit of living and paying taxes here. Any possible expansion of Camp Grayling flies directly in the face (pun not intended) of the promise of a "Pure Michigan" experience. There have been times when I've seen friends so startled that they literally jump and try to "hit the deck." I can't imagine that these training practices do anything but harm both the humans and animals that live in the area. Any possible increase in this audible threat to humans and wildlife in the area should be rejected by the state, by our local politicians, and by the greater civilian population..

- Secondly, I believe the possible expansion of Camp Grayling would pose both a short and long threat to our health. The military has demonstrated through past actions that it can't be trusted to conduct its operations in ways that do not harm the people and animals in the surrounding area. When toxic threats (e.g., PFAS) are discovered and linked by considerable evidence to the military, the A) won't acknowledge them, B) deny the harm they pose, C) try to pass the blame on to others, and D) fight tooth and nail against having to take any responsibility for their actions. The military seems to work hard to teach each enlistee to "do the right thing." Yet, they won't do that themselves. How can we - as citizens of the United States - allow this dichotomy to exist? We allow the military to squirm its way out of doing the right thing, just like a company that files bankruptcy to avoid paying for its faulty products. It's no wonder that the morals of American society are crumbling before our eyes.

- A third area of concern for me/my family concerns claims the military likes to make that its expansion will result in more jobs for the local economy. What that logic fails to grasp is that the entire economy of Grayling and its surrounding towns are driven by outdoor recreation. Fishing, golfing, skiing/snowboarding, RVing, and snowmobiling/ATVing all bring people to the area to spend money and drive local economies. When the serenity of Michigan's outdoors is trashed by intruding parties like the military, people stop coming here. They don't want to drink from wells with polluted water, swim in contaminated water, canoe while feeling like their being attacked by enemy jets, or hear a relentless barrage of machine gun fire and tank blasts off in the nearby distance. People are fickle that way with their money and where they choose to vacation or get away for the weekend. It's their dollars that create jobs and generate the income necessary to fund hospitals, schools and small businesses.

When you add these and the many other objections that come from civilians that could be impacted by this decision, it doesn't seem like a tough decision. I hope the decision makers in this battle will listen to their common sense and deny the military's proposal.

Sincerely,

David G Lockwood

[REDACTED]

[REDACTED]

[REDACTED]

**From:** [Andrew Long](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Friday, December 9, 2022 7:42:16 AM

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Dear sirs,

I am writing this letter in opposition to the expansion of the Grayling Military base fly zone expansion. Melding military operations and residential areas is a very difficult thing to do and as our area has expanded in population the noise pollution that will be created will be problematic. I am also very concerned about mission creep. We both know that project start off one size and then as the mission dictates the project modifies and suddenly there is additional expansions. This policy does not have any clause for the prevention of mission creep.

Obviously our military personnel must be properly trained to attack and defend against intruders. My suggestion as an alternative is to operate this in South Texas along the US-Mexican border. New Mexico, Arizona or other opportunities. This would allow for military training as well as monitoring our current invasion of illegal aliens. I do believe that it is a way for our separate groups in government to save face.

Either way, let the record show that this comment is in opposition to the expansion at the Grayling Michigan military base.

Sincerely,  
Andrew Long

[Sent from Yahoo Mail for iPhone](#)



**From:** [Long, David](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: Ms. Kristi Kucharek  
**Date:** Tuesday, December 13, 2022 3:25:52 PM  
**Attachments:** [Outlook-keqyh4cm.png](#)

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Thank you!

David T. Long  
Professor Emeritus & Adjunct Professor  
Aqueous & Environmental Geochemistry  
Dept. of Earth and Environmental Sciences



*Michigan State University occupies the ancestral, traditional, and contemporary Lands of the Anishinaabeg—Three Fires Confederacy of Ojibwe, Odawa, and Potawatomi peoples. The University resides on Land ceded in the 1819 Treaty of Saginaw.*

Sometimes you win, sometimes you lose, sometimes it rains. (Bull Durham, 1988)

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**From:** NGB A4/A4A NEPA COMMENTS Org  
**Sent:** Tuesday, December 13, 2022 2:29 PM  
**To:** Long, David; NGB A4/A4A NEPA COMMENTS Org  
**Subject:** RE: ATTN: Ms. Kristi Kucharek

Good afternoon, Dr. Long,

Your letter has been received. Any personally identifiable information, such as mailing address, email address, and phone numbers will be redacted and not included in subsequent documents. Thank you!

v/r,

Kristi

**KRISTI L. KUCHARAK, GS-13, DAF**  
NEPA Airspace Program Manager  
NGB/A4AM Plans and Requirements

Air National Guard Readiness Center  
3501 Fletchet Avenue  
Joint Base Andrews, MD 20762

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**From:** Long, David [REDACTED]  
**Sent:** Tuesday, December 13, 2022 10:58 AM  
**To:** NGB A4/A4A NEPA COMMENTS Org <NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil>  
**Subject:** [Non-DoD Source] ATTN: Ms. Kristi Kucharek  
**Importance:** High

MS Kurcharek,

I just sent in letter regarding the Air Expansion. However, I just received some guidelines about the letter in terms of PII. Can you check my letter and see if I need to resend?

Thank you in advance,

dave

David T. Long  
Professor Emeritus & Adjunct Professor  
Aqueous & Environmental Geochemistry

[REDACTED]



*Michigan State University occupies the ancestral, traditional, and contemporary Lands of the*

*Anishinaabeg—Three Fires Confederacy of Ojibwe, Odawa, and Potawatomi peoples.  
The University resides on Land ceded in the 1819 Treaty of Saginaw.*

**Sometimes you win, sometimes you lose, sometimes it rains. (Bull Durham,  
1988)**

**From:** [Long, David](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [REDACTED] [Jean Long](#); [Jonathan Long](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 10:10:42 AM  
**Attachments:** [Outlook-hxwadzxr.png](#)

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David T., Jean M., and Jonathan D. Long

[REDACTED]

December 13, 2022

National Guard Bureau  
ATTN: Ms. Kristi Kucharek  
3501 Fetchet Avenue  
Joint Base Andrews, MD 20762-5157

To whom it may concern:

We are strongly opposed to the proposed expansion of current military airspace in northern Michigan based on the negative impacts it could have on the future environmental health of the Au Sable, Manistee, and Muskegon River systems and our enjoyment of these systems. These systems are enjoyed by not only their residents, but also by the significant influxes of seasonal residents, hikers, bikers, hunters, fishers, photographers, and outdoor lovers in general. In addition, the airspace expansion as well as the land-based expansion, which we also strongly oppose, are expected to have negative impacts on local economies and real estate values.

We bought our piece of Pure Michigan in 1984, initially camping on our property and then building a house. We are in Lovells along the east side of the North Branch of the Au Sable River. When we bought the land, we knew about the military presence. Military activities are to the west of the river. We could hear artillery fire and the detonation of bombs, but we were able to deal with this. The military working with the Au Sable-Manistee Action Committee (AMAC), of which David was a member, created agreements to keep the impacts of the training activities at manageable levels.

Unfortunately, AMAC is no longer active, and the intensity of training activities has escalated unchecked. Now all summer and during portions of the winter, bombs and low flying jets rattle our windows and house, causing objects to fall off shelves, dry wall nails to pop out, and our pets to shiver. Increasing the sorties will just amplify the noise. We don't need this. We are often taken aback when outdoors by low flying aircraft, a situation that will be worse with the plan to lower flight paths to 500 feet. We don't need this. Concerns have been raised about increased chaff and flare releases, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest. We don't need this.

In the early 1900's, Rasmus Hanson made two decisions that have had unanticipated long-term effects on Michigan. One was the granting of land for the establishment of Camp Grayling for training the Michigan National Guard and the other was the intense clear-cutting of Michigan's forests. In terms of the latter, Mr. Hanson was not the only one, and the effects

of the clear-cutting are still with us today and most likely the Michigan ecosystem will not return to what it was in the pre-logging era (e.g., Long et al., 2010).

Since the gift of Mr. Hanson, Camp Grayling has expanded to occupy 148,000 acres. Spanning Crawford, Kalkaska, and Otsego Counties, it is now the largest U.S. National Guard base. Camp Grayling no longer trains just the Michigan National Guard, but now Guard and Reserve units from states across the U.S. and globally, which was not the original intent. Coinciding with this expansion has been the increase in the activity of the Air National Guard, which also is not limited to training Michigan troops.

The mistakes made by Mr. Hanson in his gift are two-fold: 1) trusting the military to maintain training activities within reason and 2) having his gift impact the headwaters of Au Sable, Manistee, and Muskegon River watershed systems (e.g., the biological, chemical, and physical processes and their interactions). The headwaters of the AuSable, Manistee, and Muskegon Rivers systems are the cradles of these Pure Michigan resources. These systems are considered to be fragile, and it is this fragility that makes these such wonderful cultural, recreational, and economic resources for Michigan citizens and beyond. They are world-class fisheries.

For us (and others), the intensity of land and air training is out of control and portions of watershed have been polluted. For example, military activities have introduced perfluorooctanesulfonic acid (PFOS) into rivers, groundwater, and lakes, making some of these resources unusable. Full impact of the pollution from military activities on the river systems is unknown. For example, a question was raised by AMAC about possible pollution of groundwater at the bomb and artillery impact sites and if a contaminant plume has been created that could adversely affect groundwater and rivers in the future. This was never addressed. The lack of measurements and understanding means the total impact on the current environment and environmental legacy of military activities in these watersheds is unknown.

We realize there has been an Environmental Assessment done and that a preliminary draft summary of the findings concludes no increased impacts on the environment, ecosystems, and citizens of the watershed. However, the validity of this conclusion is being questioned. The concern is the qualifications (e.g., degrees) and expertise of those who prepared the assessment. The main clients of two companies involved in the preparation of the report, Marstel-Day and Juniper Environmental, are military, both federal and state. The unbiased nature of the findings is being questioned.

We are not the only ones strongly opposed to the land and air expansions. Consider that a Facebook page has been created addressing the expansion. The page, recently established, has over 6K members and counting (Facebook, 2022). Needless to say, expansion, land or air, is not supported and is felt to be egregious. Because of the lack of support for expansion, Camp Grayling's Commander, Col. Scott Meyers questions the patriotism of the communities. If allowing access to public land and air by the National Guard (and others) is the bar measuring patriotism, then Meyers must be reminded that no other state has sacrificed more of its public land in support of the National Guard than Michigan. The communities, county, state have continually demonstrated patriotism and support to Camp Grayling for over 100 years.

We are not anti-military, and this is not a NIMBY situation. David was in the artillery (forward direction control) and military intelligence. The military, of course, needs areas to train personnel to defend our country. However, such training needs to be done in a prudent manner in an area that is less fragile and has less impact on the public. Camp Grayling and

associated military activities have impacted the enjoyment and livability (both visually and physically) of this wonderful Pure Michigan resource from the beginning. Such activities in this resource are clearly a mismatch.

In sum, the lack of regard by the military, state and federal elected officials and their appointees for the welfare of the citizens of northern Michigan, for Michigan's environment and for its ecosystems is inexcusable and appalling. Michigan does not need more military activities, whether land, or air. Do we need to train our Military? Yes. Do we need to use additional Pure Michigan natural resources to do it on public? No. **Our request is that you deny this air expansion.**

#### References

Long et al. (2010) <https://www.dropbox.com/s/muwssubghz29i3r/Logging.pdf?dl=0>.  
Facebook (2022) Camp Grayling expansion. <https://www.facebook.com/search/top?q=camp%20grayling%20expansion>

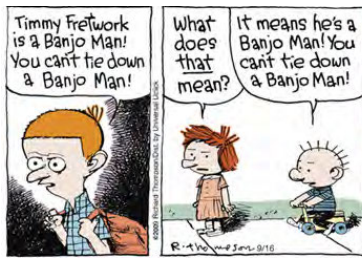
Sincerely,

David T. Long (PhD), Professor Emeritus, Aqueous & Environmental Geochemistry  
Dept. of Earth and Environmental Sciences, Michigan State University, [REDACTED]  
Jean M. Long (MS), Retired Instructor in Horticulture, Lansing Community College  
Jonathan D. Long (PhD), Research Scientist, University of Illinois positioned at European  
Organization for Nuclear Research, CERN

cc:

President Joseph Biden  
Governor Gretchen Whitmer  
U.S. Senator Debbie Stabenow  
U.S. Senator Gary Peters  
U.S. Representative Elissa Slotkin

Dr. David T. Long is professor emeritus from Michigan State University. He has taught courses in how the Earth works, earth science, environmental science, environmental geochemistry, biogeochemistry, and aqueous geochemistry. His aqueous geochemical research involves work to understand and model fundamental physical, chemical, and microbiological processes that influence water as it moves through its cycle (atmosphere, hydrosphere, lithosphere, biosphere). His environmental geochemical studies use knowledge gained from the aqueous geochemical research to solve problems that might adversely influence the environment and human and ecosystem health, particularly those that arise from human activities. Relevant to the comments above, he has studied Michigan's groundwater and surface-water systems (rivers, inland lakes, and Great Lakes) at local and watershed scales (past and present) and the influence of the types of land use on these systems.



*Michigan State University occupies the ancestral, traditional, and contemporary Lands of the Anishinaabeg—Three Fires Confederacy of Ojibwe, Odawa, and Potawatomi peoples. The University resides on Land ceded in the 1819 Treaty of Saginaw.*

**Sometimes you win, sometimes you lose, sometimes it rains. (Bull Durham, 1988)**

**From:** [STEVEN LOVING](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion - NO ONE wants it  
**Date:** Sunday, December 11, 2022 8:45:19 PM

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Hello - I have read some of the public information, am a property owner, and have enjoyed the Grayling area since my youth.

**The biggest issue is the process**, you have not engaged in much public debate at all gathering 360-degree inputs. The process lacks transparency, connected trust, is heavy-handed, and quite frankly sneaky. What an embarrassment.

Please do the right thing, extend any currently planned forced changes, and engage with your neighbors. We would like to trust you, but right now we do not.

Steven Loving



**From:** [ROBERT LUETJE](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Low level military aircraft  
**Date:** Saturday, January 14, 2023 4:36:36 PM

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The AuSable River is unique and must be protected. We have a large country and there are hundreds of alternative locations in less sensitive locations. "Go West " please!  
Bob luetje

Sent from my iPhone

**From:** [Rob Luscombe](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Saturday, January 14, 2023 10:57:04 PM

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To whom it may concern,  
I would like to voice my concerns regarding the expansion of both the camp and the fly over area.

This area while conveniently located near population areas, is not in the best interest of those who wish to retreat from the hustle and bustle to find some peace and quite.

I am against this expansion.

Rob Luscombe

**From:** [JJ](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Fw: ALPENA SUA EA  
**Date:** Thursday, December 8, 2022 5:11:39 PM

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JUST SAY NO TO CAMP GRAYLING EXPANSION & NO TO AIRSPACE CHANGE Camp  
Grayling Airspace expansion

--- Forwarded Message -----

**From:** JJ [REDACTED]  
**To:** [REDACTED]  
**Sent:** Thursday, December 8, 2022 at 09:38:32 AM EST  
**Subject:** Fw: JUST SAY NO TO CAMP GRAYLING EXPANSION & NO TO AIRSPACE CHANGE

Meant to include you as well!

----- Forwarded Message -----

**From:** JJ [REDACTED]  
**To:** [REDACTED]  
**Sent:** Wednesday, December 7, 2022 at 03:15:55 PM EST  
**Subject:** JUST SAY NO TO CAMP GRAYLING EXPANSION & NO TO AIRSPACE CHANGE

Hello everyone!

Short and to the point JUST SAY NO TO CAMP GRAYLING EXPANSION & NO TO AIRSPACE  
CHANGE- do your jobs and protect PURE MICHIGAN and save our natural resources from destruction!!  
Camp Grayling already leases enough land!!! JUST SAY NO TO BOTH!!!! From concerned Michigan  
Citizens and who live in the area!!!

Thank you!

Janet & Scott Lukas  
[REDACTED]

**From:** [kathy lutzke](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 13, 2022 11:19:31 AM

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I am ADAMANTLY opposed to Camp Grayling taking over property they do not need and do think is used. IT IS USED AND IS NOT VACANT. All of the land under question is used by hunters, trappers, fishermen, ATVers, snowmobilers, Nordic skiers, hikers, snowshoers, rockhounds, plant/fungi collectors, photographers, stargazers, backpackers, equestrians, canoers/kayakers and those that seek a quiet respite. Camp Grayling DOESN'T NEED IT!

I appreciate Camp Grayling and the service they provide to the country, but this is an unneeded land grab. What makes Michigan great is our natural resources which have already been depleted/destroyed. Natural resources shouldn't be just for those who can buy their own private property. We need space that EVERYONE can enjoy.

When the government cleans up the watershed surrounding the old Wurtsmith Air Force base, maybe it can be taken under consideration. Until that time, maybe Camp Grayling should consider the Wurtsmith property instead.

Kathy Lutzke



Fisher, Hunter, Camper, Hiker, drinker of fresh water.

**From:** [Mark Luttenton](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 12:28:12 PM  
**Attachments:** [MIANG letter luttenton.pdf](#)

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Dear Ms. Kucharek,


Please find attached my comments related to the MIANG proposal to modify the MOA in Northern Michigan.

Please do not hesitate to contact me if you have any questions.

Sincerely,  
Mark Luttenton

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***Mark R. Luttenton, Ph.D.***  
**Interim Director**  
**R. B. Annis Water Resources Institute**  
**Program Director, MS in Water Resource Policy**  
[www.gvsu.edu/acad/water-resource-policy-ms.htm](http://www.gvsu.edu/acad/water-resource-policy-ms.htm)  
**Professor of Biology**  
**Grand Valley State University**



January 13, 2023

VIA EMAIL

National Guard Bureau  
Ms. Kristi Kucharek  
3501 Fetchet Ave.  
Joint Base Andrews, MD  
20762-5157

Re: Proposal Alpena special air use airspace complex Draft Environmental Assessment

Dear Ms. Kucharek:

I have been a faculty member at Grand Valley State University for over 30 years. I have taught courses in general ecology, invertebrate biology, aquatic ecology, fisheries biology, environmental science, community ecology, wetland ecology, and stream ecology. I have been conducting research in aquatic ecology and watershed function for over 40 years. During the past 10 years much of my research has been focused on lakes and streams in the region surrounding Grayling, and I conducted my doctoral dissertation research in Northern Michigan. Consequently, I believe that I have a good understanding of the aquatic resources of the region and the watersheds that support those resources.

I have reviewed the Draft Environmental Assessment (EA) related to the MIANG proposal and have done a significant amount of research on the types of military equipment and training activities noted in the EA. In addition, I am aware that the Michigan National Guard (MNG) is proposing a significant expansion of Camp Grayling which will encompass many of the same areas included in the MIANG EA.

In my professional opinion, the proposed modifications to the MOA and the training activities outlined in the EA will have or is very likely to have unintended adverse impacts on the ecology of the terrestrial and aquatic ecosystems within the MOA.

In short, the Draft EA of the proposed expansion/modification fails to provide a complete assessment of the potential impacts from both individual and cumulative effects of training within the MOA. Indirect ecological effects will result from each training activity including elevated sound, increased atmospheric shockwaves, aircraft fuel combustion, deployment of chaff, deployment of flares, munitions, and electronic countermeasures among others. Direct ecological impacts will result from the concentration of training events that will occur within the existing and reconfigured operations area. Taken together, these activities will or are very likely to result in negative effects on both terrestrial and aquatic ecosystems. It is reasonable to suggest that unintended impacts may have already accumulated given the long history of training in some portions of the MOA.

Issues that are not adequately addressed in the EA are contaminants released into the environment from the use of munitions. These include metals and perchlorate which are a risk to wildlife and humans. The wildlife and human health risks from exposure to combustion products from chaff cartridges and flares is generally dismissed. The risk to wildlife from

exposure to electromagnetic fields is not fully addressed. The health risks associated with jet fuel combustion is not adequately addressed. And the threat to wildlife, particularly migratory birds, due to low altitude flight training is not thoroughly addressed. This includes threatened and endangered species. Indeed, the EA often relies on information found in earlier military documents to conclude that there will be no impact due to flight operations.

In sum, the long-term impacts that have likely occurred to date and will continue into the future will result from an accumulation of an array of training byproducts in the MOA. The impacts to wildlife and humans due to byproduct chemical exposure will be compounded by the exposure to physical factors such as noise, electromagnetic radiation, direct visual and potentially physical (e.g., bird collisions) contact.

I am writing to request that the MIANG be required to complete a more thorough and critical evaluation of the potential environmental impacts that will or are very likely to result from the proposed modified MIANG operations in Michigan.

Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script that reads "Mark Luttenton".

Mark R. Luttenton, Ph.D.  
Professor of Biology  
Grand Valley State University

**From:** [Terry Lyons](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 9:44:56 PM

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Unfortunately, this Airspace usage proposal and the accompanying EA were only discovered in the Grayling area in the last few weeks. The current time allotted for comment does not provide time to study the EA and make in depth comments to a complicated proposal. The following are my primary concerns with both the project and the EA as they currently exist. The Environmental Assessment for the Alpena SUA is deficient in multiple areas. Here are a few that I feel have been overlooked. The EA does not investigate the impact of additional pollution the result of greater aircraft traffic and radar evasion tactics on the AuSable and Manistee rivers and their tributaries. It also ignores the potential effect of the proposed airspace changes on the trout that live in these streams. The AuSable and Manistee rivers and their tributaries are all protected from certain activities by the Michigan's Natural Rivers program. The AuSable and Manistee are also "Blue Ribbon Trout Streams" that are also granted special protections. Both of these programs offer no protection against the potential threats this proposal presents. These streams are known as some of the best trout streams east of the Rockies. They must be protected at any cost. They are already in decline and this EA does not address the possibility of further degradation caused by additional aircraft activity.

Similarly, the surrounding public forest lands draw sportsmen and women from across the nation to hunt for deer, bear, ruffed grouse, and woodcock. There is no mention in the EA of the effects of more, louder and lower aircraft traffic will have on these species and the sportsmen that come to pursue them. Recreation is the primary source of revenue for the local units of government that will be impacted if this proposal moves forward. People have invested in homes, recreational property, cabins and recreational vehicles to get closer to the places where they can hunt, fish, birdwatch, operate their ORV's, and multiple other outdoor activities. The EA does not discuss how these people will be affected both economically and physiologically and what will happen to property values if the proposal is implemented. It is hard to imagine that property values and people's health will not be negatively impacted by more noise and pollution. Quality of life is hard to measure but more jet exhaust, chaff, and noise are not why people have been drawn to this area. The EA does not give these subjects any consideration.

None of the proposed proposal options, are justified by the EA as it now exists. At this time with the support provided by the EA, only option "D" is acceptable. If the Air Guard is truly interested in putting forward an airspace proposal that is acceptable to the public they must consider doing a more complete assessment that provides justification for the proposed airspace changes and addresses the issues mentioned above and others too numerous to mention here.

Thank you for providing an opportunity to comment on this project.



Terry Lyons



USMC Veteran

**From:** [John Malouin](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 8:05:17 PM

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I am voicing my opinion AGAINST the proposed expansion of National Guard presence described above. Too much military activity on public lands already, we don't need more!!

Sent from my iPad

**From:** [Tim M. Gmail](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org; ng.mi.miarng.list.pao@army.mi](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 11, 2022 8:21:14 PM

---

To The person(s) in Charge of this Issue,

As a partial year resident and property owner on East Twin Lake in [REDACTED], I am totally against the air space and ground space expansion of Camp Grayling.

Under the current conditions you already rattle my picture windows to the point I am nervous to be near them when you randomly drop your large bombs. We enjoy the natural areas around us and I feel this will be detrimental to the ability of concerned property owners, tax payers and concerned voters to utilize our great natural resources. I think the militaries history with PFAS and military camp water contamination speaks for itself.

I normally support our military, but I feel your secret air space expansion of Camp Grayling diminishes your credibility and any future needed support. I personally believe your military pilots secretly use the island in East Twin Lake as an electronic bombing target as they fly over our lake.

Please come up with a better and different plan to meet your needs without jeopardizing our limited and wild natural resources.

Sincerely,  
Tim Manganello  
[REDACTED]

**From:** [Tim M. Gmail](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, December 17, 2022 6:49:04 PM

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To The person(s) in Charge of this Issue,

As a partial year resident and property owner on East Twin Lake in [REDACTED] I am totally against the air space and ground space expansion of Camp Grayling.

Under the current conditions you already rattle my picture windows to the point I am nervous to be near them when you randomly drop your large bombs. We enjoy the natural areas around us and I feel this will be detrimental to the ability of concerned property owners, tax payers and concerned voters to utilize our great natural resources. I think the militaries history with PFAS and military camp water contamination speaks for itself.

I normally support our military, but I feel your secret air space expansion of Camp Grayling diminishes your credibility and any future needed support. I personally believe your military pilots secretly use the island in East Twin Lake as an electronic bombing target as they fly over our lake.

Please come up with a better and different plan to meet your needs without jeopardizing our limited and wild natural resources.

Sincerely,  
Tim Manganello

[REDACTED]  
Tim Manganello

Tim Manganello

Sent from my iPad

**From:** [Tim Manhganello](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org; ng.mi.miarng.list.pao@army.mi](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 21, 2022 12:23:04 PM

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To The person in Charge of this Issue,

As a partial year resident and property owner on East Twin Lake in [REDACTED], I am totally against the air space and ground space expansion of Camp Grayling.

Under the current conditions you already rattle my picture windows to the point I am nervous to be near them when you randomly drop your large bombs. We enjoy the natural areas around us and I feel this will be detrimental to the ability for tax payers and voters to utilize our great natural resources.

I normally support our military, but I feel your secret air space expansion of Camp Grayling diminishes your credibility and future support. I believe your military pilots already secretly use the island in East Twin Lake as an electronic bombing target as they fly over.

Please listen to the public comments regarding this issue !

Regards,  
Tim Manganello

Sent from my iPad

**From:** [Tim M. Gmail](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 11, 2022 8:38:00 PM

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To The person(s) in Charge of this Issue,

As a partial year resident and property owner on East Twin Lake in [REDACTED], I am totally against the air space and ground space expansion of Camp Grayling.

Under the current conditions you already rattle my picture windows to the point I am nervous to be near them when you randomly drop your large bombs. We enjoy the natural areas around us and I feel this will be detrimental to the ability of concerned property owners, tax payers and concerned voters to utilize our great natural resources. I think the militaries history with PFAS and military camp water contamination speaks for itself.

I normally support our military, but I feel your secret air space expansion of Camp Grayling diminishes your credibility and any future needed support. As an aside, based on their flying paths, I personally believe your military pilots secretly use the island in East Twin Lake as an electronic bombing target as they fly over our lake.

Please come up with a better and different plan to meet your needs without jeopardizing our limited and wild natural resources.

Sincerely,  
Tim Manganello

[REDACTED]

Tim Manganello

Tim Manganello

Sent from my iPad

**From:** [Paul Mangeot](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 7:53:14 AM

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Dear National Guard Bureau,

As a former OHARNG Army aviator who spent time training in Grayling, I appreciate the importance of varied and quality training facilities. However, the negative environmental, noise, and human impact of the proposed expansion far outweighs the increased capacity.

Our natural and wild areas are national treasures that we must protect with the same vigor as any foe. The Au Sable river watershed is one such National treasure.

The environment impact study which was completed over simplifies the impact and cherry picks data to support expansion. The lowering of the MOA floor will negatively impact the tourism industry, upon which the surrounding communities rely. The watershed, which is already under pressure, will be impacted by increasing noise levels, and by adding chaff and flare residue and carbon into the watershed.

During a period of increased noise abatement pressure and environmental sustainability focus world wide, I implore the National Guard Bureau to join in preserving our country's natural areas. I appreciate that this is not in your mission statement, but must be an ongoing consideration if we are to have this natural resource for future generations

Regards,

CW2 Paul T Mangeot

**From:** [PETER MAPES](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Changes to Michigan Military Airspace Usage  
**Date:** Wednesday, December 14, 2022 10:38:45 PM

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Thank you for asking for comments on the military airspace over Michigan.

Generally, I find the proposed changes to be better at deconflicting military and civilian Traffic. That being said, the following changes should be added;

The western portion of the Steelhead MOA should have it's floor raised to 10,000 feet MSL from the western shore of the thumb to the western borders of the airspace. This is necessary to deconflict civil aircraft transiting the northern neck of the Saginaw Bay while allowing single engine civil traffic to climb high enough to stay within gliding distance of land. Varied single engine civil aircraft cross Saginaw Bay between Point Lookout (north of Point AuGres) and Sand Point on the thumb of Michigan. Depending on the aircraft, they need to climb to altitudes between 5,500 MSL and 8,500 MSL to cross the Bay while staying within gliding distance of land. Since Charity Island has no safe landing terrain, aircraft must be able to glide to the east or west shore of the Saginaw Bay. When IFR operations are required, the current 6,000 foot MSL floor of Steelhead precludes clearances at altitudes which would permit a safe glide. The 10,000 foot MSL floor for the western Steelhead MOA would fix this and improve safety without significantly impacting military operations.

Military aircraft should not operate below 10,000 feet MSL at speeds in excess of 250 KIAS unless on a published IR or VR route. Most MOAs should floor at 10,000 feet MSL over the land of the lower peninsula of Michigan due to the compression of civil traffic over the peninsula due to the funneling effects of Lakes Huron & Michigan.

Military aircraft need to Squawk when operating in any airspace except restricted and prohibited areas. This will disclose them to aircraft carrying active beacon interrogators and minimize the chance of a midair collision. In addition, military aircraft need to use ADS-B transmissions so they can be identified on TIS traffic.

Lights out operations need to be prohibited for military aircraft when they are operating outside of Restricted or Prohibited Ares. Lights out operations in airspace shared with civil traffic, like MOAS, is a high midair collision potential operation.

Best Regards,

Pete Mapes  




**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 1:21:41 PM

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Dear Sir or Madam:

I am writing to object to the proposed expansion of activity of the Michigan National Guard in northern Michigan. I own more than 100 acres of land and several cottages on the main branch of the Au Sable River in Grayling Township. The property has been in my family for three generations, and the cottages are used by my whole extended family. Canoeing and kayaking, swimming, fishing, hiking, biking, birding and cross skiing are some of the activities we enjoy in the area. We love the peace and quiet of this special part of Michigan.

The proposed low-level training will have a significant impact on the area. The increase in frequency of flights and the increased noise level will certainly affect our enjoyment of our property and all the recreation areas and public land in the area. It will also adversely affect the real estate value of our property. The increased pollution will have a negative affect on the whole Au Sable watershed (which of course is one of the most famous trout streams in the Mid-west). Has there been any analysis of the impact on Kirtland Warbler habitat?

The proposed expansion of the base and the increased use of airspace will destroy the beauty of this part of Michigan. Please do not allow this happen.

Sincerely,

Barbara Martin  
[REDACTED]

**From:** [David Martin](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn:Alpena SUA EA  
**Date:** Monday, December 12, 2022 10:51:37 AM

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Hello,

I am writing to express my opposition to the proposed expansion of Camp Grayling. As a Michigan resident who frequently enjoys the North Branch of the Au Sable River I see no reason why Camp Grayling should be allowed to expand in the area. They are already one of the largest National Guard sites in the country and a further expansion is not needed or required for National security or any other reason.

This expansion is not good for the environment, the residents or the State.

Please register my objection to this expansion.

Thank you,

David F. Martin

David Martin, Associate Broker  
Greenridge Realty



**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Expansion of Camp Grayling  
**Date:** Saturday, January 14, 2023 12:46:56 PM

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I am not in favor of the proposed expansion of Camp Grayling. As a landowner in the Mio area, I understand the importance of solitude, wildness and having a Blue-ribbon Trout River as the Au Sable nearby. It is very important to the regional economy that these things are preserved. The expansion will allow the Michigan Air National Guard to fly more training missions which are noisy and will cause more pollution in the local area of noise, chaff, and PTSA's which still propose a health threat among the residents. Expansion would also affect the water qualities of the streams, rivers. I believe that the abilities of this expansion can be achieved in a different location where it will not have such an environmental impact on the community.

Sincerely,

Kirk Martin

[REDACTED]  
[REDACTED]

**From:** [John McCandless](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, December 9, 2022 10:34:26 AM

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I have reviewed the draft Environmental Assessment for the Modification and Additional use of airspace at the Alpena Special Use Airspace Complex.

I am a retired U.S. Navy Captain, a resident of [REDACTED], Mich. And a part owner of vacation property in [REDACTED], Mich..

The key to maintaining a strong and ready military is to provide our men and women in our Uniformed Services with unmatched levels of training on state-of-the art military hardware and systems. We owe it to our all voluntary forces to endorse this proposed expansion of Alpena Special Use Airspace Complex. I fully endorse the expansion.

John G. McCandless  
Captain, U.S. Navy (Ret.)

**From:** [Mary McCaughey](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 6, 2023 6:24:04 PM

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I am a resident of [REDACTED] just east of Port Austin, MI. I have long supported our frequent flyovers of military aircraft. We have never had nighttime flyovers. I would support nighttime flyovers until sunset. After dark, this would be disruptive to small children. Thanks for your consideration.

Mary McCaughey  
[REDACTED]

Sent from my iPhone

### Steelhead Low MOAs

While we welcome the new proposed ceilings of 5,999 feet AGL, we continue to hear concerns from many members about the Steelhead Low North and Steelhead Low East MOAs 500-foot AGL floor altitude. Pilots indicate there are numerous obstructions, including wind farms, that make flying at low altitude in this area impractical (see graphic below).

While the lower ceiling allows GA aircraft to overfly these MOAs, the 500-foot floor would lead many pilots to avoid the area entirely, losing the ability to do lakeshore flying and efficiently fly to many airports, thus leading to less visitation.



Not only would GA pilots not safely be able to fly beneath the Steelhead Low North and Low East MOAs, but it is questionable whether military pilots would be able to fly as low as 500 feet AGL in an area proliferated with wind turbines reaching as high as about 500 feet AGL.

While AOPA does not feel that the Steelhead Low MOAs should be dispensed with entirely, as is suggested in Alternative 2 of the EA, we do advocate for a higher floor more reflective of what the military will likely be able to use, given the presence of these high obstructions in the area.

We would also like to note that, while the summary of the FAA Airspace Study notice states that “No restrictions will be imposed on nonparticipating Visual Flight Rules (VFR) aircraft,” AOPA’s broader 2019

survey<sup>1</sup> on SUA showed most VFR pilots choose not to fly through active MOAs. About two-thirds of pilots indicated that when flying VFR (not on an IFR flight plan) that they had not flown through a MOA when they were aware it was active. This shows most pilots treat active MOAs as Restricted Areas and would route around the airspace, at great cost to the operator and with potentially lost revenue for underlying airports and communities.

Thus, consistent with our earlier comments on the Steelhead MOA complex, we believe the floor altitude must be higher. The lowest the floor altitude could be in this area is 3,000 feet MSL. This floor altitude would allow VFR aircraft maneuvering space to transit to and from airports without entering active SUA.

There are also concerns with limited communications and radar coverage at low altitudes in this area, with aircraft departing local airports not able to communicate with ATC, or obtain radar service, until they are well above 500 feet AGL.

### **Airspace dynamic deactivation documentation and real-time status notification**

While we are pleased that this proposal includes a legal requirement that the airspace must be activated by NOTAM at least four hours in advance, we still have concerns about the mechanism with which the ANG will disclose and publicize the procedures for airspace dynamic deactivation. We have heard from our members that there are many instances of the existing airspace being activated and not utilized or cancelled early and not returned for civil use.

As is required in Section 1085 of the 2021 National Defense Authorization Act (NDAA)<sup>2</sup>, GA pilots must be given the ability to find out, via electronic means, the real-time status of SUA – both on the ground during flight planning as well as once airborne. This is especially important in a large SUA complex like Alpena.

During preflight planning pilots can access SUA information via NOTAMs and scheduled SUA information via SUA.FAA.gov. If a pilot operating under IFR sees the SUA overlying or near their departure or destination airport is scheduled to be active, the pilot has no choice but to amend their flight to arrive before the SUA's activation or after it is scheduled to be inactive.

The GA flying public does not have access to Letters of Agreement or other information that states air traffic control will coordinate with the military to give way to IFR GA aircraft to allow them access during a SUA's scheduled utilization. It is not reasonable to think a pilot will expend the money and time to fly IFR under the possibility the scheduled time in SUA.FAA.gov is incorrect. Pilots flying IFR are trained to plan for not having any access to SUA when the airspace is active and will delay their flights if a destination is located below the SUA.

If there is to be "flexible use" or "dynamic deactivation" of the airspace formally documented with the FAA, that arrangement should be publicly disseminated so pilots can be informed that they will be provided egress or ingress to underlying airports with minimal delay. AOPA agrees this is a significant mitigation as it facilitates airport access, but only if pilots are told this is the case. Any arrangement must be noted for each airport in FAA publications utilized by pilots. For example, if it is the proponent's intention to release the MOA when IFR aircraft are transiting the airspace, it must be documented so civil aircraft operators understand they will

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<sup>1</sup> <https://eaa1361.org/wp-content/uploads/2019/03/AOPA-SUA-Survey-2019.pdf>

<sup>2</sup> [Text - H.R.6395 - 116th Congress \(2019-2020\): William M. \(Mac\) Thornberry National Defense Authorization Act for Fiscal Year 2021 | Congress.gov | Library of Congress](https://www.congress.gov/116/legislation/house/text/2019/house-text/6395); page 134 STAT. 3877

receive airspace access with minimal delay. Without clear communication of the mitigation to the pilot community, it is effectively nonexistent and ineffective.

In addition, pilots operating under VFR must be able to easily determine whether the MOAs in question are active or not. Currently, this is a cumbersome process, with pilots either having to make a phone call before departure or a radio call after departure to inquire about the SUA status with ATC. In some cases, this can take upwards of 15 to 30 minutes, which is unreasonable.

All of this reinforces our assertion that a system providing information about the real-time status of SUA, as required by the 2021 NDAA as noted above, must be implemented immediately. This will allow pilots to make an informed decision whether or not to transit the airspace and will mitigate the automatic avoidance of MOAs referenced earlier in these comments.

### **Requirements for lights-out training**

The existing Pike West, Pike East, and Steelhead MOAs are listed as approved for lights-out training per FAA exemption 7960I, issued August 10, 2017. Lights-out training allows military aircraft to turn off their exterior lights. In this exemption the FAA notes that the use of night vision goggles limits a pilot's ability to perform see-and-avoid; therefore, monitoring activities must be conducted to ensure participating aircraft are alerted to the presence of non-participating aircraft.

AOPA considers lights-out training to be hazardous for non-participating aircraft. First, the mitigations in place for non-participating VFR traffic are one sided. In other words, every strategy has been predicated on the ability of the military pilots to see-and-avoid civilian traffic, and for controllers to de-conflict traffic they may not be talking to. This seems to be the logical focus, as lights-out operations would make it impossible for civilian pilots to meet their obligation to perform see-and-avoid.

However, the inability of the general aviation pilot to protect himself or herself is the cornerstone of our objection. It is concerning for a pilot to completely relinquish their responsibility for their safety, and the safety of their passengers, to the pilot of another aircraft, especially one with whom they have no contact (visual or otherwise).

As this proposal would result in a significant increase in SUA in this area that would be used for lights-out training, the military should identify how this monitoring activity will be performed to ensure no increase in risk to general aviation aircraft flying through the airspace VFR at night.

Additional justification is needed on why lights-out training could not be limited to a finite area of the complex, such as the preexisting MOAs, instead of the entire expanded complex. Limiting the area where this activity takes place would reduce the extent of the hazard. Regardless, communicating the activities taking place in MOAs, per FAA requirements, is important so that general aviation pilots are aware of any hazards.

### **Conclusion**

While we appreciate the opportunity to comment on this proposal, and to encourage the FAA to make adjustments before it is implemented, the feedback from local pilots and airports continue to indicate the proposed SUA would have a significant impact. We are happy to support this effort and provide further data and input during the process.



Thank you for reviewing our comment on this important issue. Please feel free to contact me at 202-509-9515 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "J. McClay". The signature is written in a cursive, flowing style.

Jim McClay

Director, Airspace, Air Traffic and Security

**From:** [John Micallef](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Stop the Grayling expansion  
**Date:** Thursday, December 8, 2022 6:49:24 AM

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We don't want you encroaching on our pristine wildlife areas.

**From:** [Mary Michela](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Suspect][Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Wednesday, December 7, 2022 1:36:59 PM

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I am writing to protest the proposed airspace expansion as well as the Camp Grayling expansion. The Anglers of the AuSable have laid out many of the reasons to oppose these land and air assaults on our public lands, environment, and tourism industry in "Pure Michigan." These actions are opposed by many conservation and environmental groups, private citizens, and tourism-related businesses in our beautiful state. We do not believe the expansions are necessary for US security and we believe they are a violation of the public trust. Please don't allow these expansions to go forward.

Thank you,  
Mary Michela

"From Anglers of the Au Sable:

### **The Secret Expansion: The Camp Grayling Expansion Plan Just Got Worse**

With little notice, the Michigan National Guard on Nov. 14 unveiled a proposed expansion to current military airspace that will be, in terms of impact, as big or bigger than the proposed doubling of Camp Grayling. And we have only until Dec. 14 to offer our comments. That means we need you to again weigh in to protect the Au Sable ecosystem and angling experience.

This "Secret Expansion" dovetails right into the doubling of Camp Grayling, occupying both land and air for hundreds of new square miles. Together they would create an atmosphere that cannot coexist with outdoor tourism, outdoor economy, or real estate values in our communities.

The details are buried in the dense language of the Guard's own draft environmental assessment, which you can read here. But the purpose is clear, on page 8 of the paper: Give the Guard more opportunity for low altitude training in northern Michigan, including throughout the upper Au Sable watershed.

"Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL. The only current "low" airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions prohibit overwater flights."

That's bad and here is why:

- **Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.
- **Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West

Military Operation Area will pass over the mainstream and South Branch.

- Too Dirty: Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.
- Too Bad for Those Who Treasure Solitude: The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

NIMBY: Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

Promises Made, Promises Broken: Let's just focus on one: **PFAS**. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

The comment period on the proposed EA expires on December 14th.

**Written comments should be sent to the National Guard Bureau, Attn: Ms. Kristi Kucharek, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157 or emailed to [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with subject ATTN: ALPENA SUA EA.**

We need everyone, visitor and resident alike, to offer their comments against this quiet aerial expansion, before irreversible damage is done to the public lands, waters, and air of Northern Michigan. Your voice needs to be heard.

"I will continue to work hard to invest in our parks, recreation, and public lands so future generations can enjoy everything that Pure Michigan has to offer.

Governor Gretchen Whitmer, December 2, 2022"

You may have heard that Governor Whitmer named DNR Director Dan Eichenger acting director of the Department of Environment, Great Lakes and Energy (DEGLE). It's not clear what this means for the Camp Grayling expansion decision. An acting director has been appointed for the DNR, Shannon Lott, who has been serving as natural resources deputy director. And some have suggested Eichenger will return when a new DEGLE director is named.

But we need to remain active in opposing the National Guard's land grab and now, their drive to take over more and more of the air space over the Au Sable. Gov. Whitmer has a chance to turn her words into action by rejecting, either personally or through her appointees, these intrusions into our public lands and our public airspace. We all will be watching.

Joe Hemming"

**From:** [Milius, Hank](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source]  
**Date:** Tuesday, December 6, 2022 2:15:43 PM

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To whom it may concern,

Regarding the proposed expansion of Camp Grayling

Enough!

You have plenty of current land, air usage. Your actions speak louder than your promises!

You still have to answer for PFAS.

I do not support your request!

Thanks Hank & Terri



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The information contained in this transmission may contain privileged and confidential information. It is intended only for the use of the person(s) named above. If you are not the intended recipient, you are hereby notified that any review, dissemination, distribution or duplication of this communication is strictly prohibited. If you are not the intended recipient, please contact the sender by reply email and destroy all copies of the original message. E-mail transmission cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. The sender therefore does not accept liability for any errors or omissions in the contents of this message, which arise as a result of e-mail transmission. If verification is required please request a hard-copy version.

Code:ME12w2

**From:** [Ann Miller](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 4:15:46 PM

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Dear Ms. Kucharek,

Flygirls of Michigan, Inc. is a non-profit organization devoted to promoting the sport of fly fishing for women. Founded in 1996, our purpose is to make it easier for women get into the sport. Additionally, we are an open-gender group and welcome both men and women into our club. Since our inception, we have taught well over 1500 women to fly fish in our 25+ years of existence. We currently have about 300 members.

While our purpose is primarily education, we do support other groups that work hard to promote conservation in Michigan, especially as it pertains to cold water fisheries. To that end, we would like to publicly state that we do not support the Camp Grayling proposal to reconfigure their current charted airspace.

As anglers, hikers, bird watchers, mushroom hunters, photographers, and naturalists, we flock to the Au Sable and Manistee riversheds to enjoy and interact with nature. Increased noise of airplanes will be at odds for thousands of homeowners as well as wildlife. Financially, we support area businesses, pay taxes, purchase fishing, boating, and hunting licenses, have organized river clean-ups, and introduce out-of-state friends and family to the area to do the same. Expanding Camp Grayling and changing the airspace defiles the wildness and charm of northern Michigan.

In addition, we have already gone on record to denounce the expansion of the Camp Grayling. It is important to preserve and maintain our natural resources for all of us that reside in Michigan as well as tourists that visit. State management of public lands should require land for quiet use including fishing, hunting, hiking, and camping. It should also require public input by taxpayers.

Sincerely,

Ann R. Miller  
President & Co-founder, Flygirls of Michigan, Inc.

**From:** [Kurt Moehring](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Au Sable River  
**Date:** Saturday, January 14, 2023 7:11:20 PM

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Your Attention PLEASE,

Love my military. My old man is a VN vet (Tet) and my son will be shoving off to GA with the Army come April. I am a physician at the Redding VA in northern CA. All three of us our avid outdoorsman and fly-fisherman, having honed our skills on the AuSable River. Moreover, we come back to the AuSable year after year to enjoy the peace, serenity and beauty of not only the River, but Northern MI in its stunning beauty. I fear any further military or industrial expansion in this precious peace of the Great Lake State will adversely and possibly irreversibly alter not only the landscape, but the people and communities that have called this place home. Hope you read this far. Carpe Diem.

Kurt. Moehring, D.O.

Sent from my iPhone

**From:** [tony molis](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling expansion  
**Date:** Monday, January 16, 2023 11:13:23 AM

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This is Anthony Molis and I am totally against the expansion of Camp Grayling. The National Guard has not proven to be a good neighbor. They should clean up the PFAS mess that they left in the Grayling area and provide safe drinking water to the families that live there. Until that is taken care of I will remain against any more expansion of National Guard activities in the area. I do not want my property at [REDACTED] to become useless to myself and family.

Anthony Molis

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Sent from Gmail Mobile



**From:** [Keith Moorman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 11:36:59 AM

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As a Michigander who has spent a couple of weeks every summer for the last 23 years fly fishing the Au Sable river, I'm very concerned with the expansion that was proposed on November 14th. During my stays in past years the amount of jet traffic and bombing were somewhat jarring; I can't imagine what it would like be if there were 10 times this much noise and disruption. As for your data saying that there's decreasing population in the areas in which you plan on flying fighter jets below 1000 feet - well, I'm not a resident, so I'm not part of the "population". I know that the influx of *non-resident* seasonal fishermen, campers, hikers, etc has *increased* in the last few years. I'm asking you to ditch this planned expansion not of behalf of the "population", but on the behalf of the Au Sable river itself, the wildlife that would be negatively affected, and myself and thousands of others like me that treasure this beautiful wilderness ares.

Keith Moorman  
[REDACTED]

**From:** [Ronan Moynihan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 13, 2022 6:30:42 PM

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To whom it may concern,

I am writing this evening to voice my opposition to the proposed expansion of Camp Grayling and the accompanying airspace.

As an avid fly fishermen, lover of nature, and concerned citizen, I believe this expansion is absolutely unnecessary and will further contribute to the degradation of the beautiful surrounding natural environment. There are very few places in this world like the Au Sable watershed and it has already suffered enough as-is at the hands of our military with noise pollution, water pollution, equipment traffic, and destruction of landscape.

I could not be more opposed to these propositions, especially as they are not at all needed.

Sincerely,  
- Ronan Moynihan

**From:** [Mike Muston](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 7, 2022 4:09:43 PM

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I'm writing to voice my opposition to the camp Grayling expansion. I live less than 20 miles from the bombing range and can feel and hear the explosions from here. I'm far enough away that it's not an issue for me but it's a fact of daily living for people living closer and I'm sure they're used to it. I do, however, fish, camp and kayak much closer to these activities and accept it as a price to pay for knowing our troops are receiving the training they need. You've heard all the reasons for opposing the expansion from local organizations and municipalities and I am in agreement with them. This will not sit well with the people of northern Michigan if it is enacted.

Thank you,  
Michael Muston

**From:** [David N](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Expanding Camp Grayling  
**Date:** Saturday, January 14, 2023 3:15:41 PM

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No! Not necessary and once it is trashed by the National Guard there is no turning back. Have the National Guard/Camp Grayling cleaned up the PFAS from their use of fire retardants? NO! DNR should save Michigan public lands for the people who live here who appreciate our woods and waterways and who pay taxes! No benefit for the people of Michigan - they aren't even going to pay for using the land!! NO, NO, NO!!!

**From:** [Nelson, Kevin R.](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, February 5, 2023 7:42:18 PM

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I have always supported the Guard in the past, but no longer. I am disgusted with the proposal to expand when you can't even clean up the toxic waste you've already made. Shame shame shame-Go out to the Western UP

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Kevin R. Nelson, M.D.

Chief of Medical Staff  
Professor of Neurology  
University of Kentucky

**From:** [Amy Sackett](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 10:05:50 AM

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I am a property owner on the Ausable River and I oppose the expansion of the camp Grayling facility.

Amy New

**From:** [Newman, Peter Joel](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Terrible idea  
**Date:** Saturday, December 10, 2022 9:35:42 AM

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I think the proposed expansion of the airspace over the Au Sable River is not a good idea and should be reconsidered.

Peter Newman

**From:** [fred novack](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Wednesday, December 14, 2022 4:46:35 PM

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I am a long time resident of [REDACTED] Mi. Which is 1 mile west of Range 40. I know from first hand experience what aircraft activity can do. Not only to the habitat, human well-being but to real estate values. We experience A10 and F16 activity almost daily. Low flyovers are the norm not the exception. Even though there is an understanding that Guthrie Lake is a no fly zone and the altitude minimums are 5000 ft we still have tree top level flyovers.

Now if you want to increase air activity at Range 40, I suggest that you rethink the safety of doing that. Since it seems like the military doesn't give a hoot about civilians. The more activity there is the greater the potential for an accident to happen. As in the National Guards request for expansion the same issue constantly comes up- "Why can't you use the space you have more effectively."

Another consideration is why endanger more civilians, their homes and businesses when could easily use all the vacant land in the Upper Peninsula. Reopen K I Sawyer A.B. or Kincheloe A.B. and fly from there into miles and miles of unoccupied land.

If you start to use F35's there noise will exasperate an already untenable situation. Not to mention the use of heavier ordinance. There was a time when a practice bomb was used, now 500# bombs are used regularly. Dangerous, loud and concussive blast literally moves my house.

I could go on and on about issues including forest fires dangerously close to out subdivision as well as impact on the environment and the ground water.

In closing, as you can tell from my testimony above, I DO NOT SUPPORT ANY INCREASE IN AIRSPACE OR ACTIVITY FOR THE MICHIGAN ANG.

Thank you. Fred Novack, [REDACTED]

Sent from my iPad



**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 12:13:15 PM

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I oppose the lowering to 500 feet for military air flights over the Thumb of Michigan and NE Lower Michigan. I also oppose the

Lowering to 100 feet over water. Military Training air flights at this low altitude are harmful to people, farm animals, and wildlife. Flying 100 feet over water would disrupt Michigan's valuable fishery, boating, and tourism industry. As a home and property owner in both St. Clair and Sanilac counties of Mi., I know training air flights at these low altitudes will decrease Property value, quality of life, and damage local economies.

I respect the Air Force but I disagree with the lowered air flight heights.

Respectfully,  
Judy L. Ogden

**From:** [Layton, Andrew B Capt USAF 110 ATKW \(USA\)](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [KUCHAREK, KRISTI L GS-13 USAF ANGRC NGB/A4](#)  
**Subject:** FW: AIR SPACE PROPOSAL  
**Date:** Wednesday, November 30, 2022 9:12:37 AM

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Good morning, Kristi.

Here's one message we received last night regarding the Alpena airspace. FYSA, I replied this morning and directed this individual to the CRTC website and Draft EA.

Thanks!

Capt Layton

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**From:** Kathy oliver-kate [REDACTED]  
**Sent:** Tuesday, November 29, 2022 5:31 PM  
**To:** ng.mi.miarng.list.pao@mail.mil  
**Subject:** [Non-DoD Source] AIR SPACE PROPOSAL

Hello:

Could you please give me the information on the Air Space Proposal....yes I see in 2019 proposal concern for the air space in the Thumb area, but I am interested in the air space in Alpena Michigan and the surrounding area. I, for an example, live 4 miles from the airbase and my children and grand children in in the city of Alpena....I do not wish to have our homes turned in to loud jet noises..PERIOD! We live in this northern area for peace and quiet.

Another concern is the pollution in our drinking water. As I am sure you are aware we pull our drinking water I from Lake Huron. We Do Not wish to have that polluted in anyway! Let's face it ... it seems where the military places it's feet there is a clean up that has to be done. We are still dealing with the PFAS pollution here and In Oscoda that was left in the wake of the military.

The real bombing that goes on it the lake here is not good...I was told nets pick up the big pieces of the exploded bombs...what about the chemicals released into this lake and the microplastics that are left to effect our drinking water and our health!. I'm sure you wouldn't what your grandchildren drinking polluted water like that!!

Perhaps the Great Salt Lake Flats in Utah would be a good location!

I an against low flying or dropping bombs in our Lake...We live here...you can move on and not think twice about what you have done to harm us!

Please let me know what this New Proposal is about...the information available is null or very scant... perhaps for a reason?

Peace Up North,

Kate  
Sent from [Mail](#) for Windows

**From:** [Suzen Oliver](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] SUBJECT: ATTENTION; ALPEAN A  
**Date:** Thursday, December 8, 2022 1:38:08 PM

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To Whom it May Concern,

I have been following with horror the proposed quiet expansion of Camp Grayling and the proposed flight expansions of the Michigan National Guard to fly at 500ft. instead of 5000 ft. over Michigan homes, forests, streams and rivers. This cannot be allowed unless you have a majority of Michigan voters agree to it. I am sure there is ***not a majority*** of Michigan citizens that would approve this, which explains why it is attempting to be "quietly" accomplished.

Michigander's love our state and the environmental impact of this potential decision is not in the best interests of the inhabitants here – including humans, animals, plants and the air and water we need for existence. The people of Michigan will oppose you. Please put an immediate end to this expansion and proposal.

Very Sincerely,

Margaret S. Oliver  
Michigan Resident for 70 years.  
Resident of Livingston County

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"Be kind whenever possible. It is always possible."  
- The 14th Dalai Lama

**From:** Jennifer Ordway  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA.  
**Date:** Sunday, January 15, 2023 4:32:52 PM

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Hello,

My name is Jennifer Ordway and I'm a resident of [REDACTED] Michigan. I live right across the street from Lake Huron and only a few miles from the air base. I often go out and watch jets fly on warm summer days. The military has provided much needed income in our community, and I would love to support your endeavors. I'm 100 percent agreeable to expanding the airspace and training. The sound of jets are the sound of freedom and I welcome hearing them.

Thank You,  
Jennifer Ordway  
Sent from my iPhone

**From:** [DeAnna Orner](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, January 18, 2023 4:24:49 PM

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Greetings,

I write to you as newer homeowner near the banks of the beautiful AuSable River.

Our spring, summer and fall mornings are spent kayaking down the AuSable with regular sightings of bald eagle, otter, waterfowl and deer (rarely a human before noon).

Summer evenings are peaceful, with an occasional drive to Lovells for evening flyfishing.

Autumns are filled with hunting and evenings in front of our fire. We sit outside late at night to hear the coyotes and stargaze.

As I share these heartfelt sentiments for the AuSable, I equally understand the critical nature of the training of military. Moving the problem to someone else's backyard is not solution. Co-existence through respect will ultimately serve both interests.

When I hear the tremendous artillery booms, hear the fighter planes scream overhead, is my peace disturbed? Most certainly. Do I understand training is a cost of national defense? Absolutely. But now, as the Camp Grayling Camp and Air Force training expand, how much land is enough? What is the generational cost to this region, to the waters, to the people? A respect for natural habitats and the people that live in, and enjoy this region, will be a first step toward a trusting partnership.

May your decisions and actions be a legacy that you can proudly share for the generations.

"Of all the questions which can come before this nation, short of the actual preservation of its existence in a great war, there is none which compares in importance with the great central task of leaving this land even a better land for our descendants than it is for us." Theodore Roosevelt

Respectfully, DeAnna Orner

Sent from [Mail](#) for Windows

**From:** [Mark Ostahowski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 10:35:55 AM

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As a 33 year property owner and resident along the famous AuSable holy water, I can't tell you that I've ever heard a worse idea than expansion of the Grayling national guard and liberalization of its airspace.

This beautiful and storied area already tolerates low fly overs and bombs rattling windows. Outsiders and tourists are frequently dismayed by the current intrusions allowed.

But to increase this.... To allow increase number (up to 10X) and lower the "allowed" altitude ( down below 500ft) is lucancy.

With current cowboy pilots flying the river corridor at 200-300 ft in UHs what will happen when the allowed ceiling is changed?

To even propose this rape of northern michigan is unconscionable!!!!

Mark Ostahowski, MD



Sent from my iPhone

**From:** [Suzanne Ostahowski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 5:20:10 PM

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This email is to voice my opposition to the national guard expansion plans in the Grayling area.

I am a property owner on the AuSable river. We have dealt with PFAS concerns, our windows rattling, having planes fly over our home, and lots of loud bombing noises. We have never complained because we know the national guard is important. Enough is enough though - the people in Grayling have done their share to support the national guard. We must protect this precious river and forest area! We live here because we love the river and the wilderness. We do not wish to have it compromised more than it already has been.

Sincerely,  
Suzanne Ostahowski



[Sent from Yahoo Mail for iPad](#)



**From:** [Elaine Osentoski](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, January 10, 2023 6:23:26 PM

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Hello,

I am a lifelong resident of Michigan's Thumb. I would like to voice that I am **against** the lowering of the military airspace to allow flying as low as 500 feet. I am hopeful that the input of local citizens will be taken into consideration.

Thank you,  
Elaine Osentoski



**From:** [Gail Oswalt](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 4, 2022 9:44:21 PM

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Please don't expand Camp Grayling on the ground or in the air.

With little notice, on Nov. 14th, 2022 the Michigan National Guard on unveiled a proposed expansion to current military airspace that will be, in terms of impact, as big or bigger than the proposed doubling of Camp Grayling.

This "Secret Expansion" dovetails right into the doubling of Camp Grayling, occupying both land and air for hundreds of new square miles. Together they would create an atmosphere that cannot coexist with outdoor tourism, outdoor economy or real estate values in our communities.

The details are buried in the dense language of the Guard's own draft environmental assessment. The purpose is clear on page 8 of the assessment: Give the Guard more opportunity for low altitude training in northern Michigan, including throughout the upper Au Sable watershed.

"Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL. The only current "low" airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions prohibit overwater flights."

That's bad and here is why:

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who don't want Noise Pollution:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

**Promises Made, Promises Broken:** Let's just focus on one: PFAS. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

Michigan property owners, businesses and visitors can't afford the harm this expansion will cause. Stay within the vast amount of land Camp Grayling already has.

Thank you,  
Gail Oswalt

**From:** [Paladar73](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] National Guard Alpena  
**Date:** Sunday, January 15, 2023 2:38:10 PM

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I think it would be a good idea for the airspace.

**From:** [Nancy Parmenter](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 9:58:52 AM

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My family has owned a cabin in the Au Sable watershed for over thirty years. We are in the midst of spending thousands to accommodate the next generation. Our property is not large, but we treasure the vast area around us where we can hike and hunt and canoe and enjoy wildflowers in peace.

We are completely opposed to adding any more space or activities to Camp Grayling and upset beyond words at the obscure approach the authorities are taking. It is obvious that those in charge think they know better and plan to keep us in the dark as long as possible.

Nancy Parmenter



Sent from my iPhone

**From:** [virginia.pear](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Increased use of airspace  
**Date:** Monday, December 5, 2022 3:52:47 PM

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I am a summer visitor to the area that will be impacted by increase noise and disruption caused by military planes flying lower. I value the peace and quiet of the area as well as the joys of the fish, birds and wildlife that will be equally impacted by the noise of low-flying aircraft.

Please do NOT ruin my enjoyment of this lovely area, which depends on the visits of people like me for their economic well-being.

Virginia Pear  
[REDACTED] (former Michigander)

Dec. 6, 2022

National Guard Bureau  
Attn: Ms. Kristi Kucharek  
3501 Fetchet Ave.  
Joint Base Andrews, MD 20762-5157

Subject: ATTN: ALPENA SUA EA COMMENTS

Ms. Kucharek,

I am a full time, year round resident of [REDACTED] Huron County, MI. I have been a member of this community for 28 years.

The NGB has made public a Draft EA for the Modification and Addition of Airspace at the Alpena Special Use Airspace Complex, MI (Nov. 2022). There are 6 proposed changes to this airspace (p.11). The changes will be permanent. One of the major changes proposed significantly impacts the area I live, the Steelhead MOA.

The Steelhead MOA was created 50 years ago when the airspace of the Alpena SUA was configured. Military jets have trained at altitudes of 6000'-17,999'MSL since the SUA's creation. The primary users conduct combat training exercises with A-10 and F-16 aircraft (Table 2-9 pg. 22). Other than the noise of the 15-30 min. day and night sorties, the people and wildlife under the training are not negatively impacted by the military jets training overhead.

The noise level created by the training jets is tolerable and reasonable at present training altitudes (6,000'-17,999'MSL). The jets are high enough that their maneuvers do not feel threatening or unsafe to us on the ground. Civilian citizens here in the Steelhead MOA understand the need for and have always supported this military training.

This proposal makes major changes to the Steelhead MOA. The most significant change is creating the Steelhead Low MOAs, lowering the altitude for jets to conduct combat training maneuvers to 500'AGL-5,999'MSL. I have read the entire Draft EA, the Appendices, and the Draft FONSI. I am concentrating my analysis on the proposed changes that will affect my family and fellow citizens who live and work in Huron Co., as well as the wildlife in our area. My comments, therefore, are about the changes proposed to the Steelhead MOA, creating several Steelhead low altitude MOAs, and their effect on our area.

My overall comment is: There is not sufficient evidence and/or consideration of factors in this EA to conclude "... implementation of the Proposed Action would have no significant impact on the quality of the human or natural environment." (Draft FONSI pg. 5). Here are my specific comments regarding the insufficient analysis of the impact that creating the Steelhead Low North MOA would have on the people and wildlife:

#1) Obviously, the biggest concern to residents if the altitude allowed for combat jet training is lowered to 500' AGL- 5,999' MSL, is the drastic increase in noise from low-flying A-10s and F-16s. People are concerned about damaging their hearing and other negative impacts to their quality of life. These will not be fly overs. Jets will be doing tactical maneuvers with unpredictable changes in altitude and direction of flight and non-standard formations for a block of time (pg.14).

The land area where the newly created Steelhead Lows are is rural. The foundation of the economy is farming (crops, dairy, livestock, and wind farms). As noted in the EA (pg. 38), these areas are quiet with a usual daytime 40 dBA and a night time 34 dBA. An F-16 has a 115 dBA. The extreme loud noise of low flying jets will come at residents daily "an average" of 4 times, an estimated 22-24 days a month. There will be sorties during the day (7AM-10PM) and in the night (10PM-7AM). Sorties will go on for up to 15 minutes. (Table 2-6 pg. 21). There are usually two or more aircraft in a sortie practicing combat maneuvers in one area. How can all that exposure to loud noise not potentially damage the hearing of a farmer working in his fields? How about the children on the playground at recess? How will kids playing after school sports protect their hearing? Frequent loud noise exposure over time can have serious repercussions to hearing. I also do not see analysis of what Section 4.4 pg. 60 says the EA should take a look at besides the effect of the noise, things other than hearing loss, such as whether effects on humans would occur as far as speech interference, sleep disturbance or disruption of children's learning. These things deserve evaluation. This proposed change will be PERMANENT.

#2) There is not enough information in this EA to assess the possible damage to human health if the Steelhead Lows are allowed. Besides possible hearing damage, there could be harm to our respiratory systems, breathing exhaust from low altitude jets diving, climbing, and looping. There could be an impact on hearts and circulatory systems (pacemakers, AFib and other chronic conditions). Sudden loud noise coming fast out of the sky at a person could have nervous system repercussions, such as fight or flight response, PTSD, and negatively affect people with disabilities or other nervous system conditions. If an EA is not the tool to evaluate these possible negative affects to human health, then this proposal as is should not be approved until further evaluation is done.

#3) Safety of humans and wildlife has not been adequately considered in this EA for the proposed Steelhead Low North MOA. As noted in the EA, total sorties will increase. High performance maneuvering is the 2<sup>nd</sup> cause of mishaps (pg. 55 Section 4.2.1). More sorties, more jets, lower altitude, higher chance of collisions, which endanger pilots and people on the ground. We are particularly sensitive to this here in Huron County because of the military jet crashes in the early 1990s ("Fighter Crash Over Thumb Area Was Third in 14 Months", an article by Steve Drummond 3/4/92 apnews.com). In one collision, a pilot was killed. Miraculously no one on the ground was, but debris was scattered over 6 mi., some of it landing in a farmer's kitchen.

(Alpena SUA EA Comments/Penn pg. 3)

And this happened before the wind turbines came to the Thumb. There is only one mention I saw in the EA about the wind turbines (pg. 56 2<sup>nd</sup> paragraph) saying there are turbines and pilots should fly 500' above them. Huron County, MI has the largest installed wind energy base in the Great Lakes Region with 472 active turbines (thumbwind.com). Crainsdetroit.com had an article 3/8/2020 by Tom Henderson entitled "Huron Co., State's No. 1 Farming County, is Also Top Source of Wind Energy". The Thumb of Michigan where the Steelhead Lows are proposed, has 836 operating turbines (thumbwind.com). These turbines, which are from 427'-612'tall, present maneuvering challenges and are obstacles to safe low level combat training. Also, is there any analysis of possible damage to turbines from noise vibration from jet engines?

Bird aircraft strikes are also a safety issue. As mentioned in the EA (pg. 46), the area where we are in the Steelhead MOA, is in the Mississippi Flyaway, which is a heavily used waterfowl migratory route in the spring and fall. In Section 4.4.1, pg. 72, it is noted that most migrating birds fly between 500' and 1,000'AGL. This poses a bird strike risk to pilots flying in the proposed Steelhead Low North during migration. The solution cited on pg. 72 last paragraph, is to restrict the aircraft to fly no lower than 1,500'AGL within one nautical mile of the Lake Huron shoreline seasonally between May 15 and Sept. 15. The Tundra Swans and other migrating waterfowl come through here in late March and Nov., not between May and Sept. Not only do they come and stay for several weeks, but they fly in large flocks inland every morning to forage for food in the dormant corn fields and back to the lake to roost at night. So I do not see the one nautical mile restriction for low level military jet flying being a good solution for avoiding migrating bird flocks.

#4) *The low flying maneuvers will also impact other natural wild life, dairy cattle and other livestock.* The Bald Eagle and Golden Eagles are addressed in on pg. 73 of the EA. The National Bald Eagle Management Guidelines are to be followed; however, until a survey is made documenting eagle nests of the new Steelhead Low North MOA, if approved, the eagles will be at risk of being disturbed/harmed by low flying aircraft. Figure 4-2 (pg. 74) shows the most recent map of bald eagle nests. Lots of nests are in the proposed Steelhead Lows that would need to be avoided. It is questionable how this could be accomplished and monitored.

Will dairy cattle be upset by the loud noise and low flying jets while grazing? Will it change their milk production? How will sudden, loud, low flying jets affect other livestock such as pigs and beef cattle? The quiet, tranquil environment where these animals have grazed will be forever altered if jets are allowed to fly as low as 500'. Effects on livestock is not explored in this EA.

#5 The economy of Huron County will be greatly impacted if the Steelhead Low MOAs are approved. As you see on pg. 12, Huron County will be entirely in the Steelhead Lows. Our people are hard workers. Table 3-6 (pg.49) shows Huron County has the lowest unemployment rate of the counties on the table. We have the 2<sup>nd</sup> largest civilian labor force. Our economy is based on farming and tourism. Our people work hard on crop farms, dairy farms, and livestock



(Alpena SUA EA Comments/Penn pg. 4)

farms doing outdoor work, which will be negatively affected by loud low flying jets. Our economy also depends on tourism. People come here to get away from the hustle, bustle and noise of city life and enjoy nature in our state and county parks and nature centers. There are many campgrounds. Hotels are full in the summer as people come here for their vacations to relax, swim, boat, hike, and fish. In the fall there are a lot of hunters. Snow shoeing and cross country skiing are enjoyed in the winter along with ice fishing. Tourism in Huron Co. and the Thumb will be negatively impacted by loud, low-flying military jets.

#6) Also of major concern is property values. As you can see on Table 3-5 (pg.48), our population in Huron Co. has 80.9% owner occupied housing units. People choose to live and work here in this quiet, rural area. People from "the city" are looking for property to buy for vacation and retirement. They see the tranquil beauty of our area and want to live here too. If the Steelhead Low MOAs are approved, people will not want to buy property here and people who own property will not be able to sell it. It is not fair to all the people who already own property to lose property value because the NGB changed the "rules" that have been a given for the last 50 years.

#7) **\*\*Very important:** Appendix B (pgs. B-28- 32) scoping response from AOPA 7/22/21 outlining concerns pilots have with Proposed Action, especially formation of Steelhead Lows.

Conclusion:

The EA does not sufficiently support the conclusion that the Proposed Action (Alternative A) will not significantly impact the quality of the human or natural environment. Alternative A should not be approved.

Alternative B, No Steelhead Low MOAs, could be considered. This alternative would meet 2 of the 3 project objectives fully and the 3<sup>rd</sup> one partially (Table 2-29 pg. 31)

Establishing permanent Steelhead Low MOAs would jeopardized the health, safety, well-being, livelihood, and property values of the tax paying citizens who reside in those areas, as well as negatively impact the natural environment. Leave the Steelhead MOA as is with jet combat training taking place at 6,000'-17,999'MSL, which is a reasonable and safe distance above the civilian population and wildlife.

Thank you for reading and considering my comments.

Respectfully,



Deborah Penn



November 25, 2022

To: The National Guard Bureau and the Michigan Air National Guard

My family has been a property owner in [REDACTED] Huron County, MI for over 30 years. During that time, we have become endeared to the region for its natural beauty and peaceful life style.

The Michigan Air National Guard is proposing to permanently alter the environment and quality of life that my family and fellow taxpaying neighbors have enjoyed and relied on for decades. We have readily coexisted with the MIANG and the need for regular jet fighter training procedures. The “ground rules” that have been in place for many years regarding the minimum aircraft ceiling are reasonable and acceptable for human beings to live healthfully – physically, mentally and emotionally. However, the proposed drastic reduction in minimum flight elevation to as low as 500 feet threatens our health, our safety, *and the very rights that we property owners and taxpayers have relied on and reasonably anticipated to enjoy for as long as we live.* We also rely on maintaining the existing aircraft flight standards with regards to our property investment and value.

The proposal to expose my family and fellow citizens in the Steelhead Low North MOA to regular low-altitude sorties by military jet aircraft is unreasonable and will jeopardize the safety, health and wellbeing of the residents. This proposal will discriminatively impact a select, minority of Michigan citizens to be subjected to conditions not unlike that experienced when living in a war zone. Whether it is for training or actual combat, the physiological and emotional impact of this activity to all residents—especially children, the elderly and disabled population--will be felt practically on a daily, year-round basis.

The MIANG’s proposed changes to our airspace, after 50 years of precedence, will make our beloved environment unhealthy for humans and wildlife, and drastically reduce homeowner property values. Additionally, the potential negative economic impact on an area dependent upon tourism and recreation cannot and should not be ignored. I respectfully request that the NGB and MIANG not implement changes to reduce the allowable elevation for flights in the Steelhead Low North MOA.

Stephen B Penn, [REDACTED]

*Stephen B Penn*

**From:** [Kurt Pernick](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Proposed expansion  
**Date:** Sunday, January 15, 2023 12:09:18 AM

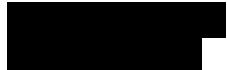
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To Whom It May Concern,

As a life long resident of Michigan and an avid outdoorsman, I am strongly opposed to any expansion of Camp Grayling, training grounds, and/or flight training airspace.

Respectfully

Kurt Pernick



**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, December 15, 2022 10:49:25 AM

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Good Morning;

I would like to make a comment about expanding the airspace in the Thumb Area and over Saginaw Bay.

I support the expansion of the Airspace for military aircrew training. My husband and I live on the bay, in the area and want to

Encourage use of the area for the low level altitude flyovers for the new fighters.

If they don't train here where will they?

The noise from hunters, airboats and other watercraft are here already.

Thank you,

Margaret Peshek

[REDACTED]  
[REDACTED]

**From:** [Sandy Peterson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 9:33:25 PM

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Dear Ms. Kristi Kucharek,

As property owners on the North Branch of the AuSable River, we would like to again voice our strong opposition to the Camp Grayling expansion and now the recently proposed expanded airspace which would include low altitude training maneuvers. We do not believe that Michigan's public lands should be restricted to the public at any time which would occur as a result of this proposal. We also do not believe that property owners in the area should be exposed to the increased noise of low-flying aircraft. Property owners on the North Branch already deal with extreme loud noise and vibrations from current military maneuvers which regularly disrupts the serenity of the area. Expanding the low flying airspace will only increase the unwanted noise that we are already experiencing and, in addition, materials released from the aircraft will also contribute to unwanted pollutants in one of the nation's finest trout streams.

Again we are strongly opposed to ANY expansion of Camp Grayling and the proposal to increase the airspace for low flying aircraft.

Sincerely,  
Greg and Sandy Peterson

**From:** [Paul Pietrzak](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn: ALPENA SUA EA.  
**Date:** Sunday, December 11, 2022 4:52:05 PM

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Just when I/we property owners on the Au Sable River thought there was some breathing room from all of the issues involving the constant attack on it's future here comes the Camp Grayling expansion proposal. Good Lord, hasn't Grayling and the AuSable River watershed sacrificed enough in giving up property for the military? Now the latest reports are coming in about air traffic expansion throughout the NE lower peninsula in addition to the land you want to take from us. We have sacrificed and been patriotic enough over many years for the military, enough is enough, find another state to conduct operations.

**From:** [Ben Pinti](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] National Guard Expansion of Air Space  
**Date:** Sunday, December 11, 2022 6:32:07 PM

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I just heard about the expansion of air space.

I adametly oppose this expansion, an increase of air space can only mean an increase of disruption of an extremely popular area for tourism. It would also disrupt wildlife as well.

Please explore other options that have less of an impact on such an extremely popular area for recreation. If this expansion is about more money for military contractors then this expansion is highly unethical.

Believe me, the people that use this area are watching! The short time frame for comments is an obvious angle that the military is using to try to back door this plan into action before people can have input. That is totally unfair!

Sincerely,

Bernard Pinti  


**From:** [Rick Platte](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Attn. AlpenaSUAEA  
**Date:** Saturday, January 14, 2023 4:22:34 PM

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Sirs,

This is to register my objection to the expansion of the Michigan Air National Guard's areas of operation in the region of the Au Sable River and the huge expansion of Camp Grayling. This is a very special portion of the state and while there have always been military training operations in the area, none on a level anywhere near that proposed.

As one who has always regarded this portion of the state as a very special area I'm very much opposed to the proposed expansions. Surely, there must be other areas that would serve the military's purposes equally well without the negative natural consequences. You will be ruining world class fishing waters and while you may protest that care will be taken, I'm afraid the National Guard's reputation in this respect does not stand very high.

Sincerely,

Richard L. Platte, Jr.



**From:** [alan plona](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] national guard aerial expansion  
**Date:** Thursday, December 8, 2022 4:40:39 PM

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I am definitely opposed to this, the current aerial and gunnery national guard is already TOO noisy. Please save what is left that is irreplaceable. Thank You.

**From:** [Maggie Voorheis](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 12:15:24 PM

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To whom it concerns,

(although it truly concerns the entire state of Michigan and beyond)

I recently learned of plans to expand the Alpena Special Use Airspace Complex to increase pilot training, meaning more jets flying lower over homes, local businesses, and nature areas in our beautiful state. This increase in flights will undoubtedly lead to more noise disturbances and increased air, water, and land pollution. **This letter is written in opposition to the Camp Grayling Airspace Expansion proposal.**

Please consider the citizens who are already fighting the pains of inflation, corporate greed, and the after effects of a worldwide pandemic. The military has polluted this world enough with its unnecessary expansion and fighting other countries' wars at the expense of the people here.

**LEAVE MICHIGAN OUT OF IT! STOP THE GRAYLING AIRSPACE EXPANSION!**

Concerned Citizen,  
Maggie Poley



**From:** [Kathleen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:ALPENA SUAEA  
**Date:** Wednesday, December 14, 2022 2:44:14 PM

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>>

>> To whom it may concern:

>>

>> I am writing to express my strong opposition to the proposed expansion of Camp Grayling. Camp Grayling is currently the largest National Guard Training Center in the United States, comprising 148,000 acres. Col. Meyers of the Michigan National Guard is requesting an additional 162,000 acres, which would allow them to occupy both land and air for hundreds of miles. This directly impacts, Otsego, Crawford and Kalkaska counties as well as the fragile watersheds of the AuSable, Manistee and Muskegon Rivers. The proposed expansion cannot co-exist with outdoor tourism, real estate values and the general economy of these three counties.

>> In Col. Myers's campaign to get community support, in a recent meeting he both admitted that the proposed acreage of 162,000 was reached arbitrarily and that large portions of the current acreage are not being used by the military. He portrayed that the land requested is vacant, which is patently false. All of the land is currently being used by hunters, fisherman, snowmobiles, hikers, Nordic skiers, snowshoers, ATVers, canoeists, kayakers, trappers, photographers and those that just want some quietude. In fact the AuSable River System is deemed the best fly-fishing in the Midwest and attracts people worldwide. This is what personifies Pure Michigan.

>> The negative impacts of the proposed expansion can not be overemphasized. They are to the environment (e.g. pollution, landscape disturbance) ecosystem (e.g. fisheries, disturbance to fragile water systems) recreation (e.g. no fish or wildlife available) enjoyment (e.g. noise pollution, trail closures) and economic (e.g. recreational tourism, local businesses, restaurants, hotels, property values). In fact, the negative impact to Otsego, Crawford and Kalkaska counties would touch all businesses.

>> Currently the National Guard is allowed to fly at 5,000 feet above these fragile watersheds. The current activity has increased to an intensity that homeowners and vacationers alike hear the firing of artillery, low flying jets, explosions and machine gun fire which disrupts any semblance of peace. It is not unusual to have objects falling from shelves and dry wall nails to pop out from walls.

>> Col. Myers has stated that the additional acreage is needed for Electronic Warfare Training, which it should be noted is already being done on the part of the already utilized acreage that the National Guard uses as well as much smaller National Guard Training Centers throughout the United States. The National Guard already has the opportunity for low altitude training in Northern Michigan. The additional certification needed for the proposed training would allow for the A10 and F16 to fly down to 100 feet over these fragile watersheds and recreational areas. According to the recent Environmental Assessment the newly formed Military Operation could see ten times more flights. The chaff and flare released from these flights would increase, allowing a rain of pollution on some of the most famous trout streams as well as the recreational land used by many Miganders as well as other tourists. Pure Michigan would no longer exist.

>> Public land in Michigan belongs to its citizens, not to the DNR to give to the National Guard so that the can sublease it other State's National Guards not to mention other Nation's Militaries. As a resident of Crawford County, home owner and avid outdoor enthusiast, I vehemently oppose the proposed expansion of the National Guard and feel it is a unjustified, blatant overreach by Col. Myers and his fellows. For the reasons outlined above, I ask you to oppose it as well.

>>

>> Regards,

>>

>> Kathleen Porter

**From:** [Linda Poston](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTENTION: ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 6:09:07 PM

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I am writing to express my concern over the Grayling National Guard Expansion. My family has owned property in [REDACTED] on [REDACTED] for over sixty years. We enjoy hiking in the woods, canoeing and kayaking on Chubb Creek, boating on the most beautiful lake with crystal clear water. In the winter we love to cross country ski through the woods. We enjoy the wildlife. There is nothing like it. Our children and grandchildren love coming to visit and this will all be handed down to them. I worry that this expansion will affect the environment. As it is, we already have the noise from the training of the troops several days out of the year. Our home actually shakes at times from the bombing and sometimes the planes fly over our home very low. We have lived with all this and respect the National Guard and are very appreciative of all they do for us. We just do not want this to expand to an even larger area than it already is. Therefore, I do not support an expansion. It would ruin our ability to enjoy our home. Many people come to the area for vacationing and enjoyment every year. This would adversely affect the area.

I don't know how to explain how strongly I feel about this. I love the area. It has been my favorite place in the world! I know all my neighbors feel the same. Please do not allow an expansion.

Linda Poston  
Sent from my iPhone

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [DNR](#)  
**Subject:** [Non-DoD Source] Protect The River  
**Date:** Wednesday, December 28, 2022 4:30:52 PM

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To All Concerned,

When is enough going to ever be enough? We're still waiting for the clean-up to begin on the PFOS discovered in 2010! And now you want to expand the destruction? Stop! There has to be an end to this insanity!

Think!

Bruce Powell

[REDACTED]

[REDACTED]

Sent from my iPhone

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATT: Alena Air EA Comments  
**Date:** Sunday, December 11, 2022 5:45:33 PM

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Hello,

My comments are below on this proposal.

To begin with, this should be considered with a full environmental impact statement and not an environmental assessment. You cannot sign a FONSI with all the impacts you did not consider.

I am very concerned about the effect on migrating and resident birds. Potential bird strikes are downplayed by mention of the Air National Guard's use of the BASH computer program yet there is no mention in the EA of the Sandhill Crane, one of the largest birds in North America, which routinely migrates in formations in the Military Operations Airspaces (MOAs) well above 500 feet and outside and above the "seasonal" flight restrictions. Nor is there any mention of Canada geese. And just the noise alone would be a major impact to birds and other mammals, even if there were no bird strikes.

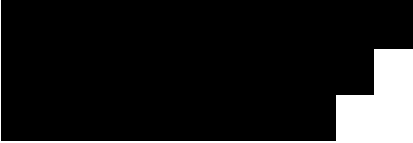
You have not addressed the particulate matter issue on residents, water sources and farms and gardens. Particulates emissions from low altitude training (below the 3000' mixing level) will settle on our farms, yards, Lake Huron, and into the deepest parts of our lungs.

Lastly, the decibel level would be at unsafe levels, for residents, visitors and military staff. F-16s at 500 feet generate 115 dBA noise levels. That is eight times louder than an A-10 ("Warthog"), louder than the maximum level in the audience at a rock concert, at the threshold of "uncomfortable" for people and eight times louder than your typical County/Township noise ordinance (85 dBA).

I grew up on Lake Huron and it is a place valued for its quiet and serenity. This would not only harm residents but the tourist industry. I know you say you would not fly during tourist season, but tourists visit year round. After all, the motto of Michigan is "Water Winter Wonderland".

Thank you

Christine Powell



[Sent from the all new AOL app for iOS](#)

**From:** [James Pratt](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling expansion/ Alpena SUA EA  
**Date:** Monday, December 5, 2022 4:32:18 PM

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Dear Sirs:

I am writing to give my full support and backing to the proposed expansion of both ground and airspace around Camp Grayling Michigan. I'm a local resident in [REDACTED] and a retired Army National Guard captain, as well as a commercial rated pilot of 40+ years.

I fully understand the need to train as we fight. I understand the additional airspace will allow low level flight, and I fully support doing exactly that.

You will see many comments against expansion. Well, as a veteran, the sound of a low level jet is the sound of freedom to me. The sound of an artillery shell outbound is a wonderful sound too.

Carry on.

Soft landings-  
Jim Pratt

[REDACTED]

Sent from my iPhone

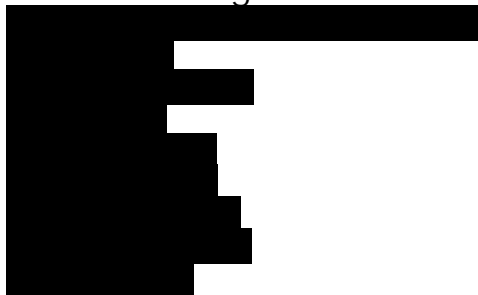


**From:** [Bruce Pregler](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Objection to the Camp Grayling Airspace expansion  
**Date:** Monday, December 5, 2022 11:28:00 AM

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Dear Sir or Madam – Please be advised that I own property ( [REDACTED] ) within the proposed airspace expansion. Please record my strong objection to the expansion. The noise presently from the ammunition and planes is already extensive. The planes are already flying low. This is not a peaceful experience. No one around my home subdivision wants more planes. This expansion is a huge overreach by the National Guard. Do not expand the air space. You are ruining northern Michigan. So much for pure Michigan!!!!!!

Sincerely, Bruce & Debra Pregler  
Bruce M. Pregler



[REDACTED] NOTICE: This e-mail and any attachments are confidential and may also be privileged. If you are not the named recipient, please notify the sender immediately and delete the contents of this message without disclosing the contents to anyone, using them for any purpose, or storing or copying the information on any medium. This e-mail was swept for computer viruses. However, we cannot guarantee that the integrity of this e-mail has been maintained in transmission and do not accept responsibility for the consequences of any virus contamination.

**From:** [Bruce Pregler](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Comments to the EA and FONSI - Air Force and Air National Guard  
**Date:** Saturday, January 14, 2023 12:10:40 PM

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Dear Sir or Madame:

I am opposed to the expansion of the air force and air national guard's request to increase usage. The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below:

1. The Au Sable River and its surroundings is a vital national resource, one that needs to be protected,
2. That more, louder and lower air training is not wanted in the area.
3. That there are other places where such training can be done.
4. That you oppose the plan to increase low-level training.

Further, this activity will impact real estate values which will go uncompensated. I strongly oppose this request. I want the DNR to do its job and protect the air space and the watershed of the Au Sable River. Why on earth would the residents of Michigan allow this national scenic river be degraded by yet more military fly overs, ammuniton, chaff, and NOISE. I strongly oppose this action. At a minimum and EIS should be completed.

Please advise me of any further notices. Notices in small unsubscribed newspapers is unfair and does not give the public proper notice.

Sincerely, Bruce Pregler  
Bruce M. Pregler  
FACCA, RICHTER & PREGLER, PC



[www.frplaw.com](http://www.frplaw.com)



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**From:** [Kathy Price](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [PRESIDENT@whitehouse.gov](mailto:PRESIDENT@whitehouse.gov)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 6, 2023 12:31:41 PM

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The proposed expansion of Michigan Air National Guard airspace with more frequent flights and lower altitudes over some of Michigan's most pristine natural resources is unacceptable. When recommended at the same time as the also proposed expansion of Camp Grayling it defies the imagination. How did we get to a point where the military instead of protecting its countries resources and people is attempting to more than double its size by grabbing as much land and airspace as it can get its hands on?

I've lived by Selfridge Air Force Base and NAS JAX and neither base would be compatible with a state forest. **This proposed airspace expansion by the Michigan Air National Guard is not compatible.** Noise pollution is one of the most poorly recognized health threats of our time. It leads to stress, anxiety, cognitive impairment, cardiovascular disease, development delay and dementia. People and animals need the peace and quiet of our forests and waterways and this expansion would affect a huge swath of Michigan's unspoiled land and water. Mobile sources such as planes are also one of the top 3 biggest contributors of air pollution. There is no way around this. Increased flights will increase the air pollution in the area. Ground pollution such as PFA's are also a known problem at Camp Grayling. How can the military suggest that expansions would have minimal impact? No matter how much assurance we receive that noise, air pollution and land pollution will be small, sadly military base history around the country tells us differently. I have seen next to nothing about this in the news and find that concerning. Have any non-military pollution consultants been involved in this proposed expansion?

Please do not contribute to the destruction of any more natural resources.

Sincerely,

Kathy Price  


CC President Joe Biden

**From:** [Greg Prosen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Mark Wortsman](#); ["Dan Postelnick"](#); [Doug Conover](#); [REDACTED]; [Dr. Bryan Burroughs](#); [Jon Ray](#); [Richard Augustine](#); [Ann Miller](#); [John Dallas](#); [Josh Greenberg](#); [Carl Hueter](#); [Doug Agee](#); [Steve Moyer](#); ["Chris Wood"](#); [Art](#); [Carol Hennessy](#); [Dale McDonald](#); [Dan LaFave](#); [David Carlson](#); [David Lunardini](#); [Doug Vanerka](#); [Ed Michael](#); [Jack Potts](#); [Jim Dickens](#); [Joe Hammon](#); [Joe Vitti](#); [Ken Krueger](#); [Keven Graham](#); [Lisa Gilmore](#); ["Marvin Strauch"](#); [REDACTED]; [Rtworek](#); [Stephen Carlson](#); [Steve Shapiro](#); [Tom Wilhelm](#); [Willie Beshire](#); [Bill Wobekind](#); [Bob Becker](#); [REDACTED]; [Darwin Adams](#); ["Douglas Conover"](#); [Evelyn Adams](#); [Hans Hintzen](#); [REDACTED]; [Jeff Goad](#); [Jeff Hoffman](#); [Jeffery Reinke](#); ["Jerry Sapp"](#); [Matt Jennings](#); [Meg Gallagher](#); [Peter Koenig](#); [REDACTED]; [Prof. Barry Coddens](#); ["William Wigoda"](#); [REDACTED]  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 11, 2022 3:28:46 PM

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National Guard Bureau  
Attn: Ms. Kristi Kucharek

Ms. Kucharek,

As a retired Army veteran, in this day and age I can really appreciate the need for keeping our armed forces highly trained for deployments worldwide. I'm sure this is what is currently motivating the stated need for both airspace as well as the ground space expansion of Camp Grayling, MI. On the other hand, I am a member of both Trout Unlimited and the Anglers of the Au Sable and strongly support their objections for such expansion for the reasons they state and of which I'm sure you are by now fully aware. I personally have spent many decades on the Au Sable River for my personal pleasure of fly fishing, camping and canoeing as well passing on those delights to our youth and the disabled. Much of my time there has been in the company of fellow veterans and I trust I speak for them as well in raising my objection to the proposed Camp Grayling expansions. I have witnessed the awe and excitement of youngsters hearing the roar then seeing A-10s and F-16s fly over the North Branch of the Au Sable, but that has always been far outweighed by the thrill they show in holding a small native brookie in their hands in the quiet solitude of those hallowed waters. Surely, we can and must find alternative ways to keep our forces fully trained while maintaining what has become a painfully slow shrinking of our pristine waters and forests.

Gregory Prosen, LTC (USAR Ret)

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] MICHIGAN /GRAYLING EXPANSION  
**Date:** Tuesday, December 13, 2022 11:48:41 AM

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TO All it may concern; We all want nothing like Air Force jets flying over our backyards , ME AS WELL but our forces need to train, they can` t use the desert for all training. I can see where the water is important in conjunction with the already in place facilities at Grayling, I am concerned about the needed air space over the thumb and would like to see the areas of Lake Huron used instead ,any areas with population need to be avoided in the expansion if there is anyway to do so thank you . MARK PUSSEHL [REDACTED]  
[REDACTED]

**From:** [Jason Ray](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] No expansion please  
**Date:** Tuesday, January 17, 2023 8:08:17 PM

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Please do not expand Camp Grayling. That river is vital to Michigan's economy. And the noise pollution is more than enough to ruin northern vacations.

**From:** [Richard Raymond](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Air expansion  
**Date:** Friday, December 16, 2022 9:54:08 AM

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NO THANKS!

**From:** [Joseph Reed](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Opposed to the Expansion 2x of Camp Grayling  
**Date:** Thursday, December 8, 2022 8:45:33 AM

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Please consider finding another  
Site for additional training.

This proposed expansion impacts the total wellness of  
Our city and the recreation  
Districts.

The Anglers of the AuSable  
Mission is “ preserve, protect,  
And enhance our Watershed “

The Mi DNR and the Military’s  
Expansion must create a shared  
Vision of success going forward.

There seems to be a values  
Disconnect. Mutual Trust,  
Rapport, and credibility need  
To be the hallmarks of this  
New Expansion plan.

Please stop this plan and give  
Consideration to finding an  
Alternative site for expansion.

Thank You.

Joseph Reed



Member  
Anglers of the AuSable.  
20 Year Fly Fisher and  
Former Board member Anglers.

Sent from my iPhone



**From:** [Jeffery Reinke](#)  
**To:** [Greg Prosen](#); ["Hans Hintzen"](#); [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** ["Mark Wortsman"](#); ["Dan Postelnick"](#); ["Doug Conover"](#); [grant.brown@ubs.com](#); [jeffery.goad@gmail.com](#); ["Dr. Bryan Burroughs"](#); ["Jon Ray"](#); ["Richard Augustine"](#); ["Ann Miller"](#); ["John Dallas"](#); ["Josh Greenberg"](#); ["Carl Hueter"](#); ["Doug Agee"](#); ["Steve Moyer"](#); ["Chris Wood"](#); ["Art"](#); ["Carol Hennessy"](#); ["Dale McDonald"](#); ["Dan LaFave"](#); ["David Carlson"](#); ["David Lunardini"](#); ["Doug Vanerka"](#); ["Ed Michael"](#); ["Jack Potts"](#); ["Jim Dickens"](#); ["Joe Hammon"](#); ["Joe Vitti"](#); ["Ken Krueger"](#); ["Keven Graham"](#); ["Lisa Gilmore"](#); ["Marvin Strauch"](#); [REDACTED]; ["Rtworek"](#); ["Stephen Carlson"](#); ["Steve Shapiro"](#); ["Tom Wilhelm"](#); ["Willie Beshire"](#); ["Bill Wobbekind"](#); ["Bob Becker"](#); [burvalb@gmail.com](#); ["Darwin Adams"](#); ["Douglas Conover"](#); ["Evelyn Adams"](#); [REDACTED]; ["Jeff Goad"](#); ["Jeff Hoffman"](#); ["Jerry Sapp"](#); ["Matt Jennings"](#); ["Meg Gallagher"](#); ["Peter Koenig"](#); [REDACTED]; ["Prof. Barry Coddens"](#); ["William Wigoda"](#); [REDACTED]; ["Dr. Mike Youssi"](#)  
**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 2:13:09 PM

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All,

I just spoke to Dave Jankowski who is a member of the Au Sable Anglers, a Board Member of the North Branch Conservancy and lives along the North Branch. Dave is well versed with the challenges posed by the bases expansion. Dave was a Viet Nam era Pilot and actually trained at this base long ago so he knows both shades of this story. Dave shared that in addition to ground level expansion there is also a desire to expand the airspace which would also reduce the altitude to 500 feet from 5000. This represents a significant noise issue.

Dave said he would share some presentations that show the expansion which I would be happy to share.

He was happy to hear his brethren from Illinois cared for the Au Sable!

Just thought I would share!

Best Regards,

Jeff Reinke

GBTU President

[Sent from AT&T Yahoo Mail for iPhone](#)

On Monday, December 12, 2022, 10:51 AM, Jeffery Reinke [REDACTED] wrote:

Ms Kucharek,

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**Sent:** Monday, December 12, 2022 9:38 AM  
**To:** Greg Prosen [REDACTED]  
**Cc:** NGB.A4.A4A.NEPA.COMMENTS.org@us.af.mil; Mark Wortsman [REDACTED]; Dan Postelnick [REDACTED]; Doug Conover [REDACTED]; Dr. Bryan Burroughs [REDACTED]; Jon Ray [REDACTED]; Richard Augustine [REDACTED]; Ann Miller [REDACTED]; John Dallas [REDACTED]; Josh Greenberg [REDACTED]; Carl Hueter [REDACTED]; Doug Agee [REDACTED]; Steve Moyer [REDACTED]; Chris Wood [REDACTED]; Art [REDACTED]; Carol Hennessy [REDACTED]; Dale McDonald [REDACTED]; Dan LaFave [REDACTED]; David Carlson [REDACTED]; David Lunardini [REDACTED]; Doug Vanerka [REDACTED]; Ed Michael [REDACTED]; Jack Potts [REDACTED]; Jim Dickens [REDACTED]; Joe Hammon [REDACTED]

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**Subject:** Re: ATTN: ALPENA SUA EA

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Attn: Ms. Kristi Kucharek

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**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 12:03:01 PM

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**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Monday, December 12, 2022 4:18:16 PM

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See below:

[https://www.alpenacrtc.af.mil/Portals/12/documents/AirSpace%20Documents/Draft%20EA\\_Alpena%20SUA%20Complex\\_MainBody\\_November%202022.pdf?ver=Ey56o\\_w9iSiyQBSEw-O16w%3d%3d](https://www.alpenacrtc.af.mil/Portals/12/documents/AirSpace%20Documents/Draft%20EA_Alpena%20SUA%20Complex_MainBody_November%202022.pdf?ver=Ey56o_w9iSiyQBSEw-O16w%3d%3d)

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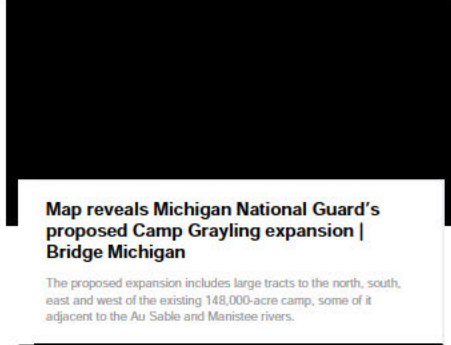
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**Subject:** [URL Verdict: Unknown][Non-DoD Source] Re: ATTR: ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 12:35:07 PM

Here is some additional info related to the Grayling Base Expansion:

[Map reveals Michigan National Guard's proposed Camp Grayling expansion | Bridge Michigan](#)



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Ms. Kucharek,

As a retired Army veteran, in this day and age I can really appreciate the need for keeping our armed forces highly trained for deployments worldwide. I'm sure this is what is currently motivating the stated need for both airspace as well as the ground space expansion of Camp Grayling, MI. On the other hand, I am a member of both Trout Unlimited and the Anglers of the Au Sable and strongly support their objections for such expansion for the reasons they state and of which I'm sure you are by now fully aware. I personally have spent many decades on the Au Sable River for my personal pleasure of fly fishing, camping and canoeing as well passing on those delights to our youth and the disabled. Much of my time there has been in the company of fellow veterans and I trust I speak for them as well in raising my objection to the proposed Camp Grayling expansions. I have witnessed the awe and excitement of youngsters hearing the roar then seeing A-10s

and F-16s fly over the North Branch of the Au Sable, but that has always been far outweighed by the thrill they show in holding a small native brookie in their hands in the quiet solitude of those hallowed waters. Surely, we can and must find alternative ways to keep our forces fully trained while maintaining what has become a painfully slow shrinking of our pristine waters and forests.  
Gregory Prosen, LTC (USAR Ret)

**From:** [Randy Reszka](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Monday, December 5, 2022 9:49:34 AM

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Attn. Ms Krista Kucharek

I am writing with extreme concern about the The Camp Grayling Secret Expansion Plan.

I am an avid fly fisherman. I spend a lot of time on the AuSable river. all branches! It would be heartbreaking to see this plan go through. Not just for me but for the community, the environment, the river system, the homes in the area, and all of the hundreds of square miles of wildlife habitat.

Please do everything possible to **STOP** this plan.

Thank you Randy Reszka  
Fly Fisherman.

**From:** [Barbara](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Wednesday, December 7, 2022 4:44:54 PM

---

Please do not expand the Camp Grayling Airspace. As a property owner and guardian of the AuSable River, we value the clean water and peaceful space in the woods.

Sent from my iPhone



**From:** [Jim Roberts](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 7:40:16 PM

---

I strongly oppose this proposed expansion.

Jim Roberts

Sent from [Mail](#) for Windows

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [REDACTED]  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN:ALPENA.SUA.EA  
**Date:** Wednesday, December 28, 2022 3:18:54 PM  
**Attachments:** [image001.png](#)

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As a cottage owner on the Lake Huron shoreline [REDACTED] [REDACTED] in Huron County) it has come to my attention that the Michigan National Guard has training flights over our area that in the past were at an altitude of 6,000 feet or higher. Under a new proposal, flights could fly over us at an altitude of 500 feet going forward, and that there could be as many as 1,000 flights a year. Pointe aux Barques Township is a community of approximately 70 homes – most of which are occupied from late May into October with sporadic usage after that. Our community has experienced sporadic viewings of fighter jets over the years coming over us at a low altitude of perhaps 500 feet. I believe these flights are from Selfridge Air Force base. While these sightings are currently rare and thrilling to behold, I would take an entirely different attitude if we had approximately 20 flights PER WEEK come over our community. I believe this would be extremely disruptive to the residents of our community, as well as the wildlife in our community and surrounding areas. I am absolutely opposed to lowering the permitted altitude from 6,000 ft to 500 ft in the Alpena Special Use Airspace Complex.

Respectfully Yours,

Frederick J Robinson III  
Client Associate

**KERCHEVAL FINANCIAL GROUP**  
*of Wells Fargo Advisors*

[REDACTED]

[REDACTED]

[REDACTED]

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**From:** [Ed Roden](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Unknown][Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 6:19:30 AM

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For me, it's simple. My family owns a shared place on Moon Lake outside of Lewiston. While fully supportive of the current guard base and the practices, I am against the expansions being proposed.

I remember taking my young daughter fishing on the Au Sable and her thinking it was going to storm, though the skies were clear and the forecast was good. I explained to her what happens on the base and the benefit of having the exercises there. I said it was a small price to pay for the freedoms we enjoy.

When these noises and planes and potential chemicals continue to creep into the areas that we love and recreate at, now I'm concerned.

I ask that we keep to the current base with no further expansion.

Ed Roden

[REDACTED]

--

Ed Roden

[REDACTED]

Henrietta Lange: The true test of a commander is when he is as frightened and confused as those who look up to him. In that moment, when you can't find it in yourself, you will find it in them. That's leadership.

**From:** [jacque.rose](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:ALPENA SUS EA  
**Date:** Monday, December 5, 2022 9:29:10 AM

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Good morning,

Please advise if there is data available on ArcGIS for any of the maps featured in the Draft EA.

Thank you,

Jacque Rose



**From:** [Angelika Ross](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, December 10, 2022 3:28:59 PM

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## Alpena SUA changes

Those of us that live in the Steelhead MOA believe that the proposed changes to the Alpena SUA will bring life-changing levels of noise pollution from the low altitude combat training - especially by bringing F-16s into our area. The F-16 is about 8 times louder than the A-10s that we are used to. Turning, diving, passing over the same area (combat training) is also something we have never had to deal with. Occasional A-10 flyovers are interesting, but the proposal is a game changer, and not a good one if you live here.

This low altitude training will also increase dangerous air pollution and decrease our property values. We'll get more pollution but only areas around Selfridge, Toledo, Alpena, and Grayling will realize any possible economic bonus.

The Pike Low MOA, farther north in Michigan, is much less populated than Steelhead MOA and home to the Alpena CRTC. How about get some better Comms in place up there with your \$234B budget in order to use Pike Low more effectively?

Angelika Ross  


**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, December 10, 2022 3:17:21 PM

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## Proposed Alpena SUA changes

In 2019 two of us from Huron County Quiet Skies Coalition met with Gen. Teff, Col. Southworth, Capt. Layton, and others, in Bad Axe and Bay City, Michigan regarding the Alpena SUA changes. COVID interrupted everyone's plans and the MIANG was busy doing admirable pandemic work. Now the SUA is back in the news.

The Alpena SUA EA leaves the reader with the impression that the military is being purposely deceptive in its plans while superficially "checking the boxes" to give the appearance of complying with NEPA and pretending to care about the most dramatically affected citizens of Michigan.

Why this impression?

The use of DNL in describing noise interference is outmoded and deceptive. The DNL is not only outmoded, but is ineffective as a description of the shattering sound events that will jar ones focus off any task or activity. The Lmax data are much more telling. Here in Steelhead Low we are used to the A-10s doing occasional flyovers, but with the addition of F-16s, many multiple times more frequently, doing combat maneuvers at 500' AGL, life in the MOAs will be *dramatically* altered.

This is why a FONSI is not only wrong, it is an insult to people that live within the MOA. How can 115 dBA (F-16 @ 500') *not* be significant? The USAF, MIANG, DOD, and the FAA may have a particular definition of the word "significant" but it surely doesn't match up with reality On The Ground. AFI 48-127 indicates the need for hearing protection for personnel on and off the base at 115 dBA. What are citizens to do?

Noise is not the only pollution we are being asked to live with. Particulates from low altitude training (below the 3000' mixing level) will settle on our farms, yards, water, and into the deepest parts of our lungs.

The AOPA has stated that the proposed changes are a bad idea as early as 2018 and more recently requested the more thorough EIS in July of 2019. These professional and amateur pilots and aircraft owners indicate the SUA changes will significantly affect the safety and economy of civilian air use. Notice the word "significantly", again, this is no FONSI.

Property values will decrease in 115 dBA areas as much as 4%. Multiply that by \$100K or \$300K. Who wants to take that hit?

One can't help but suspect that the next natural step once the SUA is changed will be to accommodate the Foreign Military Sales program and the F-35s which are the product of this business arrangement with foreign governments. These won't be "our boys (or girls)" learning valuable combat skills, but rather foreign "customers" using our environment for field testing the new equipment purchased by foreign governments. The SUA changes look to be a perfect set-up for this.

Terry Ross





**From:** [T. Ross](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, January 10, 2023 3:31:22 PM

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I object to the proposed changes for the following reasons:

In the Thumb of Michigan we are used to jets because A-10s have done **fly-bys** for years. But **this** will be **combat training** - including diving, climbing, and multiple passes over the same area, adding F-16s (8 times louder than the A-10s).

The noise will be a problem for people:

a) who enjoy a peaceful environment. This is well-expressed by our very own *2016 Huron County Planning Commission Survey*: "The most common themes people like best about Huron County include: ' . . . **the peace and quiet of the countryside.**' "

b) who are unaccustomed to sudden onsets of searing and thunderous noises that may initiate startle reflexes (with unpredictable consequences).

c) who are in the midst of important communications which may range from teachable moments of the young to safety-related commands to warnings on a job site.

d) with PTSD and cardiac issues.

e) who do not want to experience a reduction in property values.

Additionally, jet fuel particulates at 500 feet will settle on our farms, crops, homes, lawns, streets, waterways, and into the *deepest* part of our lungs. The USAF considers the mixing level of 3000 feet and above to be ok, but 500 feet? No good. Sorry.

Terry Ross  


**From:** [Carl Ruetz](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 9:39:43 PM

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Greetings:

I am writing to oppose the Air Force's plan to dramatically increase low-level flights over Grayling and the Au Sable River valley. The Au Sable River and the surrounding area is a vital national resource, one that needs to be protected. More louder and lower air training is not wanted in the area. Surely there are other places where such training can be done.

Thank you for considering my input.

Sincerely,  
Carl Ruetz



**From:** [Lucy Saunders](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 12:38:26 PM

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- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The Alpena proposal is incompatible with recreational values, the outdoor economy, and real estate values of the Au Sable basin.
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan.
- **The deployment of chaff by** military aircraft is one of several countermeasures used to evade radar detection. The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere, harming the invertebrates, wildlife and fishing.
- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

These training exercises can be conducted elsewhere. Do not damage the valuable natural resource of the Au Sable river basin.

Lucy Saunders  


**From:** [Robert Sawyer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Airspace Expansion  
**Date:** Monday, December 5, 2022 4:18:06 PM

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Please don't. So bad for the environment!

Sent from [Mail](#) for Windows

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**From:** [Steve & Gail Sawyer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 12:09:53 PM

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To Whom it may concern &ndash;

We recently received information about proposed Alpena Special Use Complex Airspace expansion, that would allow more frequent low altitude operations over the Au Sable River watershed. We are strongly opposed to this proposal.

For over 30 years, we have been visiting the Au Sable area for the beauty and serenity it offers, as well as the world class fishing of the river itself. Essentially, we were two of the thousands from around the world that visit for those reasons, bringing significant economic benefit to the area.

More frequent, low altitude flights, especially over the North Branch and Mainstream of the Au Sable will significantly deteriorate the recreational experience, in turn impacting the summer economy. A low pass from an F-16 is a jarring contradiction to a canoe trip.

The attractions of this area led us to retire from the Seattle, Washington area and settle near Grayling. So now we are year-round residents. The airspace expansion threatens to markedly degrade the very reason we decided to relocate here. Please deny this proposal.

Sincerely,

Dr. R. Steven and Gail L. Sawyer

**From:** [John Schaefer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ATTN ALPENA SUA EA  
**Date:** Friday, December 9, 2022 8:45:00 AM

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I am writing to strongly object to the proposed expansion of Camp Grayling in Northern Michigan. The current activity at the base, particularly in the summer months, negatively impacts the environment, natural habitat and peaceful existence. As a property owner on [REDACTED], the proposed expansion and low flying permits will permanently destroy nature, our land values, and greatly increase the damage to the natural environment of the area. The Michigan DNR regulates all aspect of activity in the area, and it is unthinkable that such a permanent scar on the environment would go forth that forever changes the area. On behalf of my family, neighbors and all of the visitors to this beautiful area, please do not destroy our peaceful use of this area further but approving the proposed expansion.

John Schaefer  
[REDACTED]



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**From:** [John Schaefer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 7:08:29 PM

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To whom it may concern:

I am writing to object to the expansion of Camp Grayling. This will permanently destroy the natural environment, greatly increase the risk of fire and make peaceful enjoyment of the area impossible due to excessive noise pollution. Please do not move forward with this project.

Regards,

Laurene Schaefer

██████████



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**From:** [jan.schlaybaugh](mailto:jan.schlaybaugh)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](http://NGB.A4/A4A.NEPA.COMMENTS.Org)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Sunday, December 4, 2022 3:44:19 PM

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Dear Sirs

I suggest you hire a fly fishing guide and fish the Au Sable River. Such an experience would change your life in a positive way. I guarantee you would want to do everything within your power to protect the quiet, serenity and purity of this important element of northern Michigan. Hearing the “sound of freedom” when I am fishing doesn’t make me a proud American knowing our natural resources are being poisoned with materiel and noise.

Sincerely,        Jan Schlaybaugh



**From:** [Sandra Schmitt](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#); [REDACTED]; [ng.mi.miarng.lst.pao@army.mil](mailto:ng.mi.miarng.lst.pao@army.mil)  
**Subject:** [Non-DoD Source] Proposed Airspace Expansion ATTN: ALPENA SUA EA.  
**Date:** Friday, December 9, 2022 5:42:36 PM

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With little notice, the Michigan National Guard on Nov. 14 unveiled a proposed expansion to current military airspace that will be, in terms of impact, as big or bigger than the proposed doubling of Camp Grayling.

This “Secret Expansion” dovetails right into the doubling of Camp Grayling, occupying both land and air for hundreds of new square miles. Together they would create an atmosphere that cannot coexist with outdoor tourism, outdoor economy or real estate values in our communities.

The details are buried in the dense language of the Guard’s own draft environmental assessment. But the purpose is clear, on page 8 of the paper: Give the Guard more opportunity for low altitude training in northern Michigan, including throughout the upper Au Sable watershed.

“Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL. The only current “low” airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions prohibit overwater flights.”

That’s bad and here is why:

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don’t note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle

our windows all summer...we don't need more.

Promises Made, Promises Broken: Let's just focus on one: PFAS. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

You live in the affected area. Please stop this "secretive" aerial expansion before irreversible damage is done to public lands, waters and air of Northern Michigan as is your job. Use your position for positive action by rejecting, either personally or through your appointees, these intrusions into our public lands and our public airspace. Protect our state. We all will be watching.

Sandra Schmitt

[REDACTED]

[REDACTED]

**From:** [Mike Schmitz](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 8:40:27 AM

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As a lifelong Michigan resident and property owner near the proposed Camp Grayling expansion area I am writing to express my opposition to the proposed expansion of Camp Grayling. Camp Grayling is already the largest guard base in the country and there is not a single conservation group, citizen group or local government that is in favor of this expansion. In fact, there are thirteen local governments that are formally and publicly opposed to the proposed expansion.

The Northern Michigan economy relies on the rivers, lakes and trails that are predominant in this area and adding an additional 250 square miles is not in the best interests of the local communities and our natural resources.

Please listen to the citizens and communities in this area and stop the proposed Camp Grayling expansion. 230 is enough.

Mike Schmitz



**From:** [Schneider, John \[BSD\]](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Conserve!  
**Date:** Friday, December 9, 2022 9:11:21 PM

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Do not expand camp grayling!

Best wishes,

John

**From:** [Hotmail](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Sunday, December 11, 2022 8:18:19 PM

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Hello

I am writing to say that as a resident of [REDACTED] in Huron County, MI. I am opposed to the Michigan Air National Guard Alpena Special Use Airspace Complex. I would appreciate this project being given some extra thought and moved elsewhere.

Thank you,  
Joanne Schulte

Sent from my iPad

**From:** [RICHARD SCOTT](#)  
**To:** [Rod Jenkins](#)  
**Cc:** [Dave Jankowski](#); [NGB A4/A4A NEPA COMMENTS Org](#); [Tim Tobias All](#); [Nial Raaen](#); [Gary Marquardt](#); [Gary Moyski](#); [Rusty Kalmbach](#); [Craig Swenson](#); [Dave Hellman](#); [Tom Roberts](#); [Steve Taylor](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 3:51:38 PM

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Dave: thank you for expressing these well organized, well conceived thoughts. I agree with you whole heartedly.

Sent from my iPhone

On Jan 14, 2023, at 12:17 PM, Rod Jenkins [REDACTED] wrote:

Dave,  
Well written, excellent points. As a former Air Guard pilot and an avid fly fisherman I agree with your assessment.  
Sincerely,  
Rod Jenkins

Sent from my iPhone

On Jan 14, 2023, at 10:03 AM, Dave Jankowski [REDACTED] wrote:

Attention Alpena SUA EA

My name is Dave Jankowski. I am a retired Michigan Air National Guard Lt. Col. and F-4/F-16 pilot. I have actually worked the air-to-ground range within R4201A/B. Today, I have a cabin on the North Branch of the Au Sable River and am a member of the Au Sable North Branch Area Foundation Board, and recognize how valuable the river is to so many people.

I oppose the Alpena SUA Modification – not in total but in part. That part is the proposed Grayling West MOA’s minimum altitude of five hundred feet. I understand the need to safely separate military and civil aircraft that Grayling West and East MOAs will provide. I also understand and support the need for realistic aircrew training that the entire SUA package seeks to achieve.

However, I think that the proposed five-hundred-foot-minimum-altitude floor in Grayling West is unrealistically too low. I fear that high-speed jet fighters will use the Au Sable North Branch as a navigational channel to the air-to-ground range. I know that I would

have in my flying days. When that happens, the entire river channel will experience noise levels similar to what the area around Shupac Lake experiences, as that is a frequent ingress and egress corridor for jets working the range today. The Environmental Analysis lists the Shupac Lake Lmax noise level to be 128 dBa (page 66 of the Environmental Analysis). That would represent an increase from the existing DNL of <35 dBa (page 62) to 128 dBa Lmax. Since the dBa scale is logarithmic that is a multi-fold increase in noise level. Also, the EA lists the Grayling West MOA Proposed DNL to be 45 dBa vs existing of <35 dba (page 62). On a logarithmic scale that is twice as much – and that is the DNL not Lmax! The EA obviously anticipates significantly more noise.

Another potential use of a five-hundred-foot-floor airspace is close air support training. In this scenario we could have flights of two to four aircraft making multiple ground passes anywhere in the Grayling West MOA. Once a flight of aircraft enters the Grayling West MOA they have license to operate at five hundred feet anywhere within the MOA. And, I emphasis flights of 2-4 aircraft because fighters rarely operate single ship, they always fly in flights of 2-4 aircraft.

Another concern that I have is the recently described National All-Domain Warfighting Center (NADWC). As described on the Michigan National Guard website: “the NADWC includes the nearly 148,000 acres of training space at the [Camp Grayling Maneuver Training Center](#) and 17,000 square miles of special use military airspace at the [Alpena Combat Readiness Training Center](#). The arena offers training for entities across the Department of Defense to prepare for the battlefield of the future. The training provides units with training capabilities across all five warfighting domains.”

The NADWC does not have a headquarters or a command structure. It is merely a concept, a “rebranding” of the National Guard training opportunities available in Northern Michigan. It is part of an open invitation for guard, active military, even foreign military forces to come and train in Michigan. And, it clearly shows the intent of the Michigan National Guards intent on expanding operations in the Grayling/Au Sable area.

The Au Sable River system is a designated Michigan Natural River, and a part of the Au Sable is also a National Wild and Scenic River. Every list of the top-ten-trout-fishing rivers in the country includes it, and it is arguably the best trout stream east of the Mississippi. The Michigan DNR recognizes that and has even afforded it special use regulations. Its economic value to Crawford County is immense. It is also vulnerable and environmentally sensitive. It and its creatures cannot withstand the assaults that increased military activity will bring. Fishermen and other recreational users will not return to an area of frequent loud noise activity, such as frequent five-hundred-

foot fly overs.

As members of various Au Sable environmental groups, we should probably be demanding the deactivation of the Grayling Air-to-Ground Range altogether, having it moved to a less sensitive and more remote location, further up the lower peninsula or to the upper peninsula. Instead, we only wish to reasonably limit the activity here. A five-hundred-foot floor is not reasonable!



**From:** [CAROLINE SHATTO](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [jshatto1](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Thursday, December 8, 2022 10:29:32 PM

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My name is Caroline Shatto. My husband, Jeff Shatto, and I own property at [REDACTED] not 1 mile from Camp Grayling.

We are so proud of our country and of our service men & women. We understand they need space to train and prepare. However, WE ARE AGAINST THE EXPANSION OF CAMP GRAYLING, in Grayling, MI.

The proposed expansion will conflict with and throw off the balance with the natural wildlife and environment that Michigan is valued and known for.

We vote NO EXPANSION.

Respectfully,

Jeff & Caroline Shatto

Sent from [Mail](#) for Windows

# LONG - SHAW - MARSH TRAIL

EST. 1941

North Branch AuSable River  
George Shaw & Bonnie Marsh, Props.



December 5, 2022

National Guard Bureau  
Attn: Ms. Kristi Kucharek  
3501 Fechet Avenue  
Joint Base Andrews, MD 20762-5157

Re: Camp Grayling Air Space Expansion

Dear Ms. Kucharek,

I am strongly against the proposed expansion of Camp Grayling air space.

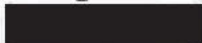
My home is on the North Branch of the AuSable River, and I have already experienced low altitude flights which put my wife and guests on the ground and threatened the structural integrity of my home.

Do not allow this proposed expansion!

Sincerely,

A handwritten signature in blue ink, appearing to be 'G. Shaw'.

George F. Shaw



**From:** [George Shaw](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 3:46:42 PM

---

Re: Camp Grayling Air Space Expansion

Greetings-

I am strongly against the proposed expansion of Camp Grayling air space.

My home is on the North Branch of the AuSable River, and I have already experienced low altitude flights which put my wife and guests on the ground and threatened the structural integrity of my home.

Do not allow this proposed expansion!

Sincerely,  
George F. Shaw

[REDACTED]

[REDACTED]

**From:** [George Shaw](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN:ALPENA SUA E  
**Date:** Saturday, January 14, 2023 12:23:53 PM

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I strongly object to the expansion of low level flights.

They can be done elsewhere — away from the high-value AuSable River resource which would be degraded by the expansion.

A10 flights over my home are generally high enough to be tolerable, but fighter plane overflights are simply unbearable to me, let alone the fish and other animals of the region.

Expanding low level flights around the AuSable may coincide with your interpretation of a mission to protect your fellow citizens, but it would cost us the kind of life we want to preserve.

Sincerely,

George F. Shaw

[Sent from Yahoo Mail for iPad](#)

**From:** [Sherman Shultz](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 12:17:39 PM

---

Dear Ms. Kucharek,

Please let me add my voice to those opposing the proposed expansion of the National Guard base in Grayling, Michigan. The reasons are many and you have heard them all I'm sure. But they are also valid. I very much oppose this proposed expansion.

Sincerely,  
Sherman Shultz

**From:** [Jeff Silsbe](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] ATTN: ALPENA SUA  
**Date:** Tuesday, December 13, 2022 5:27:42 PM

---

I am against the camp Greyling expansion and the expanded airspace proposal. Stop infringing on our quality of life & right to enjoy our property.

Sent from my T-Mobile 5G Device  
Get [Outlook for Android](#)

**From:** [Jeffrey Simpson](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 7:43:46 PM

---

Dear Sir,

I am writing to voice my strong opposition to the proposed expansion of low level flights in the AuSable area. The residents of central upper Michigan have already sacrificed 140,000 acres of precious natural lands and thousands of square miles of airspace, our privacy, solitude, and hard earned tax dollars to support military and aircraft training in our area for several decades. Now you ask us to support doubling the footprint, increasing troops, and expanding military aircraft training missions 10 fold using new louder planes (EA-18 G), lowering minimal ceilings ( down to only 500 ft), and dropping more chaff than ever to pollute the environment (our backyards).

The following are just a few reasons that I vehemently object to the expansion.

\* My family has owned land in this area for 103 years. Our lifelong goal has been to protect the land, lakes and rivers and wildlife habitat from pollution, including 6 environmental lawsuits, all of which were successfully adjudicated, but came at a high price, both emotionally and financially. We, as stewards of this beautiful land, place a high value on our privacy, environmental tranquility, peace, and wildlife preservation- all of which are threatened by your proposal.

\* The AuSable River is the first National Blue Ribbon trout stream in America and the original home of Trout Unlimited, a famous landmark and national treasure, destination to countless anglers and naturalists every year. She is worthy of our respectful protection, not of exposure to increased noise pollution and chaff pollution.

\* Expansion of both the Guard footprint and air traffic will have NO positive impact on the local economy, no tax relief, and is likely to cause increased financial pressures on the local community by driving away outdoor sportsmen, tourism, and weakening real estate values, a critical concern to the local community.

\* The Flight Floors in the proposed new Grayling West (500 Ft) area is directly over my personal property. The altitude is extremely low, even lower than the present ceiling which shakes our cabin, frightens our nesting bald eagles, and destroys the tranquility of a paddle on the lake as chinook helicopters hover overhead. The EA justifies this inevitable increase in noise by a flawed analysis which reports AVERAGE noise levels that would only slightly increase. However, it is inconceivable to me that the noise generated by aircraft like the EA 18 G "growler" or a chinook helicopter flying at these exceptionally low levels coupled with a proposed 10 fold increase in flights would not destroy the pleasure of the recreational activities which is the attraction and the lifeblood of our community.

\* The Deployment of Chaff is already impacting our environment in ways that are unclear, due to inadequate EA evaluation. The EA proposes a 20 % increase or 33.3 billion micro-glass coated aluminum fibers spewed into the atmosphere settling onto our lands EVERY YEAR. Yet there are no studies to evaluate the impact this will have on our precious land, streams, and lakes. Is it safe, or is it another issue like PFAS, which is now haunting us, and the Military Guard environmental studies remain unfinished now 5 years after they were promised?

For these, and many other reasons, I strongly oppose the expansion of Air National Guard expansion plans for more and lower level flights over the AuSable River basin.  
Thank you for your time and consideration.

Sincerely,  
Jeffrey A Simpson, MD FACOG

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**From:** [CAROLYN SKALNEK](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 1:24:46 PM

---

No way do I approve of the airspace expansion in the Grayling/Alpena area!  
We already experience the noise and window rattling associated with the current airspace use.  
Don't kill our community with more noise, lower flying planes and pollutants!

Carolyn Skalnek  


**From:** [Miles Skalne](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 12:49:02 PM

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Greetings,

I am a property owner on the AuSable river. I am strongly encouraging you to review this environmental assessment from our perspective (the residents, visitors and wildlife that inhabit northern Michigan). We are already affected by the ongoing military drills in northern Michigan (camp Grayling). While you may be accustomed to the repeated sounds of gunfire, bombing and aircrafts the vast majority of us are not and do not wish to be a part of this expansion. This would be a direct infringement on the peoples pursuit of happiness in ways I'm sure you can see. Please take a step back from your desk and imagine how your actions will have the direct negative impact on others.

Miles Skalne and many other concerned entities

**From:** [Steve and Carolyn Skalnek](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 12, 2022 8:10:37 AM

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We strongly OPPOSE the Camp Grayling expansion-both AIR and LAND and are in complete alignment with the position of the ARPOA letter/OpEd outlining the negative impacts it would cause on our community. See <https://arpoa-mi.us15.list-manage.com/track/click?u=718f958d805cd36cd42d21cd6&id=ec8a53af61&e=5b5cf7eb13>

This expansion would devastate the Grayling area and does not belong in a populated area such as ours. We did not retire in the beautiful AuSable River area to have it taken over by future expanded training measures. ENOUGH! Go somewhere else where there is less risk to people, property and wildlife.

Very concerned citizens,

Steve and Carolyn Skalnek



**From:** [Caroline B. Smith](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] expanded Air Force training space  
**Date:** Wednesday, December 14, 2022 12:04:26 PM

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I *can* tell you this,,,,in the 1970s when Selfridge Air National Guard Base flew planes around Port Hope, it *was* loud and one time it brought down the ceiling in a bedroom in my father-in-law's house in Port Hope.

Caroline B Smith

[REDACTED]

[REDACTED]

**From:** [Smith, Dan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 12, 2022 7:44:50 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)

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To whom it may concern,

Please do not expand the Grayling base permissions in any way! We have had a family lodge on the North branch for generations and it is all we have left of peace and solitude. It is bad enough when our kids and grandkids have to ask questions of the bombing in the distance. We don't need more flights overhead and more interruptions to our lives. Why should we pay taxes for this?

Please reconsider your plans.

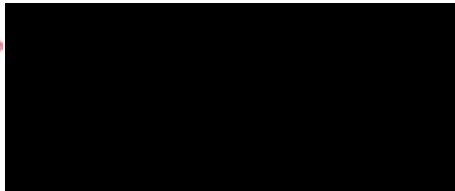
Dan

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**Dan Smith**  
EVP, Chief Growth Officer  
Owens Corning



**OWENS CORNING**



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Translations available: <http://www.owenscorning.com/emailfooter.html>

**From:** [Judy Smith](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Wednesday, December 14, 2022 10:06:52 PM

---

No, no, no.  
No expansion , no expansion, no expansion.

Judith Smith



**From:** [Renee Szuba](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Expansion michigan  
**Date:** Wednesday, December 14, 2022 7:22:42 AM

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Please please do not allow expansion. Go to another state where the land is not used by people. We in michigan use this land we do not want our privacy invaded our health affected by your testing. The wild life affected etc. we make income from people using this land we are a vacation state. And the people who live here pay taxes and want this land to stay uninhabited from the armed forces and their outside contractors who do not care about us.

Renee Solano-Szuba [REDACTED]

Sent from my iPhone

**From:** [Rod Sorge](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA>  
**Date:** Saturday, December 10, 2022 9:06:34 PM

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Dear Ms. Kucharek,

I have read with interest the proposed expansion of National Guard air training ranges. While I am indebted to the Guard for their service to our state and our nation I am strongly opposed to this plan. I was under the impression that the Guard swore an oath to protect the constitution. In case it has been somehow overlooked or forgotten let me remind you of the preamble of our constitution:

**We the People** of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.

The jets shake my walls and windows. The rockets and bombs wake me and scare my dog. The beat of the helicopters even scares the wildlife. The echoes break the peace and solitude in our last vestiges of nature in our woods and rivers. I just can't imagine how anyone could call this promoting the general welfare much less insuring domestic tranquility. This proposal promises exactly the opposite of tranquility. This proposal would in effect further make our north woods, our rivers and our homes a stage for a battleground. At my house in Crawford County I already know well the sight, sound, feel and at times even the smell of the Guards activities. Please, no more. The ends do not justify the means.

Thank you for your consideration.

Rod Sorge





**From:** [Don Sowle](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 12:15:11 PM

---

As a person living in Northern Michigan, I object to the planned expansion of air space for training because it's too loud, too dirty, too low and too wide an area over northern Michigan. It will have a negative impact on the quality of life for residents and tourists.

Thank you,  
Don Sowle



Sent from my iPhone

**From:** [Don Sowle](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 12:04:44 PM

---

Don Sowle

[REDACTED]

Sent from my iPhone

> On Dec 6, 2022, at 11:26 AM, Don Sowle [REDACTED] wrote:

>

> As a person living in Northern Michigan, I object to the planned expansion of air space for training because it's too loud, too dirty, too low and too wide an area over northern Michigan. It will have a negative impact on the quality of life for residents and tourists.

>

> Thank you,

> Don Sowle

> [REDACTED]

>

> Sent from my iPhone

**From:** [Merrilee and Greg Spangler](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 9:03:30 PM

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Good Evening,

I stand as a homeowner, against the expansion of the overflight areas in conjunction with the requested Cam Grayling expansion.

I feel strongly that you would diminish the value of my property, which would constitute a “taking”, without my consent.

Please reconsider. We have millions of acres of land without habitation, which would not be harmed by low level planes, while my wife and I would be materially harmed.

Thank you for your consideration

Greg and Merrilee Spangler



**From:** [Merrilee and Greg Spangler](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Sunday, December 11, 2022 9:11:15 PM

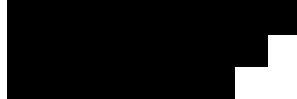
---

I am concerned that your proposed expansion, will violate my property rights ad rights to quiet enjoyment of my property  
Please reconsider as you may decrease the value of my property, which will constitute a taking without redress to the courts.

This is illegal and possibly unconstitutional.

Please review this before moving forward.

Thanks you



Thank you

**From:** [Ella Sprung](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling, National Guard  
**Date:** Wednesday, December 14, 2022 11:47:35 AM

---

I am strongly opposed to any expansion of the area used by the National Guard at Camp Grayling. I think the overall impact of the proposed changes will lead to a regional negative impact on the environment and with the proposed lower ceiling for aircraft greater air pollution and certainly excessive noise in a relatively tranquil forest, lake and river recreational area. This could lead to a reduction in tourist business and consequently to the economy of the area. I had property in Ogemaw county and enjoyed hunting, fishing and other recreational activities and often return in the summer. I can only think the proposed changes would become a distraction to anyone visiting the region and potentially pollution of the environment.

Respectfully, Douglas C. Sprung, [REDACTED]

Sent from my iPad

**From:** [Barb](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Just say no.  
**Date:** Wednesday, December 7, 2022 9:42:38 AM

---

Camp Grayling Decision Makers,

I read bits of news about your proposed expansion and other changes.

These are my objections.

1. It is moving forward without transparency and openness.
2. Camp Grayling is already big and disruptive of nature so should not be expanded.
3. The proposed criteria that would allow lower flights is shocking.

Please extend the period for public input beyond 12/14/22.

Please do not expand Camp Grayling.

With great concern, Barbara Stamiris [REDACTED] [REDACTED]

**From:** [Bruce Strachan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil with subject ATTN: ALPENA SUA EA.  
**Date:** Monday, December 5, 2022 2:09:06 PM

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Attn: Ms. Kristi Kucharek,  
3501 Fetchet Avenue,  
Joint Base Andrews, MD 20762-5157

Dear Madam,

I am writing in opposition to the proposed Expansion for the Michigan National Guard Camp Grayling Michigan including the proposed expansion of the area and altitude air space.

As a frequent visitor to Grayling and the Ausable and Manistee Rivers, I value the natural beauty and solitude afforded me and fellow visitors to Grayling and its Wild and Scenic Rivers. They are among the most famously historical, pristine and valued trout fisheries in the midwest United States. The Grayling region also affords local residents and national and international visitors immense opportunities to canoe, kayak, hike, hunt and bird watch year round.

The current area and operation of Camp Grayling is barely tolerable due to intrusive artillery practice, heavy machine gun fire, day and night aerial maneuvers and practice amphibious operations on the Manistee and AuSable watersheds. The value of experience on these rivers is simply degraded by daily sounds of 50 cal automatic fire and the night time sound and sight of helicopters dropping flares while one is fishing. In its current configuration and operation, Camp Grayling is intrusive at the very least.

Currently the Michigan National Guard proposes to expand these intrusions and indeed add aerial operations by unbearably deafening aircraft such as helicopters and A-10 "WortHog" at altitudes as low as 500 feet. This is unacceptable.

I recommend the Michigan National Guard and its military superior organizations withdraw their proposal and find alternate location(s) where the lives and activities of residents and visitors alike will not have to be devalued by the proposed camp and its operations.

**Tight Lines!**

Bruce Strachan  
Past President, Michigan Fly Fishing Club

Trout Fishing is Exciting!! Call me.

From: Bruce Strachan  
Past President, Michigan Fly Fishing Club

[REDACTED]  
National Guard Bureau  
Attn: Ms. Kristi Kucharek,  
3501 Fetchet Avenue,  
Joint Base Andrews, MD 20762-5157

December 5, 2022

Subject: Proposed Expansion Camp Grayling, MI

Dear Madam,

I am writing in opposition to the proposed Expansion for the Michigan National Guard Camp Grayling Michigan including the proposed expansion of the area and altitude air space.

As a frequent visitor to Grayling and the AuSable and Manistee Rivers, I value the natural beauty and solitude afforded me and fellow visitors to Grayling and its Wild and Scenic Rivers. They are among the most famously historical, pristine and valued trout fisheries in the mid-west United States. The Grayling region also affords local residents and national and international visitors immense opportunities to canoe, kayak, hike, hunt and bird watch year round.

The current area and operation of Camp Grayling is barely tolerable due to intrusive artillery practice, heavy machine gun fire, day and night aerial maneuvers and practice amphibious operations on the Manistee and AuSable watersheds. The value of experience on these rivers is simply degraded by daily sounds of 50 caliber automatic fire and the night time sound and sight of helicopters dropping flares while one is fishing. In its current configuration and operation, Camp Grayling is intrusive at the very least.

Currently the Michigan National Guard proposes to expand these intrusions and indeed add aerial operations by unbearably deafening aircraft such as helicopters and A-10 "Worthog" at altitudes as low as 500 feet. This is unacceptable.

I recommend the Michigan National Guard and its military superior organizations withdraw their proposal and find alternate location(s) where the lives and activities of residents and visitors alike will not have to be devalued by the proposed camp and its operations.

**Tight Lines!**



Bruce Strachan  
Past President, Michigan Fly Fishing Club



**From:** [Clay Stroup](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Unknown][Non-DoD Source] Expanded air space in northern Michigan  
**Date:** Friday, December 16, 2022 9:56:09 AM

---

To whom it may concern,

I would like to go on record as being opposed to increased amounts of Air National Guard flight areas over NE Michigan. We have owned a home in [REDACTED] Michigan since 1995 and like to enjoy the peace and tranquility that it offers. With the increased training at Camp Grayling in recent years it seems like we are in a war zone at times with planes and helicopters flying over basically around the clock. Please do not expand from what you currently have.

Regards

Clay & Linda Stroup  
[REDACTED]  
[REDACTED]  
[REDACTED]

[Sent from Yahoo Mail for iPhone](#)

**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: Alpena SUA EA  
**Date:** Tuesday, November 22, 2022 6:39:50 AM

---

What is an FA-18A (Table 2-9) and what is its Lmax at 500 feet altitude?

Clifford Stuehmer  
[REDACTED]

On Nov 20, 2022, at 10:23 PM, Clifford M. Stuehmer [REDACTED] wrote:

Attached are my questions and comments regarding the subject EA. Also attached is an example of the Shout Zone concept as referenced in my comments.

<Alpena SUA comments 111922.docx>

<SHOUT ZONE, 091722.key>

Clifford Stuehmer  
[REDACTED]

**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: Alpena SUA EA  
**Date:** Thursday, December 1, 2022 2:57:53 PM

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More comments regarding the draft Alpena SUA airspace proposal and draft FONSI.

The prior FMS pilot training proposal for Selfridge ANGB quotes a 0.65% decrease in home/property values for each dB increase in DNL. From Table 4.5, homes and properties around the points of interest listed, which is a good portion of the Huron County shoreline, will have a DNL increase of 6 dB, which translates to a property value decrease of 3.9%. Your draft Environmental Assessment and draft FONSI is woefully incomplete by not including this significant impact on the residents of Huron County.

You also need to clearly state that the seasonal adjustment will reduce noise levels from "uncomfortable" (115 dBA) to measurably more than "on a platform by a passing train" (102 dBA) only at the shoreline and not at all if one is on the water more than a mile offshore.

To make it clear to the people who will be affected, you should highlight that "low altitude air combat training" includes diving, climbing, turning and multiple passes over the same area.

This draft EA and draft FONSI:

1. Downplay the impact of Lmax by using the outdated DNL metric
2. Obscure the comparison of Lmax to common, relatable experiences by not including aircraft and Lmax in Figure 3.1
3. Omit the significant negative impact of the increased DNL on property values
4. Does not highlight or address the safety concerns noted in the AOPA's letter to you (but included in the EA appendices)
5. Cast a shadow of "propaganda" on your efforts to bring low altitude air combat training to Huron County and avoid or hide any facts or data that do not support a FONSI.

Clifford Stuehmer  


**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Tuesday, November 29, 2022 7:28:08 AM

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Additional comments.

Comments regarding the EA and appendices

What terrain, structures and over water features will be used for low altitude gunnery and munitions release training?


The appendices note moving vehicle and maritime vessel interdiction as part of low altitude training. What criteria is used to select and target moving vehicle and marine vessels for low altitude attack training? Will you conduct attack training on civilian/commercial vehicles and commercial shipping/recreational vessels?

Draft FONSI comment

The draft FONSI statement noise section is totally inadequate, misleading and obvious in its use of Ldnmr and DNL to gloss over 115 dBA single event noise levels imposed on the population. 115 dBA is the level at which the Secretary of the Air Force, through AFI 48-127, requires hearing protection for all Air Force personnel ON AND OFF base. It is a dereliction of duty by both the Air Force and NGB to ignore the DOD requirements regarding civilian protections during training. Shame on you for not addressing the single largest impact of the proposed changes on the population in your draft Finding Of No Significant Impact statement. Overflight noise levels increasing from 85 dBA to 115 dBA (a factor of 8) is NOT insignificant.

Lastly, your seasonal proposal does nothing for the full time residents along the shoreline.

Clifford Stuehmer  


On Nov 20, 2022, at 10:23 PM, Clifford M. Stuehmer   
wrote:

Attached are my questions and comments regarding the subject EA. Also attached is an example of the Shout Zone concept as referenced in my comments.

<Alpena SUA comments 111922.docx>

<SHOUT ZONE, 091722.key>

Clifford Stuehmer



**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Tuesday, December 27, 2022 9:06:27 PM

---

Additional questions that need to be answered.

Q1. For reference, what is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Steelhead Low North and East MOAs at the minimum altitude (500 feet)?

Q2. What is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Steelhead Low South MOA at the minimum altitude (4000 feet)?

Q3. What is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Pike East MOA at the minimum altitude (300 feet)?

Q4. What is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Steelhead Low MOAs at the ceiling (5999 feet)?

Q5. For an F-16 at 5999 feet, how far to each side of the flight path will noise levels be above 85 dBA (typical noise ordinance limit is 85 dBA).

Q6. For an F-16 at 500 feet, how far to each side of the flight path will noise levels be above 85 dBA (typical noise ordinance limit is 85 dBA).

Q7. For an F-16 at 300 feet, how far to each side of the flight path will noise levels be above 85 dBA (typical noise ordinance limit is 85 dBA)?

Q8. What is the minimum altitude at which an F-16 overflight at MIL power will NOT violate local noise ordinance levels of 85 dBA?

Q9. With an F-16 training at 500 feet/115 dBA one mile offshore during the seasonal restriction, what will be the noise level for the shoreline residents?

Q10. With an F-16 training at 1500 feet, one mile offshore during the seasonal restriction, what will be the noise level for the shoreline residents?

Q11. With an F-16 training at 1500 feet directly overhead, what will be the noise level for the shoreline residents?

Q12. With an F-16 training at 500 feet/115 dBA one mile offshore during the seasonal restriction, how far inland will the noise level be 85 dBA or higher?

Q13. With an F-16 training at 500 feet/115 dBA one mile offshore during the seasonal

restriction, at what altitude will the noise level be below 85 dBA for the shoreline residents?

Q14. What is the unweighted dB sound level of an F-16 generating 119/115 dBA during a 300 feet and 500 feet combat training exercise at MIL power? Show the 1/3 octave, unweighted data as proof of no whole body or historic building negative effects.

Q15. Why are there no MD's, Ear, Nose, Throat Specialists, audiologists, or auditory medical researchers on the list of preparers to address the harmful noise levels of F-16 overflights at 300/500 feet? An independent, transparent Environmental Assessment should include the research community findings that 65 dB DNL is outdated and the researchers recommend that the limit be set significantly lower.

Q16. The public deserves to know what Air Force policy with respect to noise is for its own personnel vs what they are asking the public to endure. At 300 feet altitude in the Pike East MOA, the noise levels will be 119 dBA. Why are there no references to AFI 48-127 with regard to 115 dBA and above?

Q17. With air combat training diving, climbing and turning multiple times over the same area and sorties of 2 or more aircraft and 300/500 feet noise levels of 119 dBA/115 dBA, why are there no references to exposure time limits over 24 hours regarding hearing damage?

Q18. EVERY F-16 flight over the Steelhead Low MOAs, given the ceiling of 5999 feet, will violate local noise ordinances (85 dBA) by a factor of 2 at 5999 (subjectively twice as loud, 96 vs 85 dBA) up to a factor of 8 at 500 feet (subjectively eight times as loud, 115 vs 85 dBA). At 4 flights per day in each MOA, thousands of people will experience this ordinance violation every day. Why is this not a significant impact?

Clifford Stuehmer  
Alpena SUA resident



**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Wednesday, December 28, 2022 8:34:38 AM

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Please answer these additional questions:

Q19. With an F-16 directly overhead at MIL power, 500 feet altitude, 350 mph speed, how many seconds will elapse until the dBA at the observer location decreases from 115 dBA to 85 dBA?

Q20. With an F-16 directly overhead at MIL power, 4000 feet altitude, 350 mph speed, how many seconds will elapse until the dBA at the observer location decreases to 85 dBA?

Q21. With an F-16 directly overhead at MIL power, 5999 feet altitude, 350 mph speed, how many seconds will elapse until the dBA at the observer location decreases to 85 dBA?

Q22. With an F-16 directly overhead at MIL power, 300 feet altitude, 350 mph speed, how many seconds will elapse until the dBA at the observer location decreases to 85 dBA?

Q23. Along the shoreline, with an F-16 training at 1500 feet directly overhead, 350 mph speed, how many seconds will elapse until the dBA at the observer location decreases to 85 dBA?

Clifford Stuehmer  
Alpena SUA resident  
[REDACTED]

On Dec 27, 2022, at 9:06 PM, Clifford M. Stuehmer [REDACTED] wrote:

Additional questions that need to be answered.

Q1. For reference, what is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Steelhead Low North and East MOAs at the minimum altitude (500 feet)?

Q2. What is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Steelhead Low South MOA at the minimum altitude (4000



feet)?

Q3. What is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Pike East MOA at the minimum altitude (300 feet)?

Q4. What is the dBA at ground level generated by an F-16 directly overhead at MIL power in the Steelhead Low MOAs at the ceiling (5999 feet)?

Q5. For an F-16 at 5999 feet, how far to each side of the flight path will noise levels be above 85 dBA (typical noise ordinance limit is 85 dBA).

Q6. For an F-16 at 500 feet, how far to each side of the flight path will noise levels be above 85 dBA (typical noise ordinance limit is 85 dBA).

Q7. For an F-16 at 300 feet, how far to each side of the flight path will noise levels be above 85 dBA (typical noise ordinance limit is 85 dBA)?

Q8. What is the minimum altitude at which an F-16 overflight at MIL power will NOT violate local noise ordinance levels of 85 dBA?

Q9. With an F-16 training at 500 feet/115 dBA one mile offshore during the seasonal restriction, what will be the noise level for the shoreline residents?

Q10. With an F-16 training at 1500 feet, one mile offshore during the seasonal restriction, what will be the noise level for the shoreline residents?

Q11. With an F-16 training at 1500 feet directly overhead, what will be the noise level for the shoreline residents?

Q12. With an F-16 training at 500 feet/115 dBA one mile offshore during the seasonal restriction, how far inland will the noise level be 85 dBA or higher?

Q13. With an F-16 training at 500 feet/115 dBA one mile offshore during the seasonal restriction, at what altitude will the noise level be below 85 dBA for the shoreline residents?

Q14. What is the unweighted dB sound level of an F-16 generating 119/115 dBA during a 300 feet and 500 feet combat training exercise at MIL power? Show the  $\frac{1}{3}$  octave, unweighted data as proof of no whole body or historic building negative effects.

Q15. Why are there no MD's, Ear, Nose, Throat Specialists, audiologists, or auditory medical researchers on the list of preparers to address the harmful noise levels of F-16 overflights at 300/500 feet? An independent, transparent

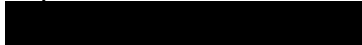
Environmental Assessment should include the research community findings that 65 dB DNL is outdated and the researchers recommend that the limit be set significantly lower.

Q16. The public deserves to know what Air Force policy with respect to noise is for its own personnel vs what they are asking the public to endure. At 300 feet altitude in the Pike East MOA, the noise levels will be 119 dBA. Why are there no references to AFI 48-127 with regard to 115 dBA and above?

Q17. With air combat training diving, climbing and turning multiple times over the same area and sorties of 2 or more aircraft and 300/500 feet noise levels of 119 dBA/115 dBA, why are there no references to exposure time limits over 24 hours regarding hearing damage?

Q18. EVERY F-16 flight over the Steelhead Low MOAs, given the ceiling of 5999 feet, will violate local noise ordinances (85 dBA) by a factor of 2 at 5999 feet, will violate local noise ordinances (85 dBA) by a factor of 2 at 5999 feet (subjectively twice as loud, 96 vs 85 dBA) up to a factor of 8 at 500 feet (subjectively eight times as loud, 115 vs 85 dBA). At 4 flights per day in each MOA, thousands of people will experience this ordinance violation every day. Why is this not a significant impact?

Clifford Stuehmer  
Alpena SUA resident



**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Thursday, January 12, 2023 7:39:53 AM

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The EA does not explain that, due to the lowered ceilings over Huron County (5999 feet), EVERY F-16 flight over Huron County will violate local noise ordinances, being TWICE as loud as the ordinance limit at 5999 feet and EIGHT times as loud at 500 feet. Noise limits are set because noise above the limit "unreasonably disturbs the comfort, quiet and repose of persons in the area" (quoted from our local township noise ordinance).

Why have you not addressed this negative impact in the EA?

In light of multiple daily noise ordinance violations, at many times above the violation limit, please explain, in detail, your rationale for declaring a FONSI.

Please explain how F-16s at 500 feet, generating 115 dBA, eight times as loud as an A-10, conducting air combat training (climbing, diving, turning and multiple passes over the same area, usually in pairs) with more daily flights than the current A-10s, is determined to be a FONSI.

Please explain in detail why you avoid publishing practical data and comparisons so average people can understand the impacts of how your proposal will change their daily lives.

Clifford Stuehmer  


**From:** [Clifford M. Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: Alpena SUA EA  
**Date:** Saturday, January 14, 2023 8:25:14 PM

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Sorry a typo in question 14. I left out the word “how”.

Cliff

- > On Jan 14, 2023, at 7:09 PM, Clifford M. Stuehmer [REDACTED] wrote:
- >
- >
- > Additional questions regarding the data in the EA.
- >
- > 1. According to Figure 3.1, 115 dBA at and near the Huron County points of interest (along the whole shoreline, in effect) is at the level of “uncomfortable” for people and is louder than in the audience of a rock concert. Is this correct?
- > 2. Air combat training is defined as diving, climbing, turning, and multiple passes over the same location. Is this correct?
- > 3. Air combat training will almost always consist of a leader and a wingman, therefore 2 aircraft in close proximity of each other performing air combat training. Is this correct?
- > 4. How many seconds of exposure at 115 dBA is allowed for Air Force personnel by AFI 48-127 in an 8 hour period?
- > 5. How many seconds of exposure will be imposed on the people at or near the points of interest by multiple passes of two F-16s performing air combat training and generating 115 dBA each?
- > 6. At what dBA level does speech communication become impossible?
- > 7. At what dBA level must one shout to communicate with someone 3 feet away?
- > 8. What noise metrics are you required by law to report in an EA and an EIS?
- > 9. Of those metrics from question 8, what are the limits above which the subject of an EA or EIS is automatically rejected?
- > 10. Are there any limits on any other noise metrics (SEL for example) reported in an EA or EIS?
- > 11. If noted as a possibility to reduce noise, are noise mitigation actions, like windows, doors, insulation automatically funded if there are no flight or aircraft alternatives?
- > 12. Are there any limits on single event Lmax levels?
- > 13. How many seconds at 128 dBA, in 24 hours, (Shupac Lake State Forest Campground, Turtle Lake Road) until hearing damage occurs?
- > 14. In the Pike East MOA, with a 300 foot floor, the Lmax appears to be 119 dBA. After how many seconds exposure of a flight of two F-16s conducting air combat training (over the boaters) will hearing damage occur?
- > 15. If the F-16s in question 14 are relatively close in proximity, the Lmax will be 122 dBA. Is this correct?
- > 16. If a flight of two F-16s are relatively close in proximity at 500 feet, in an overflight the combined Lmax will be 118 dBA. Is this correct?
- > 17. How many seconds of exposure (over a 24 hour period) will cause hearing damage at 118 dBA?
- >
- > Clifford Stuehmer  
> [REDACTED]

**From:** [Rosemary Stuehmer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Thursday, January 12, 2023 7:35:04 PM

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Regarding the Alpena SUA Expansion Proposal:

Recently (too recently), the Air National Guard sent a notice of a draft Environmental Assessment regarding changes to training patterns that would provide a cost savings to the Pentagon budget. As a retired teacher, I am familiar with the school districts' tendency to plan millage votes when the fewest people are likely to be in town to object to them. The ANG has deviously set the latest EA to be addressed during the busy holiday season when the summer tourists who might be affected will not be aware of its existence and the local citizenry is occupied with seasonal distractions and travel. With only thirty days to learn about the changes there was very little time for the inhabitants to investigate, consider, and educate themselves of the consequences should the proposal be enacted. Apparently, some authority recognized the shameful appearance of this tactic and extended the response period. Nevertheless, the initial underhanded attempt to sneak this new proposal in under the radar speaks to the quality overall of the intentions of the proposal's authors.

The Upper Thumb region of Michigan is home to a sizable sandhill crane population which uses the area for mating and rearing young from spring until fall. These very large birds, weighing as much as ten pounds with a wingspan of seven feet, are known to fly at altitudes of 6,000 feet over land and water. Their feeding and nesting in many areas of Huron County will be adversely affected by the noise and they will prove hazardous to pilots flying low altitude combat training around the Lake Huron shoreline. Besides the utter disruption to daily human life the proposed SUA changes will bring, which the military is willing to dismiss, there will be increased risk of damage to aircraft. Will the cost savings to the military be greater than the likely loss of an aircraft should there be a bird strike?

The trumpeter swan has been brought back from the edge of extinction and is once again established in the area of the SUA. They are native to Michigan and are the world's largest waterfowl species, with a wingspan of 6-7 feet and weighing as much as 25 pounds, yet they are not mentioned in the current EA. Who wrote this and left out such (literally) enormous attractions to birdwatchers and environmentalists that will be devastatingly dangerous to low flying aircraft in their habitat?

The Air National Guard shows no consideration for the damage to the quality of life for the citizens living in the proposed SUA, nor to the environment where it will shed chaff and fuel pollution. While it claims there are Findings of No Significant Impact, (FONSI)s, it did grant concessions to the times and places where tourism and economic enterprise could be harmed by the lower and more frequent air exercises that will occur. How do you preach both ways, gentlemen? Damage and disruption or no damage and disruption?

The proposed changes are an attack on the quality of life and the environment of the Upper Thumb. Lower population level does not equate to lower worth and neither the citizens nor the birds should be subjected to the increased noise and pollution the military is willing to visit upon Huron County.

Rosemary Stuehmer



Sent from my iPad

**From:** [Mike Sumeracki](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Against Camp Grayling Expansion  
**Date:** Saturday, January 14, 2023 5:21:00 PM

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As a property owner on the AuSable, I am adamantly opposed to the expansion of Camp Grayling. The reasons are too numerous to expand on in one email.

Mike Sumeracki

**From:** [Ruby Summers](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 6, 2023 3:12:15 PM

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Good afternoon,

I write to express great concern over the proposed expansion of Camp Grayling.

As you know, Camp Grayling’s footprint includes portions of the iconic Au Sable and Manistee River watersheds and beautiful forests, water and land that are depended upon by Michiganders for hiking, hunting, fishing, kayaking and more. The proposed expansion – of land and airspace – would greatly impact access to the rivers and land, not to mention the way of life for those who depend upon the area for recreation. Now, there are even more concerns about the potential environmental impacts of the expansion, specifically when it comes to toxic PFAS contamination.

If protecting the Au Sable and Manistee watersheds was not reason enough to reject the proposed expansion, Camp Grayling has been a test case for how the federal government and the military respond to PFAS contamination. After widespread PFAS contamination was found in the area more than five years ago, the National Guard pledged to investigate, address and remediate the toxic “forever chemicals” known to cause cancer and birth defects. Certain state environmental officials, however, say the Guard has not done enough.

With this framing, I urge you NOT to expand Camp Grayling, which is already the largest facility of its kind. The Au Sable and Manistee rivers, and all who rely on and enjoy these rivers, would be severely impacted by the expansion, not to mention all those impacted by the PFAS contamination.

Thank you for your consideration,  
Ruby Summers



**From:** [Jo Suszek](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Air Space  
**Date:** Monday, January 16, 2023 10:35:08 PM

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It would be a disturbance, not only for households , but also for our seniors, in Nursing homes. We live right in the landing range and it is unbelievably loud, with just the normal flights. In our opinion, why not do it in Grayling? We're tired of the noise and we are also seniors, with health issues. Some of these training exercises look like they are about to land on our house! No, NO, NO!!

**From:** [James Supina](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Saturday, January 14, 2023 12:50:42 PM

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I oppose the proposed expansion of low level aircraft training flights in the AuSable River basin. This area is a vital natural resource that requires continued protection and cannot tolerate the increased debris and pollution that would result.  
There are plenty of other sites where these activities could take place.

Regards,

Jim Supina

**From:** [MARGOT SURRIDGE](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 9:53:21 AM

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I would like to voice my strong opposition to the expansion of Camp Grayling. It will create long lasting damage to the area. Northern Michigan has provided a great deal of benefit to the military already (proud to do so) but feel this expansion is far from necessary.  
Margot Surridge

Sent from my iPhone

**From:** [DEBRA SWEET](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Airspace Expansion  
**Date:** Thursday, February 2, 2023 3:00:31 PM

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I am writing to post my objection to the proposed airspace expansion for the National Guard training. Many sources advise that increased temperatures are a leading contributor to adverse climate change. We have already seen multiple winters with less snow and summers with much higher temperatures. Have you done any studies to prove that additional jets, larger jets, flying at lower altitudes will not increase our current average temperatures? What about studies of any other detrimental effects to humans, natural resources and wildlife? If you have proof that this increase airspace will not have detrimental effects, can you please provide the results of those studies for us to review?

I know that protecting US citizens is important, but what good it that if there is nothing left to protect? Please continue to keep the current airspace as it is.

Best Regards,  
Debra Sweet



**From:** [Anna Sylvester](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Friday, December 9, 2022 10:31:36 AM

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National Guard Base

Attn: Ms Kucharek,

I am writing in opposition to the proposed changes to the Grayling National Guard Base airfield expansion & lowering of flight patterns.

The stated changes will allow flying at 500'

I attended a public meeting regarding The Grayling Base and at that time complained about low flying aircraft over my house, rattling my windows, pictures falling off my walls, the tops of my 200+ year old pine trees billowing, and most importantly scaring my cats. The noise is way too loud for their sensitive ears. (Probably not important to you, however if you witnessed the reaction from my cats, you would likely say it's inhumane treatment!) I was informed the aircraft follows the highways and they do not fly over my house. I offered them to come to my house any Friday. I am not along the Highway! They should not be flying so low above my house.

And now there is a proposal to expand the airspace and lower the flights! Should I expect the tops of my beautiful trees to be chopped off with lower aircraft?

My street address is below, look it up. I was told the aircraft should not be flying over my house, not to mention so low over my house. Please instruct your young pilots to stop this "fun" practice.

Please add this letter to the pile of those in opposition to the expansion of airspace and lowering of flights, because I'm convinced my voice doesn't matter - like it did not when I previously complained.

Sincerely,

Anna Sylvester



Sent from my iPhone

**From:** [Joey Tatar](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Monday, December 5, 2022 11:09:23 AM

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To whomever it may concern,

**STOP THE EXPANSION!**

Upon receiving this update from the Anglers of the AuSbale my heart absolutely sank. I am only 22 years old, I hear stories from my Grandfather, Dad and Uncles about what the land used to look like, sound like, feel like... TRUE WILDERNESS. Before the already fenced in section of the military base and overuse of ORVS on trails... Or the constant gun fire, all throughout the day and into the night. Or how they never had been woken up at 3am from explosions that quite literally shook the cabin, on the peaceful North Branch of the AuSable River. Or before there was PFAS.. The stories could go on, tanks blocking off trailheads for "mannovers," truck-trails destroyed from military vehicles and tanks, etc.. When I saw this email, the first thing that came to mind was that this is going to pass, and my kids and grandkids will never experience Northern Michigan like I did, and not even close to what our family members did before.

This brings tears to my eyes. There are so many other places to do this. Northern Michigan is NOT one of them.

JOSEPH TATAR

**From:** [mark](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Proposed Expansion of Military Training Areas  
**Date:** Wednesday, December 14, 2022 8:28:58 AM

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I support the expansion.

Affected property holdings available upon request.

R/

Mark Teale

**From:** [Corey Thelen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Monday, December 12, 2022 9:51:47 PM

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To whom it may concern,

As a property owner in the Pike West MOA, as well as a frequent visitor and past resident of the Grayling area, I am writing to express my opposition to the air space expansion over Northern Lower Michigan. Those of us who choose to live in and visit northern Michigan, value the peace and solitude of the north woods as well as the diverse wildlife and habitats that make the area special. The expansion of military air space, (as well as Camp Grayling), would negatively impact the quality of life of residents and visitors alike.

Tourism is the foundation of the local economy. Many of these tourists come to enjoy Michigan's outdoors and get away from the noise of the city. The noise, pollution and potential damage to the ecosystem would jeopardize the ecotourism that is the lifeblood of the area.

The Military has already broken promises and dragged their feet when it came to cleaning up the PFAS pollution around Grayling, Alpena and Oscoda. We have no reason to trust the Guard will keep any promises they make in regards to this expansion. Most join the National Guard to protect the wellbeing of American citizens and our way of life. This expansion will subvert that mission. I hope my concerns, and those voiced by all who call northern Michigan home, will not fall on deaf ears.

Thank you,

Corey Thelen  
Artist, Angler, and Banjo Enthusiast





12/2/22

Public Comment

National Guard Bureau

ATT: Ms Kristi Kucharek

3501 Fetchat Ave

Joint Base Andrews, MD

20762-5157

I disagree with your Draft Finding no Significant Impact for Modification and Addition of Airspace regarding Steel Head area over Port Austin.

\* My son was 3 when 2 planes were 250 feet above my home & business in Grindstone 5 miles east of Port Austin in 1997. He was scared to death and I could not move to get to him. We live on the shoreline. Many letters later Brigadier General Cutler moved those planes to the east.

\* This Modification states a one mile radius around Port Austin, make that a 6 mile radius and you will avoid Grindstone to the east and the popular State park to the west.

\* I request Alternative B, Action without Steelhead Low MOA's

Lucynda Thrushman

12/11/27 (2nd letter)

National Guard Bureau

SMS Kristi Kucharek

3501 Fetchat Ave

Joint Base Andrews, MD

20762-5157

- I am a member of "Quiet Ski's" a group in the Thumb who worked very hard, attending countless meetings for months in the fall and winter of 2019 to stop the Steelhead Low MOA. We collected Resolutions against the Steelhead Low MOA from many townships, these are on record! I am a patriot, I love my Armed Forces. I was called names, publically ridiculed, laughed at when I told of my experience in 1997 of two planes 200 feet above my home that almost collided. Then the noise was compared to a vacuum! Then like now the military waited until 3/4 of our population had left for the winter so we could not get the numbers we needed to oppose it - and yet it didn't happen?

- I strongly disagree with this draft that states "No Significant Impact." This area has new families that flocked here in 2020, 21 & 22. Covid brought them out of the cities to seek a quieter, peaceful life. Many have bought businesses and have young children. They have no idea of the possibility of planes flying 500' over their heads daily!

→ This area is listed as one of the largest areas for migration of millions of birds. How do jets training begin to mix with them safely?


- I am requesting and submitting for family and friends, for my church and my small resort along the shores of Lake Huron in Grindstone Michigan 5 miles east of Port Austin -  
Alternative B! Do not take away lively heads of this tourist town!

Lucy NDA Thrushman

**From:** [lu.thrushman](mailto:lu.thrushman)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](https://www.ngb.org/)  
**Subject:** [EEMSG-SPAM: Suspect] [Non-DoD Source] Alpena SUA EA  
**Date:** Friday, January 13, 2023 3:38:20 PM

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This proposal is unacceptable as we went through this in 2019 and Huron County Quiet Skies of which I am a member went to many meetings and collected resolutions from townships to oppose lowering the Steelhead MOA. I have had these planes overhead in 1997 out in my driveway at 250 feet with my 3 year old son, it was one of the scariest experiences in our lives. The two planes came very close to colliding and I could not move to get to my son who was screaming in pain from the pressure. Brigadier General Cutler moved these planes east 4 miles off the grid. I still own the small resort in Grindstone. The military now as it did in 2019 waited until our snowbirds left the area. We have many new families that moved here during covid, some investing their life savings to buy businesses. We have a seasonal majority home and business ownership in this small town. They have no idea this will happen. My residents pay rent to enjoy the peace and quiet and beautiful water. As a tax payer what will be my compensation for this violation of the noise ordinance above my property if they all leave? I have paid lake front tax dollars for 26 years! I have paid close attention to other areas that have had a horrible time with the noise. Why can we not go with alternative B, which leaves Steelhead as it is? Grayling is temporary this is being proposed as PERMANENT that is just not right. Add in the training and shooting of flares and there goes Our tourism and peace . The proposal puts a one mile radius around the village of Port Austin why not move it to 6 mile radius to protect Grindstone 5 miles to the east a resort fishing town, and it would also protect the state park to the west. There is plenty of open land on either side to find an unpopulated route? I am a law abiding citizen and love my country but I have not signed up for combat and noise over my head and neither have my residents. The military has land out west why bring this over to Michigan above a total tourism state? Money is the only reason and this states greed should not be able to take away what this town has strived for for 50 plus years. Yes I grew up in this quiet beautiful little town and moved back to run the family business so I'd like it to remain peaceful and I don't think that's too much to ask. I also want to mention the migration of thousands if not millions of birds I watch every spring and fall directly over my home. The majestic eagles nested in my trees will be gone, don't tell me it will have no affect on them, it will. The ENVIRONMENTAL Assessment is false. Come and visit and you will agree you all made a mistake!

Lucynda Thrushman court, 

**From:** [Kristin Tindall](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Wednesday, December 14, 2022 10:31:53 AM

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I would love to comment on all the environmental and social reasons why expanding the air space of Camp Grayling is a terrible idea for residents, tourists, and future generations. But I can't really get past this sentiment that jumped straight into my head "Get the fuck out of here with your military"exercises"". Don't want it. Don't need it. Close it all down. All public land back to tribal control - this land should be promptly turned over to control of the local Odawa band council for remediation.

Thank you for your consideration of citizen commentary,

Kristin Tindall



**From:** [Tkat](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Air fly zone  
**Date:** Wednesday, December 14, 2022 10:10:27 AM

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I lived by Selfridge growing up. I love the plans flying over. We are in [REDACTED] Sanilac county and a Canadian company is pushing for 656 ft tall turbines. Residents do not want them. But 4 board members are getting them and pushing it for themselves. We found out no medical aircraft can not fly in. Please I support our military and use fremont stop these turbines. I know your map does not have a color section by us. But we need our boarder to be able to fly in. Thank you

**From:** [Bess Touma](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alena Air EA Comments  
**Date:** Sunday, December 11, 2022 1:29:28 PM

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I urge The Michigan Air National Guard to refrain from expanding its airspace and intensify its activities over the northern Lower Peninsula, Thumb, and Lake Huron, allowing military aircraft to fly further, more frequently, and lower overhead.

The proposed military training airspace expansion will result in increased and extended high levels of noise, well beyond those currently allowed by local ordinances. Other impacts will include increased air pollution in the form of fine particulates from jet fuel exhaust, increased potential for spills of fuel and other toxins, release of thousands more of decoy chaff and flares by aircraft each year resulting in the discharge of magnesium oxide, magnesium chloride, and magnesium fluoride over water and land, greatly increased potential for accidents involving civilians, catastrophic bird strikes particularly large migratory waterfowl, and increased military presence, potentially even foreign military personnel.

Thank you for your consideration,  
Elizabeth Touma

Bess Touma  


**From:** [Brian Turner](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 13, 2022 7:41:12 PM

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Hello,

I am writing this email with extreme concern. First, for the preservation of the natural habitat that is at risk with the expansion of camp Grayling. Second, I am saddened to hear that this might be a possibility that was without adequate notice to residents of Grayling, Waters, and the several thousand nonresident vacationers.

Finally, I am feeling neglected. With the growing destruction of the natural resources, tranquility, and fire risk.

Concerned citizen,

Brian Turner

--

Brian Turner 

**From:** [Sydney Turner](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 8:49:38 PM

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To whom it may concern:

Please do not move forward with the Camp Grayling expansion. It would destroy the land's natural habitat and increase chances of fires. I am the third generation of individuals who have been coming to the area to enjoy the outdoors. I hope my kids can continue to do the same. Please, please do not move forward with the plan.

Thank you,

Sydney Turner



**From:** [Jeff Twyman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 12:23:21 PM

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While I am extremely proud of our military when I see and hear them fly over my cabin on the AuSable, I have already suffered cracked windows and traumatized grandkids and pets. Please don't increase the noise and traffic over such a pristine river and ecosystem. Thanks for what you do and your consideration of my opinion.

Jeffrey R. Twyman

[REDACTED]

[REDACTED]

[REDACTED]

**From:** [John Van Dam](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA  
**Date:** Tuesday, December 6, 2022 5:33:53 PM

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Dear Ms. Kristi Kucharek,

We are property owners on the North Branch of the Ausable River near Grayling, MI. We have great concern about airspace expansion in the area and proposed expansion of land area in the Grayling area. The up North experience is lost about the time A-10 and F 16 aircraft come zooming past at 500' AGL. Please have some understanding for folks in that area of Michigan who have invested life savings in cabins in that area of Michigan so they can enjoy the outdoor experience without the sounds of military training missions ringing in our ears.

Unfortunately I doubt we can stop the development of military expansion in the Grayling area. But we can at least try. Or perhaps we can limit the time periods when training is taken place. Put yourself in the position of the people on the ground who are there to enjoy the outdoor experience without the sounds of high speed jets passing 500' overhead. Thanks for your consideration. John Van Dam, [REDACTED]  
[REDACTED]

**From:** [Thomas Van Tiem](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, January 4, 2023 5:05:55 PM

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Dear National Guard Bureau:

As a Huron County resident, I am strongly opposed to the proposal to increase and expand airspace for additional flight training in Huron County. Flights as low as 500 feet are unwise in any populated area. The additional noise and pollution is unacceptable. I urge you to reconsider this unreasonable proposal.

Sincerely,



**From:** [Rich Vander Veen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Josh Greenberg](#)  
**Subject:** [Non-DoD Source] 230 is enough!  
**Date:** Saturday, January 14, 2023 3:41:45 PM

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GUARD & PROTECT

OUR GREAT LAKES

& Watersheds

FOR FUTURE GENERATIONS!

Rich Vander Veen



**From:** [Rich Vander Veen](#)  
**To:** [Frederick Baker](#)  
**Cc:** [NGB A4/A4A NEPA COMMENTS Org](#); [Jim Graves](#); [whitmer.g@michigan.gov](mailto:whitmer.g@michigan.gov); [ELIZABETH KIRKWOOD](#); [Lisa Wozniak](#); [Josh Greenberg](#); [Rich Vander Veen](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Re: ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 3:15:23 PM

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Fred

May the Guard, the MDNR, EPA, EGLE & all concerned Citizens read your thoughtful epistle and get engaged in protecting the environs where trout are found!

Rich Vander Veen  
[REDACTED]

On Jan 14, 2023, at 2:33 PM, Frederick Baker [REDACTED] wrote:

Dear Sirs:

Michigan is almost as large as several European countries (Germany, France, Spain, Poland, Sweden) and larger than some (each of the Benelux countries, Denmark, Austria, the Czech Republic). Each of these countries – all NATO members -- maintains a robust military without destroying its environment. They choose training alternatives that protect their small nations from irreversible damage, not only for the benefit of their citizens, but because tourism is an important part of most of their economies.

Michigan should be no different. Tourism and recreation are the third largest component of the Michigan economy. The citizens of Michigan are privileged to live in a unique corner of the world: there is no other place on earth – and this is the literal truth – virtually surrounded (both peninsulas) by fresh water seas containing twenty percent of the world's fresh water and teeming with more miles of river and streams per square mile than any place on earth except Canada. We, too, have alternatives to the terribly thoughtless low flight training plan our own Michigan National Guard has proposed for Camp Grayling.

Whatever would possess you to think it is appropriate to send planes at altitudes as low as 300 feet over what some believe to be the finest trout stream in the world?

What are you thinking?? You are the **MICHIGAN NATIONAL GUARD. Please guard Michigan!**

You know the arguments – the Growler, a low altitude ground support aircraft, is named that for a reason. It is loud!

People come to the Au Sable to renew themselves, not to be buzzed by weekend warrior flyboys who think it is great fun to drop chaff on holy waters. Why would anyone think it is acceptable to deposit the 33,306,000,000 micro-glass aluminum fibers contained in the 6,103 chaff cartridges the Guard plans to drop annually over an expanded training area that includes the Au Sable?

If you adopt this plan, we – the Anglers of the Au Sable, and the citizens of Michigan -- can promise the Guard litigation. Ultimately, the Guard will not succeed in implementing this hare-brained scheme, because this plan violates NEPA, and you know it.

Don't you care??

The Au Sable was already destroyed once, when Michigan was stripped of its timber and the grayling that once teemed in it not were decimated.

The Au Sable has recovered from that devastation as a trout stream of the highest quality. This recovery took over a century.

*We should learn from history: Do not pollute and jeopardize the fragile balance of one of Michigan's most delicate and valuable natural resources.*

The Guard's mission is to protect Michigan. We appreciate what you do, and you deserve our support and our thanks.

But remember that the Guard also have a duty – as all Michiganders do – to protect our state's beauty and resources. After all, they are an important part of what makes our state worth defending.

Please, amend your plan. Protect the Au Sable.

Frederick M. Baker Jr.



**From:** [Amanda VanDusen](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, January 6, 2023 2:23:09 PM

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To Whom It May Concern:

I am writing to express my comments and concerns regarding the proposed Modification and Addition of Airspace at the Alpena Special Use Airspace Complex as described in the November 2022 Draft Environmental Assessment for that proposal. My husband and I own a 120 year old historic home, with the framing and windows mostly in their original state, on Lake Huron, [REDACTED] Michigan, in the proposed Steelhead Low East MOA., not far from the Steelhead Low North MOA. That kind of housing stock is not particularly unusual along the Lake Huron shoreline, and our location is not isolated from other residences and cottages.

At the outset, I want to acknowledge the need for training flights, and to say that the existing flights over our area have not been problematic, and we would not object to a moderate increase in the number and duration of sorties in the proposed Steelhead Low East MOA.

At the same time, we are opposed to the dramatic and significant increase in sorties as proposed, and the accompanying noise, fire risk and negative economic impact on a long-depressed area which is just beginning to show signs of positive economic growth. Finally, the draft assessment appears to misstate and understate the environmental impact of the proposed changes—in addition to the impact of noise, this region is home to major bird migrations, and those migrating birds frequently fly at altitudes of 2000-5000 ft., well above the proposed 500-1500 thresholds, beginning in April and extending well into the fall months, even into November each year.

As your draft acknowledges, the typical decibel levels in Huron County are 35. The anticipated average day/night increase is 6 decibels. You do not indicate in the draft what the difference is between the noise impact at 500 feet vs 1500 feet, making it appear that the increase will be substantially higher when sorties are run at 500 feet. The maximum anticipated decibel level listed is 105 which is extremely loud, triple the normal level. The number of hours (388) and duration (up to 60 minutes) of proposed flights is dramatically higher in Steelhead Low East than in the other Steelhead Low MOAs. And noise really carries over water, so the impact of your plan would fall disproportionately on the residents and businesses of the Steelhead Low East MOA. It appears to us that the noise would increase very significantly for 60-90 minutes nearly every day.

The economy of the northern part of Huron County relies not just on farming, but also on recreation and the tourist industry. Your assessment gives a small nod to that by increasing the minimum altitude from 500 feet to 1500 feet from May 15-September 15. The decibels, frequency and duration of sorties even at 1500 feet will be significant, interfering with the peaceful enjoyment of the many

recreational opportunities in the area, and depressing property values, not just discouraging the tourist industry but adversely affecting local businesses and restaurants, contractors and trades actively engaged in the local economy, and reducing property tax assessments and collections. Outside the “summer season” increased flights at lower altitudes would discourage the burgeoning development now occurring in Port Austin, as workers take advantage of the increased opportunities for remote work.

Your draft acknowledges increased fire risk, but fails to acknowledge the potential impact of increased chaff and flares on the many historic cottage communities and businesses along the Lake Huron coast, where high winds frequently blow in off the lake. Much of the coastline is wooded, and most of the homes are wood frame. Your report does not recognize impact these wind patterns could have on the increased flare and chaff detritus.

In sum, your draft fails to accurately and thoughtfully reflect and assess the true impact of the proposal on the quality of life for residents, businesses and wildlife in Huron County. We ask you to reconsider the plan and come back with a much more modest proposal which reduces the number, frequency and duration of flights to a level which both allows for some training without the significant disruption of the local economy and quality of life (both for residents and the animals with which we share that environment) that the current proposal would bring to the area. We would also ask that whatever plan is put in place should be temporary, so that a periodic review and reevaluation of the actual impact can occur, and adjustments made to prevent adverse impacts to the region.

Thank you, Amanda Van Dusen



**From:** [Matt Vaughan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Opposed to additional low elevation flight envelopes out of Camp Grayling  
**Date:** Monday, December 5, 2022 9:24:16 PM

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I would like to register my strong opposition to any additional low flight testing envelopes out of Camp Grayling.

The environmental impacts are numerous as are the negative economic impacts to our local area which depends on tourism. The noise impact on both residents and wildlife would also be significant and unnecessary.

Furthermore, the motivation for this expansion is perplexing. The terrain is uninteresting from a training stand point. There are no significant elevation changes in this part of Michigan. Pilot readiness, it could be argued, will in fact be diminished by low altitude training in such boring terrain relative to pilots training in other parts of the country. If the Guard is serious about pilot readiness for low altitude flight envelopes it would do well to consider ranges in the Dakotas, the southwest, the northeast, the Front Range, or the Pacific Northwest. These areas offer both the flat terrain of Michigan and more complex terrain that, collectively, provide much more realistic training environments. With the presence of major bases in all of these locations, why would it make sense to prioritize additional low altitude training in Michigan over these options? I would like to be provided with the Analysis of Alternatives or other formal Guard Bureau and DoD approved studies indicating that this terrain is actually the most suitable for low altitude training. Should that data not be available to the public, please let me know so that community members can seek it out through the delegation.

In closing, the negative environmental, community and economic impacts of the proposed additional training envelopes out of Camp Grayling compel me to strongly oppose this expansion. The logic of the training benefits are also counter intuitive and warrant additional study.

Matt Vaughan



Sent from my iPhone

**From:** [christie.verlac](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Grayling NG Expansion  
**Date:** Saturday, January 14, 2023 4:56:18 PM

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I am opposed to the expansion of the National Guard. The AuSable River is the greatest asset in Crawford County and the prime tourism attraction that brings extraordinary revenue to our community. My concern is a trust issue with guard as well as the effect the expansion and lower fly zones will have on the river, recreational sports and real estate market values. The trust issue is that the guard has polluted several wells and Lake Margarethe with no remediation. This has no doubt affected market values to the lakefront and backlot owners on the lake. Who wants to purchase real estate on a polluted lake and who wants to purchase real estate in a community that has low flying aircraft and who knows what else flying overhead?

Christie Verlac  
Sent from my iPad

**From:** [Katrina Verlac](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, January 15, 2023 1:13:28 PM

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To whom it may concern,

I'm writing as a resident of [REDACTED] - only 6 years myself, but also as the wife of a life-long resident of [REDACTED]. We are both successful in our fields, extremely active in this community, and care deeply about the natural resources that this place harbors.

We are proud of the military activity that takes place here. We are accustomed to blasts that shake our entire house, and continue to think fondly of all of the service men and women who are here to practice in these rugged northwoods conditions. However I do not support increasing military noise. We ask that you please respect the peace and quiet that exists here.

We can support a reasonable amount of military activity for this area. However we do not believe that expanding the area in which you deploy chaff is reasonable. I beg that you do not expand the area for your training.

Many of our neighbors cannot drink their well water due to PFAS contamination that is residual from military training exercises in this area. That is unacceptable. Our soil, our water, our air is too precious - not only to us, but to all humans consuming Nestle products! Think about how this affects not only the small community of Crawford County, but all of Michigan and the US of A.

Please find somewhere else to do the necessary training. Somewhere less important, less fragile, less treasured than the Au Sable river valley.

Thank you for your consideration of my personal opinions.

Sincerely,  
Katrina Franzen Verlac

**From:** [Kevin Virta](#)  
**To:** [NGB A4/A4A NEPA COMMENTS.Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Sunday, December 4, 2022 7:27:38 PM

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I am writing to express my opposition to the proposed air space expansion at Camp Grayling.

My wife and I are summer residents of [REDACTED]. We come to the area to enjoy the outdoor recreation activities and the solitude of the Northern Woods. We appreciate the value Camp Grayling brings to the area and recognize its importance in preparing our US military to defend our country. Accordingly, we understand and accept the noise and other minor disruptions that occur during training activities. However, we are opposed to the expansion because of the increases in noise and disruption that would accompany it, and because of the negative impact it will have on the land and wildlife.

There is already enough disruption from training activities to the area residents, tourists and wildlife. An increase would negatively impact an area that is already overly accommodating to Camp Grayling.

Thanks,  
Kevin

[REDACTED]

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Kevin Virta

[REDACTED]

**From:** [Lorie Vorraro](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATN.ALPEN A SUA EA  
**Date:** Tuesday, January 17, 2023 10:14:21 AM

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Dear Ms Kristi Kucharek,

My name is Lorie Vorraro. My husband and I live at [REDACTED] [REDACTED]. As I near retirement age and will be able to spend more time at my beloved home I am concerned about increase noise from the Alpena base/Airport which is quite close to my house.

I understand and accept that there is going to be traffic noise but the possibility of increase noise due to air space changes and therefore more traffic noise has me concerned.

There are different types of pollution and noise pollution is just one of the many ways that can decrease my quality of life. Being outside and enjoying walking my property, gardening will be dampened by the increase of air pollution if our air space area is increased and more traffic is over my property. More is not always better.

Our Pentagon spends way too much of our taxes to pay for equipment that most likely will be never used.

My family is against the increase in air space thus an increase in noise level for my area.

Although my opinion does not matter, I felt it was important to let you know how my family feels about this decision.

Thank you for your time,  
Sincerely,  
Lorie J. Vorraro DC,LMT

**From:** [REDACTED]  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Monday, December 12, 2022 10:53:35 AM

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It is an unbelievable nightmare that the Air Guard would be so cavalier of the lives of so many Michigan residents and visitors, to even propose that so much more of our Michigan skies will be subjected to more jet flights that fly **too** low, **too** loud, **too** often.

Unbelievable that it so blatantly threatens our environment and those lives with deafening noise pollution, chemical pollution: from exhaust, chaff and flares, as well as the risk of fires that their report describes as possible.

These are very environmentally sensitive areas, iconic wildlife areas that draw folks from around our state and around the country, some recognized officially as Natural Rivers, entitled to special protections by our government to preserve them as natural and healthy.

Their own report warns: **Use of chaff over or immediately adjacent to highly sensitive areas such as Wilderness Areas, Wild and Scenic Rivers, National Parks and Monuments, and other pristine natural areas may be incompatible with the land use management objectives for those areas.**

This proposal dramatically violates this important limitation.

There are so many reasons this proposal should be rejected. This one, on its own is enough for the FAA to say: No

Neil Wallace

From: [REDACTED]  
To: [NGB A4/A4A NEPA COMMENTS Org](#)  
Subject: [Non-DoD Source] Alpena SUA EA  
Date: Friday, January 13, 2023 6:12:11 PM

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Attention Alpena SUA EA

That there is even a hint in the proposed intensification of Electromagnetic Attack Warfare to be used in our community is unacceptable, and irresponsible.

When I read in an appendix to the so-called Environmental Assessment that: **“military activities that use electromagnetic energy to control the electromagnetic spectrum (“the spectrum”) and attack an enemy”**, I startled and upset.

There are many reasons to fear the various dangers for people, wildlife and the environment from this proposal. This is a blatant disregard for all three. Our region, our peninsula, is every bit as sensitive as the Olympia Peninsula.

The lack of any discussion of the potential dangers in the Assessment is a glaring, seemingly intentional, omission. The contractor preparing this Assessment must certainly be aware of the risks to human and animal health and well-being – and yet nothing – rather it is blithely dismissed, as though it is what? Just something we have to learn to live with, like PFAS?

It is almost as if the plan is to experiment on the people of Michigan to determine what combat value there is to degrading an enemy by this high-tech poisoning. Even the Colonel pushing the Camp Grayling ground Expansion recognized the dangers of electromagnetic attack, saying in a June meeting at the Camp: “I would never expose my men to that” Yet they will be, from the air.

I believe this proposal should be rejected for many, many reasons, but this one alone is enough to deny it.

At the very least the dangers and risks must be thoroughly studied and analyzed, or the Assessment is just window dressing. Nothing less than a full environmental impact study should be performed by a reputable, independent contractor. I have no doubt it would conclude this proposal, as presented poses to many threats to be realistic.

Neil Wallace  
[REDACTED]

**From:** [Ryan Walter](#)  
**To:** [9-NATL-CSA-Public-Notice-Airspace \(FAA\)](#)  
**Subject:** AIRSPACE STUDY 22-AGL-361-NR, Alpena Airspace Complex  
**Date:** Friday, July 28, 2023 1:04:07 PM

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To whom it may concern,

On behalf of Thumb Aviation LLC & Gemini Group Inc, I would like to submit comments regarding Airspace Study 22-AGL-361-NR. Our Flight Department is located at Huron County Memorial Airport (KBAX) and we are the largest flight operator in this region. All of our comments are in reference to the newly proposed Steelhead Low East, Steelhead Low North, and Steelhead Low South MOAs.

When this airspace was in the beginning phases of development, Master Brian Boeding ANG worked very closely with us to make sure these changes would have minimal impact on our operations. Since his retirement a few years ago we have not received any updates or coordinating efforts to ensure a smooth transition. While we are in support of military training, we have a few concerns of how this will be implemented.

The Letter that we received for the proposed establishment of the airspace brings a few concerns to our flight department.

1. Real Time Separation:

In June of 2021, Ms. Kristi Kucharek of the NGB at Joint Base Andrews MD sent a letter which included the following statement.

**“Michigan ANG would enter into a Letter of Agreement with Minneapolis Center and Cleveland Center to establish procedures for real-time separation and use of the airspace to allow civilian Instrument Flight Rules aircraft access through the MOAs.”**

This was established with the utmost importance as it would allow our flight department’s on call trips to be communicated with the ATC centers in real time. This language is not included in Airspace Study 22-AGL-361-NR. We would like to ensure this is included in the proposal as agreed upon in June of 2021.

2. Activation Times

It was stated when developing the Steelhead Low airspace that it would be needed less than 90 Hours per year. The intention of the military was to issue a NOTAM 4 hours prior to activation “As Needed”. That is included in the proposal. Our concern is that if a NOTAM is issued and then the airspace is not needed, that the NOTAM be removed and the airspace remains cold.

The current Steelhead MOA is supposed to be activated in the same manner. Currently we see the Steelhead MOA being activated and not used quite often. If Steelhead Low MOAs are activated in this same fashion it will greatly impact our operation not only in efficiency but financially as well. Since the low MOAs will be used for air to ground training, I would see no reason to activate them during IFR conditions. These airspaces should only be activated and used when the weather is better than the minimum VFR conditions.

3. Under “Designated Altitudes” it is stated “Seasonal Avoid 1 May – 1 Oct avoid flight within 1NM of Lake Huron Shoreline below 1500’ AGL” We do have many year-round residents along



the shoreline and this should be all year round and not just a seasonal restriction for altitudes.

We are in full support of our military having better and more realistic training missions in Michigan. For many people, including myself, it is a joy to sit outside and watch the jets practicing their missions. My intent as the largest operator in this airspace is to work closely with the ATC facilities to have minimal impact while there is active training in these airspaces. My hope is this will be reciprocated by only activating the airspaces when needed and deactivating them when they are no longer in use for training.

Thank you for your time and accepting our comments and concerns.



**Ryan Walter**

*Chief Pilot*

[rwalter@geminigroup.net](mailto:rwalter@geminigroup.net)

(989) 450-4882

**Gemini Group**

175 Thompson Rd  
Bad Axe, MI 48413

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**From:** [Marjie Warner](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Alpena SUA EA-I am strongly opposed to this airspace expansion  
**Date:** Wednesday, December 14, 2022 3:48:21 PM

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Attention: Ms. Kristi Kucharek

Dear Ms. Kucharek:

I am very angry and disappointed in the proposed plan for modification and expansion of the airspace at the Alpena Special Use Airspace Complex. I admit to being pleased that the public comment window has recently been extended by 30 days-that was a good decision.

I live in [REDACTED] in the affected area, and have endured many practices/sorties in the airspace where I live on the North Branch of the Au Sable river. Both the increase in air traffic and the reduced altitude that is proposed are unacceptable for several reasons, including debris/chaff/flares, noise pollution, potential water and ground pollution, etc.

I will be following this issue closely, and will look forward to any scheduled public meetings. Are any meetings scheduled at this time?

In short, stay away from increased airspace use in Northern lower Michigan. I'm sure there are other areas somewhere in the U.S that could be utilized for ANG practice. What is being proposed is too much, too low, and thoughtlessly offered re: the effect on the environment and life quality. Please do not explain about Day-Night Average Sound levels-averages are not useful when you are living in these situations.

Sincerely,

Marjorie J. Warner

[REDACTED]  
[REDACTED]

**From:** [Charlie Weaver](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 6, 2022 8:46:57 PM

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ATTN: ALPENA SUA EA.

The recently released proposal for low-level flights by the National Guard over much of northern Michigan is an outrageous travesty. To desecrate our natural environment in this manner will have an extremely negative impact on our wildlife and recreational activities. Please remove this part of the Camp Grayling expansion plan immediately!

Charlie Weaver

[REDACTED]  
[REDACTED]  
  
[REDACTED]

**From:** [Charlie Weaver](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Friday, December 16, 2022 6:00:09 PM  
**Attachments:** [Noise pollution Citations References.docx](#)

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Ms. Kucharek:

I would hope this documented information would discourage the National Guard from doing low-level flights in Northern Michigan.

Charlie

“Noise pollution, also known as environmental noises or sound pollution, is the spread of noise that has a range of consequences on human and animal behavior, the majority of which are harmful in some way.” (Kattakayam, et al, 2022)

Noise harms the central nervous system. (Kattakayam, et al, 2022)

“In both invertebrates and vertebrates, we found experimental evidence of deleterious impacts of...noise on development, physiology and or behavior (McLaughlin et al, 2016).”

Unanticipated impacts of noise effect animals and insects alike, disrupting the balance of the ecosystem.

Extreme noise impacts the distribution of animals, particularly the bird population. (Kattakayam, et al, 2022)

Extensive noise pollution effects pollinating, seed dispersion and plant growth. (Kattakayam, et al, 2022)

Noise pollution effects animal physiology and behavior. (Kattakayam, et al, 2022)

Kattakayam, A.; Kurian, A.; Lhaden, T.; Kennedy, N.; Reddy, J. (2022, January). Effects of Noise Pollution on Animals. *International Journal of Research and Analytical Review (IRAR)*, Volume 9 (1), 241-244.

[https://www.researchgate.net/publication/358164968\\_Effects\\_of\\_Noise\\_Pollution\\_on\\_Animals](https://www.researchgate.net/publication/358164968_Effects_of_Noise_Pollution_on_Animals)

Kunc HP, McLaughlin KE, Schmidt R. Aquatic noise pollution: implications for individuals, populations, and ecosystems. *Proc Biol Sci.* 2016 Aug 17;283(1836):20160839. doi: 10.1098/rspb.2016.0839. PMID: 27534952; PMCID: PMC5013761.

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The proposal to lower the flight ceiling to as low as 300 feet over rivers and wetlands is low enough to vibrationally effect river, streams, and wetland inhabitants with extreme levels of noise pollution.

“Human-generated noise disrupts the behavior, physiology, and reproduction of marine organisms so much that it can lead to an increased risk of mortality.” (Tarino, 2021)

Noise pollution interferes with aquatic communication. (Tarino, 2021)

Tarino, G. (2021, February 22). Noise Pollution Impacting Marine Animals Worse Than Previously Thought. *E360 Digest*. <https://e360.yale.edu/digest/noise-pollution-impacting-marine-animals-worse-than-previously-thought>

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The quiet of a park or natural wetlands is considered a resource by park visitors. (NPS et al, 1994)  
*[addressed in Chapter 3 which quantifies the level of sound that is “natural quiet”]*

**Of Further Note:** It is interesting that President Truman issued Executive Order 10092 establishing an airspace reservation prohibiting flights below the altitude of 4,000 feet. Is there something comparable for the Huron-Manistee National Forest? Where would one find this information?

#### **“1.3.4 Effects on Wildlife**

Wildlife is one of the parks' natural resources that can be impacted by overflights, and is required to be examined by the law. Chapter 5 discusses physiological and behavioral responses of wildlife to overflights, presents a summary of observed responses for various species, and examines indirect effects of disturbance from overflights such as accidental injury, reproductive and energy losses and habitat avoidance and abandonment. It also presents factors that influence animal responses to aircraft, discusses some of the problems with detecting long-term effects of aircraft produced disturbance, and examines the limitations of current information about wildlife responses to aircraft overflights.” (NPS et al, 1994)

Noise from aircraft cause a range of responses from being annoyed to panic behavior. (NPS et al, 1994)  
*[Chapter 5.3]*

“That exposure to low-altitude aircraft overflights does induce stress in animals has been demonstrated. Heart rate acceleration is an indicator of excitement or stress in animals, and increased heart rates have been shown to occur in several species exposed to low-altitude overflights in a wild- or semi-wild setting.” (NPS et al, 1994)  
*[Chapter 5.2][Table 5.1]*

Certain animals have increased heart rates and stress responses to aircraft noise pollution. (NPS et al, 1994)

Animals avoid the habitats with high noise levels. (NPS et al, 1994)  
*[Chapter 5.4.4 Habitat Avoidance and Abandonment]*

Animals have more larger hearing ranges and are more sensitive to sound. Aircraft sound is “broadband” incorporating a wide frequency range no present in natural tonal sounds. (NPS et al, 1994)  
*[Chapter 5.2.2 Aircraft Sound and Animal Hearing]*

**Of Note:** Chapter 5.10 Development of Impact Criteria sets precedent and impact guidelines.

“Indirect effects on wildlife such as accidental injury, energy losses and impacts to offspring survival have been documented. Current literature supports the argument that aircraft overflights negatively impact wildlife populations.” (NPS et al, 1994)

The National Park Service; The Department of Interior; Grand Canyon National Park, Denver Service Center; Research Contractors and Subcontractors. (1994, September 12). *Report on Effects of Aircraft Overflights on the National Park System*. Report To Congress.  
<https://www.nonoise.org/library/npreport/intro.htm>

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Bird diversity is declined in high noise areas. (Daley, 2015)

Various species will migrate out of high noise areas, moving to more quiet places. (Daley, 2015)

Stressed animals in high noise pollution areas increase watchful behavior while decreasing foraging behavior. Even invertebrates have lower foraging ability under high noise conditions. (Daley, 2015)

Daley, B. (2015, December 17). How noise pollution is changing animal behavior. *The Conversation*. <https://theconversation.com/how-noise-pollution-is-changing-animal-behaviour-52339>

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“Communication, mating behavior, hunting and survival instances of animals are altered by excessive noise.” (NMS, 2016)

“There is no escape from noise pollution underwater.” (NMS, 2016)

Noise Monitoring Services. (2016, June 25) *Noise Pollution Can Be as Dangerous to the Environment and Ecosystems as All Other Types of Pollution*. Noisemonitoringservices.com. <https://www.noisemonitoringservices.com/the-effects-of-noise-pollution-on-wildlife/>

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Loud noise pollution raises blood pressure in mammals. (Sigma Earth, 2022)

Noise pollution interferes with navigation, mating, and foraging. (Sigma Earth, 2022)

Noise pollution disrupts pollinators. (Sigma Earth, 2022)

Sigma Earth. (2022, August 9). Effects of Noise Pollution on Plants and Animals. *Sigmaearth.com*. <https://sigmaearth.com/effects-of-noise-pollution-on-plants-and-animals/>

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Animal communication is disrupted by noise pollution; animals use sound to communicate warnings, mating times and locating one another. (Malik, 2021)

Malik, S. (2021, April 15). 4 Ways that Noise Pollution Can Impact Wildlife (and 4 Ways to Help). *Wildlife Habitat Council*. <https://www.wildlifehc.org/4-ways-that-noise-pollution-can-impact-wildlife-and-4-ways-to-help/>

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Noise pollution causes stress in animals changing their behavior. (Pradhan, 2021)

Acceptable noise level ranges for animals is 30-60 dB. (Pradhan, 2021)

Noise pollution causes uncharacteristic behaviors in animals. (Pradhan, 2021)

Sound is a sensory cue for aquatic and land animals. (Pradhan, 2021)

Pradhan, A. (2021, December 12). 11 Reasons Noise Pollution Should not be Forgotten. *Earth & Human*.  
<https://earthandhuman.org/noise-pollution-effects/>

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“Noise pollution has long been recognized as a concern for people, but it is only recently that it has been identified as an impending hazard to Long-term survival and animal health. (Slabbekoorn et al, 2019)”

High noise levels cause deafness in animals. (Slabbekoorn, 2019)

High noise levels on animals cause changes in predator-prey interactions, anxiety, distraction, communication issues, habitat reduction, and chronic stress behaviors. (Slabbekoorn, 2019)

“At close range, extreme sounds sources may cause physical damage such as organ ruptures and internal bleeding as reported for aquatic animals.” (Slabbekoorn, 2019)

[provides hearing ranges for terrestrial and aquatic animals]

[some, not all, animals and birds can adjust their calls to avoid noise pollution masking]

Slabbekoorn H. Noise pollution. *Curr Biol*. 2019 Oct 7;29(19):R957-R960. doi:  
10.1016/j.cub.2019.07.018. PMID: 31593676.

[https://www.cell.com/current-biology/pdf/S0960-9822\(19\)30863-2.pdf](https://www.cell.com/current-biology/pdf/S0960-9822(19)30863-2.pdf)

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Research shows aircraft noise pollution causes increased white blood count and vascular dysfunction in mice. (Ekrich, et al, 2021)

Ekrich, J.; Frenis, K.; Rodriguez-Blanco, G.; Ruan, Y.; Jiang, S.; Jimenez, M.; Kuntic, M.; Oelez, M.; Hahad, O.; Li, H.; Gericke, A.; Steven, S.; Strieth, S.; Von Kriegsheim, A.; Munzel, T.; Ernst, B.; Daiber, A. (2021, July 8). *Aircraft noise exposure drives the activation of white blood cells and induces microvascular dysfunction in mice*. *Redox Biology* 46 (2020) 102063. doi:  
10.1016/j.redox.2021.102063.

<https://reader.elsevier.com/reader/sd/pii/S2213231721002226?token=9BBA5E66FF4807EE0DF6A832EA2EFD5F25DA2DE8B7D6E7BAEFDE94503CCFDCFFCA7A4575EA1E93B349299CA8E1B5DE&originRegion=us-east-1&originCreation=20221216171157>

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Research shows aircraft noise pollution causes cardiovascular inflammation, hypertension, renal problems, immune cell response in mice. (Steven, et al, 2020)

Steven, S.; Frenis, K.; Kailnovic, S.; Kvandova, M.; Oelze, M.; Helmstadter, J.; Hahad, O.; Filippou, K.; Kus, K.; Trevisan, C.; Schuter, K.; Boengler, K.; Chlopicki, S.; Frauenknecht, K.; Schultz, R.; Sorensen, M. Daiber, A. Kroller-Schon, S.; Munzel, T. (2020, April 18). *Exacerbation of adverse cardiovascular effects on aircraft noise in animal model of arterial hypertension*. *Redox Biology* 34 (2020) 101515. doi: 10.1016/j.redox.2020.101515.

<https://reader.elsevier.com/reader/sd/pii/S2213231720302809?token=AB7C4A29C9FDE18A0682A07C2A8F21FCE260472A88A1DD9D7DF7C118B4D831387A381EE09CBF4AB08F068B4154EFEB61&originRegion=us-east-1&originCreation=20221216170859>

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Animals exposed to noise pollution exhibit behavioral changes and increased immune responses. (Morris Animal Foundation, 2021)

Noise pollution interferes with mating calls. (Morris Animal Foundation, 2021)

Detrimental noise pollution effects on invertebrates affect the entire food chain. (Morris Animal Foundation, 2021)

*[crickets react poorly to noise pollution]*

Morris Animal Foundation. (2021, November 11). *An Unlikely Puzzle Piece of Animal Health – The Impact of Noise*. [Morrisanimalfoundation.org](http://Morrisanimalfoundation.org).

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### **Miscellany Found On The Way**

Sound Proofing Guide with charts (include jet at takeoff only)

<https://soundproofingguide.com/decibels-level-comparison-chart/>

Federal Aviation Aircraft Noise Levels (legal briefs)

[https://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/noise\\_emissions/aircraft\\_noise\\_levels/](https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/)

Federal Register. National Archives. (info on statutes of air traffic vehicles and sound compliance)

<https://www.federalregister.gov/documents/2013/07/02/2013-15843/adoption-of-statutory-prohibition-on-the-operation-of-jets-weighing-75000-pounds-or-less-that-are>

Federal Aviation Administration.

<https://www.faa.gov/noise/levels>

Fish Communication Research

[https://link.springer.com/chapter/10.1007/978-3-642-41494-7\\_4](https://link.springer.com/chapter/10.1007/978-3-642-41494-7_4)

**From:** [Dustin Weber](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: I oppose the expansion to the current military airspace in northern Michigan  
**Date:** Wednesday, December 14, 2022 10:02:43 PM

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On Wed, Dec 14, 2022 at 10:00 PM Dustin Weber [REDACTED] > wrote:

I am a home owner and AirBNB operator in [REDACTED]. My family is strongly opposed to the proposed expansion to the current military airspace in northern Michigan.

We believe this change will have negative impacts to the immediate and future environmental health and enjoyment of the Au Sable, Manistee and Muskegon River systems by residents and the yearly and significant influx of recreational users. Clearly, there will be negative impacts to the local economy with ten times more flights below 5,000 feet above ground level with an accompanying increase in noise pollution. Please note that all summer and during portions of the winter, bombs and planes rattle our windows, cause objects to fall off shelves, dry wall nails to pop out, and pets to cower. The adverse impact this has had and will have on the health of residents and the natural environment is a concern that we believe has not been taken as seriously by the military as it warrants. The same can be said for the pollution caused by increased chaff and flare releases on the headwaters of the most famous and iconic trout streams in the country. There is no reason for us to trust that the military will do the right thing here given its history of dragging its feet regarding the clean up of the mess caused by PFAS releases from Camp Grayling. The callous disregard shown by the military in this proposal for the welfare of the citizens and for the health of the environment and ecosystems of northern Michigan is reprehensible and appalling.

Please do not allow these changes to move forward.

Sincerely,  
Dustin Weber

**From:** [paul weideman](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 5, 2022 4:25:16 PM

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Please reject the proposed expansion of Camp Grayling which has been announced publicly and the secret airspace expansion which will include very low altitude flights by extremely loud aircraft. This "Secret Expansion" dovetails right into the doubling of Camp Grayling, occupying both land and air for hundreds of new square miles. Together they would create an atmosphere that cannot coexist with outdoor tourism, outdoor economy or real estate values in our communities. If you spent any time in the Grayling area you would know the guard poisoned our lakes and rivers, bombs and planes rattle residents' windows all summer...let's not allow even one more. Please do your part to reject these intrusions into our public lands and our public airspace to help preserve our beautiful and limited north woods resource.

Sincerely,

Paul Weideman  
President  
Mirror Lake Organics

[REDACTED]  
[REDACTED]

**From:** [Marshall Weimer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 13, 2022 11:59:28 AM

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To Whom This May Concern,

My name is Marshall Lee Weimer, a dual degree graduate of Michigan State University. As a lifelong Michigander, former student activist with MSU's Spartan Sierra Club, and concerned citizen, I am writing to you regarding the proposed expansion of the Alpena Special Use Airspace Complex.

Let me be frank; I oppose this idea in its entirety. The northeast coast of Michigan is well known to be a seldom traveled place in the state, especially compared to its lucrative and busy west coast and the more adventurous Upper Peninsula. The lack of bustling crowds of tourists is a guaranteed feature of this region, where quiet still reigns and stillness commands much of the thick conifer woods and birch-maple groves of this part of the Northwoods. Michigan's only elk herd runs free here, supporting both opportunities for hunting and popular wildlife viewing. The endemic Kirtland's warbler flits between jack pine barrens, beavers build their dams, and locals dream of seeing the Arctic grayling jumping from the Au Sable once more. Residents enjoy their quiet, their solitude, where humans and nature can enjoy each others' company in peace.

That cannot happen if a pilot is burning exhaust all day overhead. The solitude would be destroyed, the region would become a military training zone, and all the wildness would be severely disturbed.

I once spent 10 hours on a kayak navigating an unnavigable tributary of the Au Sable with a friend. I have hiked through most of the hilly dense woods of Rifle River State Park. I have collected tree pests samples from Antrim to Alpena. All these experiences would be ruined, the connection with nature I and others are able to enjoy, if pilots were flying military craft 500 ft overhead. I have been to many airshows as a child and I have no illusions about how disrupting the airspace expansion would be to this area. Additionally, it is likely that such expansion would result in more wild or residential areas being polluted with increased military activity. There might not be a lot to draw people to this area, but its solitude and wilderness is one.

I would sooner see silent windmills on the horizon of Lake Huron before I hear the low unnatural rubble of a fighter jet out on the lake.

Please do not destroy our silence. There is so little of it left in the world.

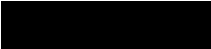
I will restate my previous message; I oppose the proposed expansion of the Alpena Special Use Airspace Complex.

I hope you consider my opinion and concerns wholeheartedly.

Thank you for your time,  
Marshall.

--

Marshall Lee Weimer | 黑雲杉



Water is LIFE

**From:** [Jeff Welch](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [asn@aopa.org](mailto:asn@aopa.org)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 2:08:01 PM

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Dear Ms. Kristi Kucharek,

Thank you and the military organizations for such a thorough and in-depth EA regarding the proposed APN SUA.

First about my background.

Airline Transport Pilot  
Lear Jet and King Air 350 Type Ratings  
Certified Flight Instructor Airplane-Instruments-Multi Engine  
Aircraft Multi Engine Land, Aircraft Single Engine Land and Sea  
21,000 Flight Hours Total Time  
FAA-Master Pilot Award - Wright Brothers for 50 + years of safe flight  
FAA FAAST SAFETY TEAM Representative  
AOPA Airport Support Network Representative KAPN  
Author - Aviation safety publications

I was born and raised at the Alpena County Regional Airport. In 1952 my original home was what is now known as the "River Club" on the military base. I am a former airport manager of KAPN. For the past 70 years my family and myself have operated aircraft and airport services at Alpena. We have always enjoyed a great working relationship with the ANG and affiliated agencies visiting APN.

I remain a proponent of quality (and safe) military readiness and training.

I am however opposing the expansion of the APN SUA, as presented, for the following reasons.

1. 3.1 Airspace Management. Historically the units using the SUA have booked airspace for large blocks of time and have either not used the time, or the sortie was cut short. MSP ARTCC in turn would not release the airspace until the NOTAM expired. There has always been a disconnect between Minneapolis Center and the users of the SUA. Unless this problem is resolved I can not support expansion of the SUA.
2. I propose a non-military group to oversee the interests of the stakeholders other than the military. This group would consist of AOPA Airport Support Network volunteers (such as myself) and other interested parties (i.e. MI-DNR) affected by the overlying airspace. This group would monitor SUA usage, bird strikes, noise complaints, etc.
3. Aircraft Speed Control. In airspace where military aircraft are commingled with all other aircraft types, I am opposing speeds in excess of standards set forth by Federal Aviation Regulations (FAR's). This would also include the Visual Routes (VR) that are outside of active SUA's. For example on a VR below 10,000' MSL, outside of the active SUA, it is unsafe for any aircraft to fly in excess of 250KTS IAS, military or otherwise. Perhaps you see

this paradox as I do? Why have SUA's (at all) if safety isn't the primary concern?

4. Figure 4-2. I totally disagree with the Bald Eagle assessment. There will be a impact on any bird population, including Eagles, in Steelhead Low(s) SUA and the Grayling West MOA. The entire Thumb of Michigan is a "flyway" for all types migratory birds.

5. The airspace must be shown on navigation tablets and onboard navigation programs as "scheduled" orange, "active" red. For flight planning purposes a pilot flying in and or around SUA's must have easy access to critical information.

6. Military aircraft operating in non-active SUA airspace must be reporting their altitude via ADSB out or Mode S transponders.

If you have any questions I can be reached at [REDACTED] or at [REDACTED]

Sincerely,

Jeff Welch  
[REDACTED]

[REDACTED]

CC: AOPA ASN



12/09/2022

ATTN: ALPENA SUA EA

As a lifelong resident of Crawford County, I want to express my opinion regarding the proposed expansion of Camp Grayling and also military airspace.

Over the years our community has accepted the National Guard and understood the importance of their training for our state and national security. That is not to say that the extra noise from helicopters, bombing, and heavy equipment has not been an annoyance and often quite frightening.

I am an avid nature lover in every respect! Taking walks and rides through the woods are my peace and serenity. Our trees, wildlife, lakes and rivers are sacred. In the last several years, many more trail roads and forested areas have been blocked off or clear cut for military activity. Additionally, the activity has caused an increase of noise and pollution. As a result of this, loons have left our lakes, and other wildlife have been displaced.

We residents have respected the military, tolerated the noise and pollution, and sacrificed much! Enough is enough! We have the right to a safe and healthy environment where we can enjoy peace and serenity. I am vehemently opposed to this expansion!

Sincerely,

Linda Welch

[REDACTED]

[REDACTED]

**From:** [james welser](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Monday, December 5, 2022 10:17:24 AM

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As part-time residents and owners of twenty-one acres of land on the the AuSable River, we are completely and firmly opposed to the changes that have been proposed to not only to the Camp Grayling expansion, but also to the changes found in the Guard's own draft environmental assessment. These changes would have a very detrimental effect to our environment (including wildlife), quality of life, and property values.

There are residents who are dealing with PFAS. The idea of adding more potentially damaging policies is unconscionable.

James and Marilyn Welser

Sent from my iPad

**From:** [John Weston](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Friday, December 9, 2022 9:22:23 AM

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RE: Camp Grayling Michigan, proposed expansion.

Dear people,

At approximately 147,000 acres of public land it is the largest National Guard training center in the United States. That should be enough of MY BACK YARD used for military training in Northern Michigan. Any further encumbrance of this area will adversely affect the values and the reasons that people inhabit and use the area. The people of Michigan should not be burdened by any further destruction of their wilderness and the peace and tranquility that are sought in it.

John Weston

**From:** [Joe Whelan](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 1:48:35 PM

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Sent from [Mail](#) for Windows

The proposed low level flying of aircraft and the resulting damage to a place that Michiganders love is a disaster. As a long time fisherman on the sacred Ausable rivers, you would destroy the environment that myself and thousands of others cherish.

The Au Sable River and its surroundings is a vital national resource, one that needs to be protected.

More, louder and lower air training is not wanted in the area.

There are other places where such training can be done.

I oppose the plan to increase low-level training.

Sincerely,

Joe Whelan

**From:** [Donald White](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling  
**Date:** Tuesday, December 6, 2022 8:48:13 AM

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Please do not move forward with the proposed expansion of the ground and airspace in the pristine environment of Northern Michigan. Adding more disruption than already exists would destroy the atmosphere that attracts thousands to the area each year for living, rest and relaxation and peace.

Donald White



Member Anglers of the Ausable  
Member Trout Unlimited

**From:** [Ian Wiesner](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: Alpena SUA EA  
**Date:** Friday, January 13, 2023 2:11:04 PM

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To Whom It May Concern,

As a citizen of Michigan, I am writing to voice my opposition to the proposed expansion of the Michigan Air National Guard Alpena Special Use Airspace Complex. Our northern Lower Peninsula wilderness is too important to threaten and pollute for this purpose.

Thank You,

Ian Wiesner

[REDACTED]  
[REDACTED]

**From:** [The River Specialist](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] NG Flight Expansion  
**Date:** Saturday, January 14, 2023 1:14:17 PM

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- **The EA fails to comply with Air Force, FAA, and CEQ regulations requiring compliance with the National Environmental Policy Act (NEPA).** The proposal is incompatible with recreational values, the outdoor economy, and real estate values of these areas for the reasons set forth below
- **The proposal will result in a dramatic increase in noise.** The tables contained in the proposal show up to a tenfold increase in flights. The EA justifies this increase in noise by use of a flawed statistical method of averaging the peak noise to achieve what appears to be a slight increase average noise; noise that will shatter the solitude of the population noted above with constant low overflights of ear-splitting jets.
- **The proposal will result in an increase of various pollutants.** This increase will be a rain of pollution on the headwaters of one of the most famous and most-loved trout streams in the United States, as well on the lands and waters of permanent residents, seasonal residents, and participants in outdoor activities for which the area is justly famous and desired. The EA contains no discussion of the magnitude or effect on land and water of this increased pollution. The EA relies on generic studies that do not relate to eastern northern Michigan. Need we remind you of the PFAS mess which National Guard activities have created.
- **The deployment of chaff** by military aircraft is one of several countermeasures used to evade radar detection. .... The EA indicates that a total of 6,103 chaff cartridges will be used for training purposes ... which is approximately a 20% increase over previous expenditures. This means that every year a total of **33,306,000,000** micro-glass/aluminum coated fibers will be released into the atmosphere.
- **Flight Floors:** The flight floors stated for the proposed new Grayling West (500 feet) and VRs 1601/1602 (300 feet) are extremely low. It is inconceivable that aircraft flying at these levels would not interfere with quiet enjoyment and the pursuit of fishing and any other recreational activities on the state land and waters located beneath these areas.

Lance Weyeneth / Broker-Owner  
Headwater Realty, LLC





**From:** [Amee Wiggins](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Saturday, January 14, 2023 3:30:04 PM

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To Whom it may concern,

I am writing to express my voice that the proposed expansion of Camp Grayling through the increase in low level flights and the physical extension of acreage is incompatible with Northern Michigan and should not move forward. The fundamental reasons for opposition are:

1. The waters and woods of Northern Michigan are a treasure and the Au Sable River a vital natural resource that will be irrevocably damaged by the proposed expansion.
2. Summer homes and tourism in Northern Michigan are vital to the regional and state economy, both of which will be negatively impacted by this proposal. Increased flights, at lower levels with an additional use of chaff will result in increased noise and environmental pollution. Quiet enjoyment of the region's natural resources will be impossible. Home values will decrease, tourists will stop coming north and economies will suffer.
3. There are other areas much better suited for such low-level flight and ground training – areas where the woods and waters will not be damaged by this scope expansion.

As a property owner in the affected area who has been hearing the jets for decades, we do not want more aircraft flying at lower levels or expanded land use.

Please stop this planned expansion on all fronts.

Respectfully,

Amee Wiggins

**From:** [WILLIAMS BRIAN](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [URL Verdict: Neutral][Non-DoD Source] Proposed expansion of Camp Grayling Airspace - no!  
**Date:** Saturday, December 10, 2022 8:30:41 PM

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To whom it may concern,

I am a Michigan resident, and as nature lover and fly fisherman, I have relied on the wild Ausable River valley to recreate and recharge, supporting the local economy while doing so.

I strongly oppose the (at least) doubling of the airspace and reducing the flying elevation to 500ft minimum. I have experienced the low flying over the Ausable North branch, and it is unsettling and disturbing. The Ausable South and Main branches have some of the most sacred blue ribbon trout waters in the nation. Please don't destroy the serenity that is found there. This would cause economic harm to the area. I understand chaffing and flare releases would happen - pollutants to the environment. No good.

Record me as a strong NO!

Brian Williams



[Sent from AT&T Yahoo Mail on Android](#)

**From:** [john williams](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] No expansion  
**Date:** Sunday, January 15, 2023 9:58:36 AM

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I am opposed to expanding the flight zones in northern Michigan

John Williams, [REDACTED]  
Sent from my iPhone

**From:** [Patrick W.](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Saturday, January 14, 2023 1:52:17 PM

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To whom it may concern:

As a vacation property owner in the affected area, I am against any further activity in this geographic area. I feel it would be a detriment to our peaceful enjoyment of our property. Furthermore it could also negatively affect our property values in the future.

Please find alternative ways to enhance our national security.

Thank you for your consideration of my point of view.

Patrick Williams



Sent from my iPhone

**From:** [Bill Wobbekind](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.W  
**Date:** Wednesday, December 14, 2022 5:08:10 PM

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expansion of air space over the Ausable River basin and surrounding areas is a very bad idea for too many reasons to list. I and my chapter members are 100% opposed.

William J Wobbekind  
Conservation Chairman  
Elliott Donnelley (Chicago) Chapter Trout Unlimited

December 5, 2022

National Guard Bureau  
ATTN: Ms. Kristi Kucharek  
3501 Fetchet Avenue  
Joint Base Andrews, MD  
20762-5157

Ms Kucharek:

I am writing to oppose the Camp Grayling Expansion Plan that was unveiled by the Michigan National Guard on November 14. My family has had a cabin on the North Branch of the Au Sable River since 1969. We have tolerated the noise and vibrations for years. The night bombing in the 80's terrified our young children, rattled our windows, and loosened the ceiling fan in our cabin. Much has been done to improve the situation but this new expansion plan will make things much worse.

Our children are grown and have children of their own who love to vacation at our family cabin. This proposed expansion will turn this beautiful area into nothing more than a war zone and who wants to vacation in an area that is a war zone? You will be polluting the environment, destroying the local economy, decimating our property value, and undermining the local culture.

Please.....NO EXPANSION OF CAMP GRAYLING!

*Linda Burchi Wood*

Linda Burchi Wood



**From:** Mark Workmann  
**To:** Dan Postelnick; NGR AA/AA NEPA COMMENTS Org  
**Cc:** Bill Davis; Brent Runval; Carol Hennessy; Dale MacDonald; Dan LaFave II TL; Darwin Adams; Dave Carlson; David Lunardini; Edward Michael; Gerry Sapp; Greg Prosen; Jeffrey Reinke; Joe VIII; Marvin Strauch; Steve Carlson; Willie Bestire  
**Subject:** [URL Verdict: Neutral][Non DoD Source] Re: Fw: Au Sable Flow: The Guard plans more low flights  
**Date:** Sunday, December 11, 2022 1:24:45 PM

Dear Ms. Kristi Kucharek,

Please note that as a member of Trout Unlimited's National Leadership Council and an officer in the Illinois TU Council, I want to inform you that the plans to double the size of Camp Grayling will have a severe detrimental impact on the region's tourist and environmental interests.

The Au Sable River is the "holy waters" of Trout Unlimited as the organization was founded in 1957 on its shores. The Illinois Council offers an environmental and educational camp for teenagers every summer in and around the Au Sable River and Grayling.

Please reconsider this plan and preserve this special place in Michigan as your Governor has promised.

We strongly object to the National Guards plan to increase the size of Camp Grayling and increase the amount of training sorties in and around the Au Sable River Shed. Please scroll and read the Anglers of the Au Sable River's response and plea for assistance in this regard.

On Sat, Dec 10, 2022 at 4:16 PM Dan Postelnick [REDACTED] wrote:

Good day members,

This note went out to EDTU and know many others can help with this issue. Please send to others and also comment as noted above as the timeline is short. Thank you,

Dan Postelnick

----- Forwarded Message -----

**From:** Bill Wobbekind [REDACTED] >  
**To:** Hans Hintzen [REDACTED]  
**Cc:** [REDACTED]; wally book [REDACTED]; Douglas Conover [REDACTED]; Dan Postelnick [REDACTED]; Daniel Meskimen [REDACTED]; Grant Brown [REDACTED]; Jill Goad [REDACTED]; April Ice Postelnick [REDACTED]; Jim Brown [REDACTED]; Jon Uhlenhuth [REDACTED]; Rose [REDACTED]; Tyson Damman [REDACTED]; Jeff Hoffmann [REDACTED]; Mark B. Cleveland [REDACTED]  
**Sent:** Friday, December 9, 2022 at 01:39:36 PM CST  
**Subject:** Re: Au Sable Flow: The Guard plans more low flights

I am in 100% agreement. I wish there was info on who else we could contact about this issue besides just the NG itself.

On Fri, Dec 9, 2022 at 1:08 PM Hans Hintzen [REDACTED] wrote:

Hi, all,

This came to my attention via Bill Wobbekind and Bill Anderson, an EDTU member who came to the dinner Tuesday and has a house there. Given that the deadline is coming up very soon, I am going to ask Mark to send out an e-mail blast to our members, unless somebody has a strong objection. Thanks,

Hans

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Begin forwarded message:

**From:** Jon Ray [REDACTED] >  
**Date:** December 9, 2022 at 12:39:15 PM CST  
**To:** Hans Hintzen [REDACTED]  
**Subject:** Fwd: Au Sable Flow: The Guard plans more low flights

Jon Ray  
[REDACTED]

From JR's iPhone

Begin forwarded message:

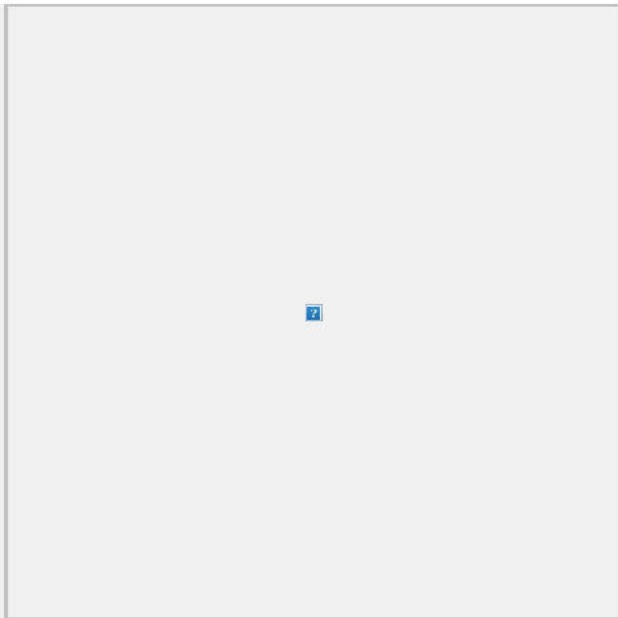
**From:** Stephen Pels [REDACTED]  
**Date:** December 9, 2022 at 10:4:26 PM EST  
**To:** Jon Ray [REDACTED]  
**Subject:** Fwd: Au Sable Flow: The Guard plans more low flights

Capt. Stephen Pels  
[REDACTED]

Begin forwarded message:

**From:** Anglers Of The Au Sable [REDACTED]  
**Subject:** Au Sable Flow: The Guard plans more low flights  
**Date:** December 5, 2022 at 11:02:02 AM EST  
**To:** [REDACTED]  
**Reply-to:** Anglers Of The Au Sable [REDACTED]

[View this email in your browser](#)



## UPDATED email address to comment on Camp Grayling Airspace expansion

PLEASE NOTE...yesterday's Flow had a bad link to comment on this matter. The correct link is: Written comments should be sent to the National Guard Bureau, Attn: Ms. Kristi Kucharek, [3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157](mailto:3501.Fetchet.Avenue.Joint.Base.Andrews.MD.20762-5157) or emailed to [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with subject ATTN: ALPENA SUA EA.

Our apologies. Here is repeat of the FLOW in case you missed it.

With little notice, the Michigan National Guard on Nov. 14 **unveiled** a proposed expansion to current military airspace that will be, in terms of impact, as big or bigger than the proposed doubling of Camp Grayling. And we have only until Dec. 14 to offer our comments. That means we need you to again weigh in to protect the Au Sable ecosystem and angling experience.

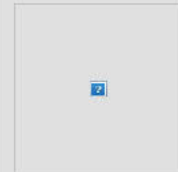
This "Secret Expansion" dovetails right into the doubling of Camp Grayling, occupying both land and air for hundreds of new square miles. Together they would create an atmosphere that cannot coexist with outdoor tourism, outdoor economy or real estate values in our communities.

The details are buried in the dense language of the Guard's own draft environmental assessment, which you can read [here](#). But the purpose is clear, on page 8 of the paper: Give the Guard more opportunity for low altitude training in northern Michigan, including throughout the upper Au Sable watershed.

"Both types of training must occur below 5,000 feet above ground level. The A-10 and F-16 have varying low-altitude certifications down to 100 feet AGL. The only current "low" airspace is Grayling Range, which is too small, and the Pike East MOA, which is over water. While overwater low airspace is useful, it must be matched by overland low airspace to provide low-level training opportunities when Great Lake environmental conditions

The Anglers Mission Statement:

To preserve, protect and enhance the Au Sable River System for future generations of fly fishers.



The Anglers of the Au Sable is much more than a fishing club. Our activities are driven by issues affecting the greater Au Sable ecosystem.

Anglers Address:  
Anglers of the Au Sable  
P.O. Box 200  
Grayling, MI 49738

for information contact:  
[info@AuSableAnglers.org](mailto:info@AuSableAnglers.org)



prohibit overwater flights.\*

That's bad and here is why:

**Too Loud:** According to the Environmental Assessment, the newly formed Grayling Military Operation Area could see 10 times more sorties (flights), with some aircraft – such as the electromagnetic warfare equipped Growler – that are much louder and more disruptive than the current aircraft. Ten times the current traffic. More and some louder aircraft.

**Too Low:** A new flight path near Grayling would allow flying within 500 feet of ground level (instead of the current 5,000 feet). The Grayling East Military Operation Area passes right over the North Branch of the Au Sable and its tributaries. Grayling West Military Operation Area will pass over the mainstream and South Branch.

**Too Dirty:** Chaff and flare releases would increase, offering a rain of pollution on the headwaters of the most famous trout streams in the Midwest.

**Too Bad for Those Who Treasure Solitude:** The Environmental Assessment makes a point to note that in areas where flying at altitudes of under 1,000 feet would be allowed, most are decreasing in population. What they don't note is that these same areas receive significant influxes of seasonal residents, hikers, bikers, hunters, fishers, and outdoor-lovers that support our local economies. This data is cherry-picked and inaccurate.

**NIMBY:** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more.

**Promises Made, Promises Broken:** Let's just focus on one: PFAS. The military continues to drag its feet on cleaning up this problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

The comment period on the proposed EA expires on December 14th.

Written comments should be sent to the National Guard Bureau, Attn: Ms. Kristi Kucharek, [3501 Felchert Avenue, Joint Base Andrews, MD 20762-5157](mailto:3501.Felchert.Avenue.Joint.Base.Andrews.MD.20762-5157) or emailed to [NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil](mailto:NGB.A4.A4A.NEPA.COMMENTS.Org@us.af.mil) with subject ATTN: ALPENA SUA EA.

We need everyone, visitor and resident alike, to offer their comments against this quiet aerial expansion, before irreversible damage is done to the public lands, waters, and air of Northern Michigan.

## Your voice needs to be heard

*I will continue to work hard to invest in our parks, recreation and public lands so future generations can enjoy everything that Pure Michigan has to offer.*

*Governor Gretchen Whitmer  
December 2, 2022*

You may have heard that Governor Whitmer named DNR Director Dan Eichenger acting director of the Department of Environment, Great Lakes and Energy (DEGLE). It's not clear what this means for the Camp Grayling expansion decision. An acting director has been appointed for the DNR, Shannon Lott, who has been serving as natural resources deputy director. And some have suggested Eichenger will return when a new DEGLE director is named.

But we need to remain active in opposing the National Guard's land grab and now, their drive to take over more

and more of the air space over the Au Sable. Gov. Whitmer has a chance to turn her words into action by rejecting, either personally or through her appointees, these intrusions into our public lands and our public airspace. We all will be watching.

Joe Hemming

---

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You are receiving this email as a member of Anglers of the Au Sable

Our mailing address is:  
Anglers of the Au Sable  
P.O. Box 200  
Grayling, MI 49738

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**From:** [Samuel Yannerilla](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Monday, December 5, 2022 12:22:48 PM

---

Dear Sirs:

I am writing to let you know that I am fully against any expansion of the land area or air space for Camp Grayling. This is one of the few areas east of the Mississippi that has intact ecosystems both forests, wetlands, and rivers. People throughout the eastern United States make this a summer and winter destination likely spending billions of dollars a year enhancing Michigan's economy. The proposed expansion would not only put a damper on our economy, it would also be extremely destructive to the relatively pristine environment we currently have in North Central and Northern Michigan. Doubling the size of Camp Grayling land area and air space would be unconscionable. I strongly urge you to stop any the expansion of Camp Grayling

Sincerely,  
Samuel Yannerilla

**From:** [Samuel Yannerilla](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Low Level Air Flights  
**Date:** Saturday, January 14, 2023 12:23:51 PM

---

Dear Sirs:

I am totally against the increase in the number of aircraft and the number of low level air flights that is proposed for the Camp Grayling area. How in the world do you expect the citizens of northern Michigan just below the peninsula not to be adversely affected in numerous ways by this expansion. Living in the Gaylord area I already have my windows regularly rattling from the use of the artillery shooting range and now you propose low level flying aircraft!

There are many other areas of the Country with a much, much, smaller population and a less sensitive environment in which to conduct these activities. It would be unconscionable on your part to go ahead with this proposal.

Sincerely,  
Samuel Yannerilla

**From:** [Yoder](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Camp Grayling Expansion  
**Date:** Thursday, December 8, 2022 9:23:10 AM

---

How has it come to this? A simple gift of land for the Michigan National Guard to train upon, has been taken over by the federal government and will now be destroyed. Destroying the head waters and watersheds of 3 of Michigan's most valued river systems. Shame on the military for taking over and greedily destroying our (the tax payers and land owners of Michigan) property.

Penny Yoder

**From:** [Michael Youssi](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Cc:** [Jeffery Reinke](#)  
**Subject:** [Non-DoD Source] Camp Grayling Proposed Expansion  
**Date:** Tuesday, December 13, 2022 1:35:13 PM

---

Dear Decision Makers,

I write to support preserving the Au Sable River fishing and conservancy experiences.

Having taught high school students to fly fish on the Au Sable for several summers as part of Trout Unlimited, it's exceptionally accessible and pristine waters and wonderful trout populations are unparalleled in the Midwest and have few such peers in America.

Now that I live in Arizona I would do just about anything to fish the Au Sable again. There is no stream in the Southwest that can hold a candle to the Au Sable.

The defense of our nation is paramount.

But destroying one of America's finest trout stream, especially when drought threatens many other prime fisheries in other states, argues in favor of limiting interventions that could permanently eliminate this fishery.

Please revisit the proposed changes and look a viable alternatives.

Thank you,

Michael D Youssi, MD, MHA



Sent from my iPhone

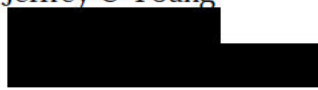
**From:** [Jeff Young](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ALPENA SUA EA  
**Date:** Tuesday, December 6, 2022 11:42:29 AM

---

I am a 70 year resident here in the great state of Michigan and want to formally oppose the latest planned expansion of military test flights in North Eastern Michigan out of the military base at Camp Grayling in Northern Michigan. The environmental impact and the impact on tourism and outdoor sports including hunting and fishing is not acceptable to the residents of Michigan. This expansion project runs completely contrary to the stated position of our Governor.

This type of noise pollution should be banned in Michigan and should be planned to be done in uninhabited locations in the western US.

My name is: Jeffrey C Young



--

*Jeff Young*

**From:** [Mary Lynn Yux](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] Re: ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 11:31:40 PM

---

I am opposed to any modification and addition of airspace at the Alpena Special Use Airspace Complex as well as any and all alternatives including proposed alternatives A, B, C and D. I believe this aerial expansion will cause irreversible damage to the public and private lands, waters and air of Northern Michigan. My property in Otsego Lake Township has already suffered a damaged window due to National Guard Activity. Let's not increase the intensity and breadth of potential damage!

Mary Lynn Yux, Property Owner





**From:** [Snowtrail Blazer](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 11:26:15 PM

---

I am opposed to any modification and addition of airspace at the Alpena Special Use Airspace Complex as well as any and all alternatives including proposed alternatives A, B, C and D. I believe this aerial expansion will cause irreversible damage to the public and private lands, waters and air of Northern Michigan. My property in Otsego Lake Township has already suffered a damaged window due to National Guard Activity. Let's not increase the intensity and breadth of potential damage!

Robert Yux, Property Owner



**From:** [R. J. Yux](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA  
**Date:** Wednesday, December 14, 2022 10:53:39 PM

---

On behalf of the 18 families we the duly elected officers and board members of Ram Nek Ranch, a nonprofit corporation whose physical property is in Otsego Lake Township and Chester Township in Otsego County do hereby pass the following resolution:

A resolution in opposition of any modification and addition of airspace at the Alpena Special Use Airspace Complex as well as any and all alternatives including proposed alternatives A, B, C and D.

Whereas, Ram Nek Ranch is a nonprofit organization dedicated to the acquisition and maintenance of existing property and improvements for the benefits of it members for recreational, pleasure and entertainment per our articles of incorporation in 1952; and

Whereas, Ram Nek Ranch believes that any modification and addition of airspace at the Alpena Special Use Airspace Complex will have a negative and lasting impact on our communities recreational, pleasure and entertainment;

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of Ram Nek Ranch that we oppose any modification and addition of airspace at the Alpena Special Use Airspace Complex as well as any and all alternatives including proposed alternatives A, B, C and D.

Resolution passed on this 14th day of December, 2022 by the following vote: 4 yes, 0 no, 1 abstain.

Respectfully submitted,

Robert Yux, Treasurer

Ram Nek Ranch

Otsego County, MI

**From:** [Zoe Zeerip](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Tuesday, December 20, 2022 8:50:00 AM

---

Hello,

I'm writing to oppose the expansion of Camp Grayling.

This expansion would be highly impactful to our communities and the environment, including precious natural resources and wildlife that call Michigan home.

The expansion will essentially deny residents and others who use or visit our towns for recreation of an additional 250 square miles of public lands. The impacts will be felt throughout the entire state and beyond, especially those who cherish our natural resources and want to preserve these beautiful lands and waters for generations.

The citizens and Camp Grayling have co-existed in harmony for decades, and residents are accustomed to the current training level despite disruptions every now and then. Area residents are even tolerant of the sounds of aircraft and live fire that sometimes (literally) shake the foundations of their homes. Adding to this will not be tolerable.

Thank you for your time and consideration,  
Zoe Zeerip

**From:** [Rudy Ziehl](#)  
**To:** [NGB A4/A4A NEPA COMMENTS Org](#)  
**Subject:** [Non-DoD Source] ATTN: ALPENA SUA EA.  
**Date:** Sunday, December 4, 2022 7:57:32 PM

---

**I object to the above-cited environmental assessment on the grounds that the proposed expansion is:**

**Too Loud**

**Too Low**

**Too Dirty**

**Too Bad for Those Who Treasure Solitude**

**Furthermore,** Not in Our Back Yard is already in our backyard. Bombs and planes rattle our windows all summer...we don't need more. And,

**Promises Made, Promises Broken.** The military continues to drag its feet on cleaning up the PFAS problem it has caused in Alpena and Grayling, to the point that there are Do Not Eat orders on fish and wildlife, and people that have been displaced or must drink treated water.

Rudy Ziehl

[REDACTED]  
[REDACTED]

[REDACTED]  
[REDACTED]

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**Appendix H**  
**Responses to Comments on the**  
**Draft Environmental Assessment**

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## Acronyms and Abbreviations

<b>ACAM</b>	Air Conformity Applicability Model	<b>LASDT</b>	Low Altitude Step Down Training
<b>AFFF</b>	aqueous film-forming foam	<b>Ldnmr</b>	Onset-Adjusted Monthly Day-Night Average Sound Level
<b>AFI</b>	Air Force Instruction	<b>Lmax</b>	Maximum Sound Level
<b>AGL</b>	above ground level	<b>LOWAT</b>	Low Altitude Air-to-Air Training
<b>ANG</b>	Air National Guard	<b>MDNR</b>	Michigan Department of Natural Resources
<b>ANGB</b>	Air National Guard Base	<b>MIANG</b>	Michigan Air National Guard
<b>BASH</b>	Bird-/Wildlife-Aircraft Strike Hazard	<b>MOA</b>	Military Operations Area
<b>BMP</b>	best management practice	<b>MSL</b>	above mean sea level
<b>CEQ</b>	Council on Environmental Quality	<b>MTR</b>	Military Training Route
<b>CFR</b>	Code of Federal Regulations	<b>NAAQS</b>	National Ambient Air Quality Standards
<b>CO<sub>2</sub>e</b>	carbon dioxide equivalents	<b>NAS</b>	National Airspace System
<b>CORA</b>	Chippewa Ottawa Resource Authority	<b>NEPA</b>	National Environmental Policy Act
<b>CRTC</b>	Combat Readiness Training Center	<b>NGB</b>	National Guard Bureau
<b>DAF</b>	Department of the Air Force	<b>NOTAM</b>	Notice to Air Missions
<b>DAFI</b>	Department of the Air Force Instruction	<b>PFAS</b>	per- and polyfluoroalkyl substances
<b>dB</b>	decibels	<b>PFBS</b>	potassium perfluorobutane sulfonate
<b>dBA</b>	A-weighted decibels	<b>PFOA</b>	perfluorooctanoic acid
<b>DNL</b>	Day-Night Average Sound Level	<b>PFOS</b>	perfluorooctane sulfonic acid
<b>DOD</b>	Department of Defense	<b>R-/RA</b>	Restricted Area
<b>DODI</b>	Department of Defense Instruction	<b>RPA</b>	remotely piloted aircraft
<b>EA</b>	Environmental Assessment	<b>SHPO</b>	State Historic Preservation Officer
<b>EGLE</b>	Michigan Department of Environment, Great Lakes, and Energy	<b>SPL</b>	Sound Pressure Level
<b>EIAP</b>	Environmental Impact Analysis Process	<b>SUA</b>	Special Use Airspace
<b>EIS</b>	Environmental Impact Statement	<b>UAS</b>	unmanned aircraft system
<b>FAA</b>	Federal Aviation Administration	<b>USC</b>	United States Code
<b>FONSI</b>	Finding of No Significant Impact	<b>USEPA</b>	United States Environmental Protection Agency
<b>IFR</b>	Instrument Flight Rules	<b>USFWS</b>	United States Fish and Wildlife Service
<b>IPaC</b>	Information for Planning and Consultation	<b>VFR</b>	Visual Flight Rules
<b>JO</b>	Joint Order	<b>VR</b>	Visual Flight Rules Military Training Route
<b>JTE</b>	Joint Threat Emitter		

---

## 1 H1. Introduction

2 The National Guard Bureau (NGB) would like to extend our appreciation to all who have shown  
3 interest in this proposal and have provided comments on the Draft Environmental Assessment  
4 (EA). By taking an active part in the environmental impact analysis process, you help to ensure that  
5 this document is the best it can possibly be and that all substantive issues have been addressed.

6 Comments were received via email and the U.S. Postal Service. Comments were grouped into  
7 similar topics so that, in many cases, a single response was generated for multiple comments,  
8 thereby reducing redundancy in responses.

9 Approximately 400 comment letters were received during the Draft EA comment period. Not all  
10 comments received were considered to be substantive, though all were fully considered and made  
11 part of the administrative record. Substantive comments were considered individually and  
12 collectively and responded to in the following pages. Some comments were used to make  
13 corrections or modifications in the body of the EA.

14 There were several comments received related to the Camp Grayling Expansion, which is a  
15 Michigan Army National Guard proposal. It is separate and distinct from this proposal. As such, all  
16 comments and questions related to the proposed Camp Grayling expansion were provided to the  
17 Michigan Army National Guard and are not addressed in this EA.

18 Substantive comments are those comments that generally challenge the analysis, methodologies, or  
19 information in the EA as being factually inaccurate or analytically inadequate; that identify impacts  
20 not analyzed or developed and evaluate reasonable alternatives or feasible mitigations not  
21 considered by the NGB; or that offer specific information that may have a bearing on the decision,  
22 such as differences in interpretations of significance, scientific, or technical conclusions, or cause  
23 changes or revisions in the proposal. Non-substantive comments, which do not require a specific  
24 NGB response, are generally considered to be those comments that are non-specific; express a  
25 conclusion, an opinion, agree, or disagree with the proposals; vote for or against the proposal itself,  
26 or some aspect of it; state a position for or against a particular alternative; or otherwise state a  
27 personal preference or opinion. Due to the number of comment letters received on the Draft EA and  
28 the sensitivity of Personally Identifiable Information, the NGB has summarized the comments. The  
29 table of contents beginning on page H-1 identifies where the reader can find relative comments and  
30 responses. However, public comment letters are a part of the official record and included in  
31 Appendix G.

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1 **H2. Public Involvement, Agency Coordination and Consultation, and**  
2 **Government-to-Government Coordination and Consultation Comments**  
3 **and Responses**

4 **Time Provided and Notice**

5 **Comment: Commenters requested the comment period be extended.**

6 Response: The Draft EA public comment period must be a minimum of 30 days; however, given the  
7 public interest in the Proposed Action and the requirement for the comment period to extend  
8 maximum participation, the public comment period was extended for a total of 61 days beginning  
9 with the publication of the Notice of Availability. The Draft EA and FONSI were originally released  
10 for a 30-day public review period on November 15, 2022, concluding on January 14, 2023.

11 **Comment: Commenters requested responses to comments submitted during the public**  
12 **comment period. Commenters raised questions and concerns regarding stakeholder**  
13 **engagement, early stakeholder engagement, adequacy of public notification, and method of**  
14 **public notification.**

15 Response: The NGB notified the public of the release of the Draft EA and the public comment period  
16 through various modalities (e.g., online and hard copies). A good faith effort was made to include  
17 interested parties from previous NEPA efforts for the Alpena SUA. The Notice of Availability for the  
18 Draft EA was published in local newspapers, including the *Alpena Daily News*, *Huron Daily Tribune*,  
19 *Crawford County Avalanche*, and *Gaylord Times Herald* in November and December 2022. Hard  
20 copies of the Draft EA were sent to 13 local libraries. A detailed list of stakeholders can be found in  
21 Appendix B and Appendix G. The list of recipients included federal, state, and local agencies and  
22 elected officials, including county commissioners, airports, airspace managers, federally recognized  
23 Tribes, and other interested parties. Updates regarding the public comment period were also  
24 posted on the project website maintained by Alpena CRTC Public Affairs. This information has been  
25 added to Section 1.7 of the Final EA.

26 **Comment: Commenters requested more community outreach, engagement, and debate**  
27 **opportunities as well as special events to encourage local education, garner residential**  
28 **input, and establish community trust.**

29 Response: The NGB provided notice and made the Draft EA and Draft FONSI available electronically  
30 and in hard copy at various libraries, and the NGB extended the public comment period to allow  
31 agencies and the public additional time to review the document. For the Alpena SUA Draft EA,  
32 public involvement was achieved by inviting the public to review the Draft EA/FONSI and submit  
33 comments through email and regular mail. Interested parties may contact Alpena CRTC/Public  
34 Affairs ([ng.mi.miarnng.list.pao@army.mil](mailto:ng.mi.miarnng.list.pao@army.mil)) to request informational events.

35 **Comment: Commenters requested that information regarding scheduled training events be**  
36 **made available to the public.**

37 The Alpena CRTC does not issue press releases or public statements regarding airspace activation  
38 or scheduled training events. Questions or concerns regarding training operations associated with  
39 the Alpena CRTC may be emailed to the Alpena CRTC/Public Affairs  
40 ([ng.mi.miarnng.list.pao@army.mil](mailto:ng.mi.miarnng.list.pao@army.mil)).

1 **Agency and Stakeholder Coordination**

2 **Comment: Commenters raised concern regarding agency consultation and coordination**  
3 **efforts. Specifically, commenters asserted that no coordination occurred with the Michigan**  
4 **Department of Environment, Great Lakes, and Energy (EGLE), the U.S. Environmental**  
5 **Protection Agency (USEPA), and the U.S. Army Corps of Engineers.**

6 Response: A scoping letter was mailed to the EGLE on June 17, 2021 (Appendix B), and the NGB  
7 received a receipt from the EGLE's Water Resources Division of acknowledgment on September 7,  
8 2021. A coastal consistency determination was also sent via email to the Federal Consistency  
9 Specialist, Water Resources Division, Michigan EGLE on November 15, 2022. To date, no responses  
10 have been received providing an official comment on the project.

11 The USEPA received and provided comments on the Draft EA, which have been reviewed and  
12 addressed, as appropriate, in the Final EA. As there are no anticipated permitting requirements for  
13 impacts on Waters of the U.S. under the Clean Water Act, consultation with the U.S. Army Corps of  
14 Engineers is not required for this airspace action.

15 **Government-to-Government Consultation (see also Appendix F)**

16 **Comment: The Chippewa Ottawa Resource Authority (CORA)—as a representative on behalf**  
17 **of the Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians,**  
18 **Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians, and the**  
19 **Sault Ste. Marie Tribe of Chippewa Indians—stated there was no effort to ensure Tribes are**  
20 **aware of this airspace action at Alpena. CORA was unaware of this action until December 8,**  
21 **2022.**

22 Response: On December 13, 2022, the CORA initially contacted the NGB, voicing their concerns that  
23 they were not notified regarding the availability of the Alpena SUA Complex Draft EA in a timely  
24 manner. The NGB values our relationship with all Tribal partners and strives to ensure that we  
25 properly respect and honor all reserved treaty and other rights. The oversight was acknowledged  
26 and rectified immediately.

27 Each of the Tribes identified by the CORA was informed of the Proposed Action in a letter dated  
28 June 17, 2021, sent by certified mail. Both the Chairperson and the Cultural Resources specialist or  
29 Tribal Historic Preservation Officer were sent separate letters describing the proposed  
30 undertaking. In addition, each of the Tribes identified received notification that the Draft EA was  
31 available for public review on November 15, 2022. The Tribal distribution list for this initial  
32 consultation is included in Appendix B, page 13 of the EA, and a sample letter on page B-16.

33 Participation from the CORA and its member Tribes is important to the NGB and the NEPA process.  
34 In an effort to ensure that adequate review time was provided, the comment period for the review  
35 of the Draft EA was extended by 30 days.

36 **Comment: The CORA requested to engage in consultation regarding concerns on**  
37 **environmental conditions and preservation of treaty rights on lands and waters.**

38 Response: At the request of the CORA, consultation was initiated in June 2023, and concluded on  
39 September 22, 2023. The results of consultation are summarized in Section 4.8 of the EA, and Tribal  
40 consultation materials are in Appendix F.

1 **Comment: The Miami Tribe of Oklahoma requested to serve as a consulting party.**

2 Response: At the request of the Miami Tribe of Oklahoma, the NGB hosted a virtual meeting in  
3 January 2023 to discuss the Proposed Action and concerns raised by the Tribe. The NGB provided  
4 responses and additional information to the Deputy Tribal Historic Preservation Officer. Tribal  
5 consultation meetings were held in June 2023, and consultation concluded on September 22, 2023.  
6 The results of consultation are summarized in Section 4.8 of the EA, and Tribal consultation  
7 materials are in Appendix F.

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8 **H3. Level of Documentation, Regulations, and Impacts Comments and**  
9 **Responses**

10 **Level of Documentation and Detail**

11 **Comment: The EA fails to comply with Air Force, FAA, and CEQ regulations requiring**  
12 **compliance with NEPA. An Environmental Impact Statement (EIS) is required.**

13 Response: The need to complete an EIS is driven by the significance of the impacts associated with a  
14 Proposed Action. The analysis of the anticipated impacts indicates that the Proposed Action would  
15 not result in significant impacts based on the Air Force and the FAA regulatory thresholds for the  
16 resource areas identified within the proposed project area. The anticipated impacts associated with  
17 the Proposed Action, as well as the methodology for determining the expected impacts, are  
18 discussed in depth in Chapter 4 of the EA. The analysis concluded that the anticipated  
19 environmental impacts resulting from the implementation of the Proposed Action do not meet the  
20 criteria for conducting an EIS. The analysis conducted for the EA determined that the Proposed  
21 Action would not pose significant impacts to the environment.

22 **Comment: Commenters thought the information was not specific or detailed enough to**  
23 **evaluate long-term effects of the proposal.**

24 Response: In accordance with 40 CFR 1502.23, agencies shall make use of reliable existing data and  
25 resources. In developing the EA, the most recent and relevant data were used to form the analysis  
26 in the EA. Agencies are not required to undertake new scientific and technical research to inform  
27 their analysis (40 CFR 1502.23, as applied to EAs per 40 CFR 1501.5(g)). The NGB, as the  
28 responsible federal agency and decisionmaker for this action, prepared the EA in coordination with  
29 the FAA, in accordance with CEQ, Air Force, and FAA NEPA regulations. The NGB has sought  
30 independent contractors to assist in the analysis and relied on agency experience in similar  
31 proposals to assess the nature of the expected impacts. The level of information in the EA is  
32 intended to provide enough information so that federal agencies can make an informed decision.

33 **Comment: How is it determined which resources are carried forward for further analysis in**  
34 **the EA?**

35 Response: It is necessary to evaluate all environmental resources pursuant to NEPA, the Air Force's  
36 Environmental Impact Analysis Process (EIAP; 32 CFR 989), and the FAA's Environmental Impacts:  
37 Policies and Procedures (FAA Order 1050.1F). Resources that are carried forward for analysis are  
38 those resources that could be reasonably affected by the Proposed Action or alternatives. Resources  
39 that are not carried forward are evaluated adequately to determine that they will not be reasonably  
40 affected by the Proposed Action or alternatives. Appendix A of the EA includes a discussion about  
41 each of the resources that were initially considered but eliminated from detailed evaluation in this  
42 EA.

1 **NEPA and FAA Aeronautical Application**

2 **Comment: The FAA’s aeronautical proposal was released prior to the Draft EA. The**  
3 **application must be withdrawn until the EA is complete.**

4 Response: The Alpena SUA Aeronautical Proposal was circulated for public review and comment  
5 from June 20 through August 3, 2023, as directed by FAA JO 7400.2P. A Notice of proposed  
6 rulemaking for the Modification of Restricted Areas-R-4201A and R-4201B; Camp Grayling was  
7 published in the Federal Register on October 13, 2023. Comments were invited between October 13  
8 to November 27, 2023. Comments received during the public review of the aeronautical proposal  
9 and notice of proposed rulemaking are incorporated into the Final EA, as appropriate. The FAA’s  
10 NEPA and aeronautical approval processes are intrinsically tied. As is the case with any federal  
11 action, the FAA will not make any decisions on this or any airspace proposal until the final NEPA  
12 documents are signed.

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13 **H4. Purpose and Need Comments and Responses**

14 **Comment: Why can’t the NGB use the current airspace more effectively?**

15 Response: Specific readiness requirements for airspace modifications are in Section 1.3 of the EA.

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16 **H5. Alternatives Comments and Responses**

17 **Comment: Commenters questioned the adequacy of alternatives selected.**

18 Response: In accordance with NEPA, the range of reasonable alternatives must meet the underlying  
19 purpose of and need for action. Per 40 CFR 1501.5(c)(2), an EA shall “[b]riefly discuss...alternatives  
20 required by section 102(2)(E) of NEPA.” The No Action Alternative is carried forward for detailed  
21 analysis to provide a baseline against which the Proposed Action and alternatives can be evaluated,  
22 as required in 32 CFR 989.8.

23 In addition to the Proposed Action and No Action Alternative, two additional alternatives were  
24 considered in Chapter 2 of the EA. A summary of the alternatives is presented in Table 2-18 of the  
25 EA. The range of reasonable alternatives considered that meet the project’s purpose and need and  
26 satisfy project objectives are described in Section 2.5 of the EA.

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27 **H6. Proposed Action Details Comments and Responses**

28 **General**

29 **Comment: Who authored and approves the airspace modification?**

30 Response: The NGB and MIANG developed the proposed airspace modifications and additions and  
31 coordinated early with the Minneapolis Air Route Traffic Control Center and other interested  
32 parties to put forth the proposed airspace modification. The NGB is the proponent of this proposal,  
33 the lead agency for preparation of the EA, and the signatory on the FONSI for this EA. The FAA  
34 serves as a cooperating agency for this EA and is in the process of preparing the Aeronautical  
35 Proposal. The FAA is the ultimate decisionmaker for approval and charting of the airspace.

1 **Boundaries**

2 **Comment: Could the south boundary of Grayling West and Grayling East match the south**  
3 **boundary of the current temporary Grayling MOA?**

4 Response: The shape of the MOAs was developed in coordination between the NGB, FAA, and  
5 Minneapolis Air Route Traffic Control Center. The proposed boundary as presented in the EA takes  
6 into account mission requirements, civil and commercial aviation, as well as potential impacts to  
7 land use under the airspace.

8 **Time Periods**

9 **Comment: Commenters requested limitations on various aspects of training, to include times**  
10 **of use and altitudes.**

11 Response: For all the proposed MOAs considered in this EA (Grayling West, Grayling East, Steelhead  
12 Low North, Steelhead Low South, and Steelhead Low East), the times would normally be Monday-  
13 Friday, 0900-1130 and 1300-1530, for one hour or less. However, the MOAs may be activated for  
14 any time block, as long as it is four hours in advance by Notice to Air Missions (NOTAM). Aircraft  
15 would not fly outside of approved altitudes of the MOA. See Tables 2-1 and 2-2 and Tables 2-4  
16 through 2-16 of the EA, as well as Appendix I.

17 **Sorties and Aircraft**

18 **Comment: Commenters expressed concern about a perceived ten-fold increase in sorties**  
19 **(e.g., Grayling West MOA: 1,603 proposed per year, Grayling East MOA: 1,528 proposed per**  
20 **year; this totals 3,131 proposed per year, compared with 309 existing per year).**

21 Response: The sorties within each MOA are not additive across the airspace because the same  
22 aircraft sortie may use several MOAs. Many of the sorties within Grayling East may be the same as  
23 in Grayling West, so Grayling East and West cannot accurately be totaled together.

24 **Comment: Commenters expressed concern about the number of aircraft in formation during**  
25 **close air support training, noting two to four aircraft or as many as eight to twelve aircraft**  
26 **could make multiple ground passes over the same place at 500 feet anywhere in the Grayling**  
27 **West MOA.**

28 Response: While 8-12 aircraft flying in formation at once would not be a regular occurrence for  
29 day-to-day training, it could occur during large force exercises. When aircraft are flying in  
30 formation, aircraft would typically be within one nautical mile of each other. In addition, based on  
31 the variable flight paths and overall size of the SUA, there is a low likelihood that a particular point  
32 would be repeatedly overflown.

33 **Comment: How were the numbers of proposed sorties and mix of aircraft determined?**

34 Response: The sortie numbers and hours were obtained from Alpena CRTC, Selfridge ANGB, and  
35 Toledo ANGB and represent an average over a year. Existing sortie numbers were taken from  
36 recent airspace utilization data. The proposed sortie numbers and hours are based on a  
37 conservative annual estimate from average operational data and the planned mission and would be  
38 flown after the Proposed Action is implemented. The proposed sortie numbers are the best  
39 estimate of actual sortie numbers. Aircraft, sorties, and hours may vary somewhat day to day,  
40 month to month, and year to year.

41 **Comment: Is there a threshold for how many sorties or kinds of aircraft that would**  
42 **necessitate additional analyses?**

43 Response: Training needs that necessitate a significant increase in sorties or modification of the  
44 airspace to support mission requirements beyond what is proposed in this EA would require  
45 additional NEPA analysis.

1 **Comment: Remotely piloted aircraft (RPA) are not addressed in the Draft EA. In which**  
2 **MOA(s) would RPA operate?**

3 Response: RPAs do not have a specifically assigned airspace. In addition, transient aircraft,  
4 including RPAs, may occasionally utilize the airspace. The RPAs either operate inside restricted  
5 areas or in Class A airspace (above 18,000 feet MSL) or are operating in these areas using chase  
6 planes and spotters.

7 **Comment: Would VR-1601/1602 only be used as an approach/return pathway to and from**  
8 **R-4201A?**

9 Response: VRs are not used as an approach/return pathway only to and from R-4201A. A VR is a  
10 standalone entity that may or may not be used in conjunction with a Restricted Area or other SUA.  
11 The VR-1601 and VR-1602 were designed to allow a more direct low-altitude ingress into R-4201  
12 and return from R-4201, but there are alternate entry and exit points along the proposed route at  
13 each turn point that allow pilots to choose to use the route without R-4201A, as required for  
14 training.

15 **Comment: How does an aircraft transition from a VR (500 feet to 1,500 feet) to a MOA with a**  
16 **higher floor (e.g., Pike West at 6,000 feet)?**

17 Response: This is a very nuanced question that requires a lot of scenario-specific information to  
18 give a full answer. All military pilots must comply with Federal Aviation Regulations unless a  
19 military waiver has been granted by the FAA. If DOD aircraft need to transition between SUA and  
20 MTRs in order to accomplish required training objectives, procedures would be established  
21 between the DOD unit and the appropriate FAA Air Route Traffic Control Center in order to  
22 accomplish the transition safely and efficiently.

23 **Comment: Why has the floor for the Grayling Temporary MOA varied year to year? What was**  
24 **the rationale for raising the flight floor above 5,000 feet MSL in the Grayling Temporary**  
25 **MOA?**

26 Response: The Air Route Traffic Control Center is responsible for all flight in a geographic area  
27 outside of major airports assigned airspace. The 5,000-foot MSL floor was identified to allow VFR  
28 traffic and IFR traffic to be routed at published altitudes per the Federal Aviation Regulations under  
29 the airspace. The Grayling Temporary MOA is only activated to support large force exercises such as  
30 Northern Strike, which are high-volume, high ops tempo, summertime events. In the past, if the  
31 DOD scheduled an event during or near the Air Venture aircraft convention (Osh Kosh, WI), the Air  
32 Route Traffic Control Center raised the flight floor of the Grayling Temporary MOA to prevent  
33 congestion with civilian aircraft and to relieve controller workload. V609 is a published flight  
34 corridor between R-4201A/B and the Pike West MOA for which the Air Route Traffic Control Center  
35 wanted to ensure adequate space. For this reason, the Proposed Action includes a 10,000-foot MSL  
36 floor within the proposed Grayling East MOA and a 500-foot AGL floor within the proposed  
37 Grayling West MOA. This configuration would provide adequate room around V609 to enable  
38 multiple levels of flight along that route.

39 **Comment: Commenters were concerned about low altitude supersonic noise.**

40 Response: No changes in supersonic aircraft operations are included in the proposed Alpena SUA  
41 modifications.

42 **Comment: At what speed will the EA-18G aircraft be traveling in VR-1601/1602?**

43 Response: If an F-18 of any variant is flying on a VR, they are approved to fly at speeds up to those  
44 required for the mission not to go supersonic. A typical sortie flown by jet aircraft such as the F-18  
45 is at 500 knots ±50 knots.



1 **Comment: Would fifth generation aircraft (e.g., F-35 and F-22) use this airspace?**

2 Response: F-35 and F-22 aircraft are not anticipated to be primary users of the Grayling MOAs. F-35  
3 sorties were modeled in the Pike East, Pike West, and Steelhead MOAs, and usage would be  
4 relatively low. More than half of proposed sorties would be above 5,000 feet MSL. F-35 sorties  
5 would be an uncommon occurrence in the proposed Grayling MOAs. No F-35 sorties would occur  
6 within the Steelhead Low MOAs. If training requirements for fifth generation aircraft evolve or an  
7 aircraft basing action is proposed that would result in increased usage of the Alpena SUA, additional  
8 NEPA analysis would be conducted.

9 **Comment: Training for the A-10 and F-16 aircraft has been successfully carried out for many**  
10 **years in the existing airspace. What has changed for LOWAT and LASDT training for these**  
11 **aircraft?**

12 Response: The tactics employed by these aircraft have changed over the lifespan of the aircraft and  
13 require larger areas to be relevant for modern weapons and threats. The requirements for the size  
14 and shape of military airspace are driven by multiple factors. These include the primary using  
15 aircraft, the weapons and targeting systems utilized, and the known capabilities of our peer/near-  
16 peer adversaries. The LOWAT and LASDT training requirements are updated to meet the changes of  
17 our U.S. systems and the threats of our known adversaries.

18 **Comment: With the anticipated divestiture of the A-10, will the ANG still be training pilots on**  
19 **this aircraft in this airspace in the next 3–4 years?**

20 Response: Yes, the ANG will continue to fly and train pilots to remain current in the A-10 until it is  
21 no longer in the inventory.

22 **Comment: Why are there 110 fewer F-16 sorties in R-4201B than R-4201A (Table 2-12)?**

23 Response: The approved targets are in R-4201A. R-4201B is only used by F-16s for maneuvering  
24 space if they need it.

25 **Comment: Proposed VR-1601/1602 includes rotary aircraft. What are the floor and ceiling**  
26 **altitudes for helicopters?**

27 Response: Military helicopters using this MTR fall under the same altitude restrictions. However,  
28 helicopters may also fly using visual flight rules that cannot be used by fighter aircraft.

29 **Chaff and Flare**

30 **Comment: Commenters expressed concern about the altitudes that chaff and flares could be**  
31 **released.**

32 Response: Minimum altitudes for expenditures per AFI 11-214 is 2,000 feet AGL for all areas  
33 outside federal property. The proposed MTRs include 300 to 1,500 feet AGL and are not approved  
34 for release of chaff or flare. If a MOA has a floor that is higher than 2,000 feet, chaff and flare within  
35 that MOA would be released no lower than the approved floor.

36 **Weapons and Missions**

37 **Comment: What criteria is used to select and target moving vehicles and marine vessels for**  
38 **low altitude attack training? Will you conduct attack training on civilian/commercial**  
39 **vehicles and commercial shipping/recreational vessels?**

40 Response: Simulated moving vehicle and marine vessel training is done in accordance with Air  
41 Force Instruction 14-404, Intelligence Oversight (USAF, 2019). Selection of training targets is done  
42 by the pilot of the aircraft at random during the flight while airborne to meet training requirements.  
43 There is no additional danger to the driver or passengers of the vehicle, and they do not know they  
44 are being used as a training aid.

1 **Comment: Is training ordnance live or inert? If live, what types of ordnance? How much? Are**  
2 **lasers employed within R-4201A/B?**

3 Response: Live and inert munitions training is conducted at the Grayling Air Gunnery Range. Inert  
4 ordnance is also used at R-4207. No ordnance is employed outside the designated impact area of  
5 the Restricted Area. No changes in ordnance usage are proposed in this EA.

6 The only approved laser range is the impact area in R-4201A. It is possible/permissible for an  
7 aircraft to use a laser from R-4201B with a ground point in the impact area in R-4201A. No changes  
8 in laser or weapons employment are proposed in this EA.

9 **Comment: Commenters had questions about ordnance waste and disposal within the region**  
10 **of influence.**

11 Response: Ordnance waste and disposal is conducted in accordance with federal and Air Force  
12 policy and regulations.

### 13 **Minimization and Mitigation Measures**

14 **Comment: Commenters expressed concern that the proposed shoreline restriction was not**  
15 **sufficient in size or should be year-round.**

16 Response: The seasonal altitude restriction of 1 NM and 1,500 feet from the shoreline of Lake  
17 Huron would be in effect between May 15 and September 15 as described in the Proposed Action in  
18 Section 2.1 of the EA. Military aircraft are required to avoid low-level flight over areas of population  
19 density. The 1 NM radius was agreed to by Michigan state and local public officials working with  
20 members of the MIANG.

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## 21 **H7. Airspace Management Comments and Responses**

22 **Comment: The Michigan MDNR expressed concern that military operations within the**  
23 **Grayling West and other low MOAs could impact other missions conducted in the airspace**  
24 **including wildfire detection and suppression and wildlife surveys.**

25 Response: Procedures for real-time separation and use of the airspace by civilian air traffic would  
26 be developed in coordination with the Minneapolis and Cleveland Centers through a letter of  
27 agreement.

28 **Comment: Commenters expressed concerns about the low utilization rate of the airspace,**  
29 **contrasted with the proposed increase in the number of sorties.**

30 Response: The proposed sortie numbers and hours are based on a conservative annual estimate  
31 from average operational data and planned missions. Some of the sorties would be conducted using  
32 multiple SUA together, such as Grayling West MOA and R-4201A/B. As a result, the number of  
33 proposed sorties listed in the EA are estimated to be the highest number that would be flown in the  
34 SUA.

35 **Comment: Commenters expressed concern that general aviation pilots would choose not to**  
36 **fly VFR through active MOAs and would be unable to fly below MOAs due to height**  
37 **obstructions, resulting in overall less visitation.**

38 Response: While a MOA does not prohibit access to VFR traffic, it is recognized that many VFR pilots  
39 choose to avoid these areas, particularly within low MOAs. A NOTAM would be issued at least four  
40 hours in advance of MOA activation for the proposed SUA to increase awareness of military training  
41 in the area to increase the safety of all airspace users. See also Section 4.1 for airspace procedures  
42 and estimated utilization and for flight safety including height obstructions.

1 **Comment: Commenters expressed concerns with limited communications and radar**  
2 **coverage at low altitudes in this area, with aircraft departing local airports not able to**  
3 **communicate with Air Traffic Control, or obtain radar service, until they are well above 500**  
4 **feet AGL.**

5 Response: This comment is outside the scope of the EA. When a military airspace proposal is  
6 submitted by the DOD to the FAA, the Air Route Traffic Control Center conducts an aeronautical  
7 study that includes identifying impacts to IFR and VFR operations as well as impacts to public and  
8 private airfields.

9 **Comment: Commenters expressed concern about the mechanism in which the ANG will**  
10 **disclose and publicize the procedures for airspace dynamic deactivation, as required by the**  
11 **2021 National Defense Authorization Act.**

12 Response: This comment is outside the scope of the EA. Section 1085 of 2021 National Defense  
13 Authorization Act tasked the FAA and DOD to develop real-time scheduling and dissemination of  
14 military airspace; the FAA is the lead for this. The DOD fully supports this initiative and stands  
15 ready to comply with all information needed for FAA dissemination.

16 **Comment: A recent Federal Aviation Administration computer outage and system failure**  
17 **that halted all departing flights in the United States on January 12, 2023, makes precise**  
18 **management and coordination between military and civilian air traffic controllers**  
19 **questionable for the proposed expanded airspace.**

20 Response: The FAA NOTAM outage is an issue that is beyond the scope of this EA. The safety of the  
21 National Airspace System (NAS) is paramount. The FAA is tasked with the safe and expeditious flow  
22 of air traffic throughout the NAS. The FAA responded to this incident by halting flights until air  
23 traffic could safely resume. The security of the NAS is just as paramount. The DOD is trained and  
24 capable of acting under the National Command Authority to protect the NAS against all external and  
25 internal threats.

26 **Comment: Commenters expressed concern that pilots would use the Au Sable North Branch**  
27 **as a navigational channel to the air-to-ground range.**

28 Response: The purpose of the Alpena airspace is to support military readiness requirements  
29 through mission training. Aircraft activities in MOAs would typically consist of tactical combat  
30 maneuvering, non-standard formation flights, and close air support. As a result, aircraft activities  
31 would be more focused on mission tactics as compared to flying to a certain destination and using  
32 navigational channels.

33 **Comment: The NGB should consider how the proposed activities could impact civilian drone**  
34 **use, hot air ballooning, and paragliders, both motorized and non-motorized.**

35 Response: As defined in 14 CFR 91.113 (Rights-of-Way Rules: Except Water Operations), vigilance  
36 would be maintained by each person operating an aircraft so as to see and avoid other aircraft.  
37 When there is a rule that gives another person the right-of-way, the pilot shall give way to that  
38 aircraft and may not pass over, under, or ahead of it unless well clear. Specifically:

- 39 • An aircraft in distress has the right-of-way over any other aircraft.
- 40 • A balloon has the right-of-way over any other aircraft.
- 41 • A glider has the right-of-way over airplanes or rotorcraft.
- 42 • An aircraft towing or refueling another aircraft has the right-of-way over engine-driven
- 43 aircraft.
- 44 • Life Flights and ambulance flights are always given priority in airspace.

1 As noted in Part 91.113, balloons and gliders would and do have right-of-way over military aircraft  
2 conducting training. Military pilots are highly trained and maintain see-and-be-seen awareness  
3 throughout their training activities.

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## 4 **H8. Safety Comments and Responses**

### 5 **General**

6 **Comment: Commenters suggested that military issues and associated studies appear to be**  
7 **discussed behind the veil of national security.**

8 Response: Per DODI 5230.09, it is DOD policy to make accurate and timely information available to  
9 the public to help with analysis and understanding of defense strategy, defense policy, and national  
10 security issues. Classified and Controlled Unclassified Information is not publicly disseminated.

11 **Comment: Comments suggested the increased noise and air pollution could pose a health**  
12 **threat.**

13 Response: Potential effects of air emissions and noise were considered in the EA. Refer to Sections  
14 4.3 (Air Quality) and 4.4 (Noise) of the EA, as well as Appendices K and L. Criteria pollutant air  
15 emissions associated with the Proposed Action would not cause any pollutant concentrations to  
16 exceed National Ambient Air Quality Standards, which protect human health and safety. An  
17 evaluation of expected noise impacts was completed and incorporated an analysis of both DOD and  
18 FAA noise significance criteria. Based on the EA that has been prepared, the Proposed Action would  
19 have minimal effect on the area under the SUA. Adverse health effects from casual, temporary  
20 exposure to expected noise levels for residents and outdoor recreationists under the SUA are not  
21 expected. Hearing protection would not be required.

### 22 **BASH and Mishap Potential**

23 **Comment: Commenters were concerned that military aircraft operating at lower floors,**  
24 **particularly along shorelines, could increase the potential for aircraft mishaps.**

25 Response: Minimizing flight safety risks is a priority. See Section 4.2 for a discussion of aircraft  
26 safety.

27 **Comment: Commenters were concerned that ANG pilots are not seasoned pilots, increasing**  
28 **the potential for safety mishaps.**

29 Response: ANG pilots are highly skilled and trained professionals who are capable of performing  
30 the same duties as “full-time” military pilots. They receive the same training and have the same  
31 qualifications as pilots in the active-duty military. The primary difference is that ANG pilots  
32 typically serve a dual role, both as a citizen-airman and as a member of the military. This means  
33 that they may have civilian jobs in addition to their military duties, while active-duty military pilots  
34 typically do not. Many ANG pilots have prior military service and are also experienced current  
35 airline pilots. Overall, both groups of pilots are highly skilled and capable professionals.

36 Available general mishap rates by aircraft type are included in Table A-4 of Appendix A of the EA.  
37 The risk of a mishap under the Proposed Action is very low.

38 **Comment: Commenters expressed concern about increased BASH associated with the**  
39 **Steelhead MOA in the Mississippi Flyaway, noting that the one nautical mile restriction along**  
40 **the shoreline would not avoid migrating bird flocks.**

41 Response: Bird strikes are a potential flight hazard. In general, migratory waterfowl are the most  
42 hazardous birds to low-flying aircraft, though waterfowl may congregate along the many water  
43 bodies present in the SUA Complex. See also discussions in Sections 4.2 and 4.7 of the EA.

1 Bird Watch Conditions are informed by compilations of historical data as well as near-real-time  
2 information relayed by airborne aircraft, air traffic control, and base operations personnel.  
3 Conditions are assessed at least hourly. Bird activity can be LOW, MODERATE, or SEVERE, and  
4 MODERATE or SEVERE conditions are relayed to air traffic control and aircrews. Tactical training,  
5 such as within MOAs, may occur during SEVERE or MODERATE conditions, but flight levels and  
6 areas with reported bird activity must be avoided. When conditions are SEVERE, aircrews must  
7 evaluate mission need before operations; operations below 3,000 feet AGL are generally avoided.  
8 Existing measures discussed above to manage BASH would continue to be used under the Proposed  
9 Action. While the proposed shoreline avoidance area between May 15 and September 15 was  
10 intended to reduce potential military training conflicts during the times of the year when most  
11 people are outside along shorelines, it would also reduce BASH somewhat during that time, when  
12 many shorebirds and waterfowl are likely to be present along the lake.

13 **Comment: Aircraft Owners and Pilots Association expressed concern with the widespread**  
14 **practice of military aircraft not utilizing ADS-B Out, citing FAR 91.225 (f)(1).**

15 Response: Dependent Surveillance-Broadcast (ADS-B) Out is a function of an aircraft's onboard  
16 avionics that periodically broadcasts the aircraft's state vector and other required information  
17 allowing the aircraft to be tracked by other users of the airspace or surveillance systems on the  
18 ground. 14 CFR 91.225 requires that after January 1, 2020, ADS-B Out equipment be installed on all  
19 aircraft in Class A airspace. An Interim Final Rule (effective July 18, 2019) modified the requirement  
20 for all aircraft to be equipped with ADS-B and to transmit at all times. Specifically, aircraft that are  
21 owned/operated by federal, state, and local government agencies and conducting missions for  
22 national defense, homeland security, and law enforcement purposes can operate aircraft that are  
23 not equipped with ADS-B.

24 14 CFR 91.225(f) states, "The requirements of paragraph (b) of this section do not apply to any  
25 aircraft that was not originally certificated with an electrical system, or that has not subsequently  
26 been certified with such a system installed." The ADS-B transmission requirement could draw  
27 attention to operational vulnerabilities and expose government aircraft performing sensitive  
28 missions to immediate risk and compromise the operations security of missions for national  
29 defense. This decision was made at the DOD level, and the DAF does not have authority to equip  
30 their aircraft with this technology. In September 2019, the DOD was granted a national  
31 authorization by the FAA to operate non-ADS-B Out equipped aircraft, provided that they are  
32 owned and operated by the DOD, in airspace where ADS-B Out is required. The national  
33 authorization satisfies the requirements of 14 CFR 91.225 (a), (b), (d), and (g)(2) without degrading  
34 the safety of the NAS and ensuring the DOD's ability to fulfill its national security mission.

35 **Comment: Military aircraft need to squawk when operating in any airspace except restricted**  
36 **and prohibited areas.**

37 Response: Military aircraft squawk while operating in the airspace on Air Traffic Control-assigned  
38 codes. When they are operating on visual flight rules outside of military airspace, they squawk the  
39 standard VFR 1200. While operating within assigned military airspace, they squawk the standard  
40 military assigned code of 4000 per the Letter of Agreement between Minneapolis ARTCC and  
41 Alpena CRTCC.

42 **Comment: Commenters requested additional justification on why lights-out training could**  
43 **not be limited to a finite area of the complex, such as the preexisting MOAs, instead of the**  
44 **entire expanded complex.**

45 Response: See Section 4.2.1 of the EA. The DOD will only conduct, and the FAA will only allow,  
46 lights-out training within military airspace as long as the safety of the participating and  
47 nonparticipating aircraft is fully assured.

1 **Obstructions**

2 **Comment: Commenters expressed concerns that military aircraft would not be able to use**  
3 **the Steelhead Low MOAs due to the presence of windmills.**

4 Response: All obstructions including structures and populated areas are identified by pilots as part  
5 of preflight preparations. The windmill areas are noted on the Detroit Sectional Aeronautical Chart;  
6 these areas would be avoided in accordance with minimum safe altitudes. The remaining proposed  
7 airspace in Steelhead Low North and East would provide effective low-level training.

8 **Comment: Would trees be obstructions in the airspace?**

9 Response: The tallest trees would not be expected to reach the 300-foot floor proposed in  
10 VR-1601/1602, or the 500-foot floors in the Grayling West or Steelhead Low MOAs. The tallest  
11 trees include the tulip poplar, eastern cottonwood, shagbark hickory, eastern hemlock, and eastern  
12 white pine (average less than 120 feet) (MDNR, 2023b). The tallest tree on record is an eastern  
13 white pine in the Grayling area at 165 feet tall (MonumentalTrees.com, 2023). Therefore, the tops  
14 of trees would not encroach into the SUA. Furthermore, pilots employ preflight planning during  
15 which terrain, obstacle elevations, and other areas for terrain masking are reviewed prior to every  
16 low-level sortie. Pilots also employ see-and-avoid tactics to ensure avoidance with all obstructions.

17 **Hazardous Materials, Wastes, and Substances**

18 **Comment: Commenters expressed concern about increased potential for fuel spills,**  
19 **accidents, and other toxins, including PFAS.**

20 Response: The potential for aircraft mishap is discussed in Section 4.2.1 of the EA. MIANG takes air  
21 and ground safety very seriously and has established protocols to prevent mishaps (including  
22 aircraft mishaps, fuels spills, and other accidents), as well as to establish emergency procedures to  
23 respond to mishaps and reduce or eliminate risks to persons or property or to lessen the actual or  
24 potential effects or consequences of an incident.

25 In the event of an aircraft mishap, there would be the potential for fuel or other materials to spill  
26 into the environment. Currently, aqueous film-forming foam, or AFFF—is used in case of an aircraft  
27 emergency, but is not used for maintenance or training. In the near future, AFFF will be replaced  
28 with a Florine Free Foam. These materials are used to rapidly suppress fire and protect human  
29 health and safety and property damage. In the event of a Class A mishap, special procedures are  
30 used to manage emergencies and crashes, for which installations have established procedures, off-  
31 base mutual air support, and general hazardous materials response plans. Through mishap  
32 response plans, the MIANG manages the safety risks and would have adequate management and  
33 response plans in place to minimize the safety impacts associated with spilled material. See also  
34 Section A.14 of the EA.

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35 **H9. Air Quality Comments and Responses**

36 **General Air Emissions and Air Quality Monitoring**

37 **Comment: If there is only one ambient air quality monitor in the study area, how has the**  
38 **“attainment” designation been obtained?**

39 Response: Michigan EGLE has established a network of air quality monitors in compliance with  
40 40 CFR 58; locations may change over time. Areas that do not have monitors are unclassified and  
41 treated as attainment areas for regulatory purposes.

42 The USEPA determines attainment status. The USEPA confers with states and Tribes and analyzes  
43 air monitor data to determine if an area attains National Ambient Air Quality Standards (NAAQS)  
44 for criteria pollutants.

1 **Comment: Has the MIANG conducted air quality monitoring within areas with concentrated**  
2 **training activities such as R-4201A/B?**

3 Response: The NGB is not aware of any such air monitoring efforts.

4 **Comment: Do training flights occur during ozone action days?**

5 Response: Flying training is conducted as scheduled to ensure National Security and military  
6 readiness.

### 7 **Air Quality Modeling**

8 **Comment: The EA (Table 2-3) suggests that the increase in sorties does not equate to an**  
9 **increase of low airspace pollutants being introduced as these missions are held in more than**  
10 **one airspace.**

11 Response: The air quality analysis considered the total time in airspace per sortie as the basis to  
12 determine air emissions within each MOA to provide a maximum emissions estimate. Therefore, if  
13 looking at Table 2-3 (which includes baseline and proposed sorties and hours), the time in airspace  
14 was the metric used to estimate air emissions. We used the information in Tables 2-4 through 2-16  
15 to look at the total time in airspace per aircraft, subtracting out the sorties/time that would be  
16 above 3,000 feet. This approach assumes the maximum time that could be spent in the proposed  
17 MOAs.

18 Criteria pollutant emissions below 3,000 feet would increase, but these impacts would not be  
19 significant because the total increase in project emissions would not exceed established *de minimis*  
20 thresholds.

21 **Comment: Commenters questioned why the analysis only looked at emissions up to the**  
22 **3,000-foot mixing level.**

23 Response: The 3,000-foot mixing height for criteria pollutants is a prescribed value; using a lower  
24 mixing height may be acceptable in some areas, which would lower projected emissions. Per  
25 40 CFR 93.153(c)(2)(xxii), "Where the applicable [SIP] does not specify a mixing height, the Federal  
26 agency can use the 3,000 feet above ground level as a default mixing height unless the agency  
27 demonstrates that use of a different mixing height is appropriate because the change in emissions  
28 at and above that height caused by the Federal action is *de minimis*." This regulatory citation was  
29 added to the text of the EA to identify the source of this standard.

30 The emissions estimates in the EA are also conservative on the 3,000-foot AGL mixing height  
31 matter. Any airspace block with sorties up to 3,000 feet was included in the air model. If the altitude  
32 block for sorties extended beyond 3,000 feet, the total sorties and time in that airspace were  
33 modeled. Detailed tables identifying the sorties, time in airspace, and altitude blocks were added to  
34 the end of Appendix K for clarity.

35 **Comment: Commenters expressed concern that the EA used regional criteria for air quality**  
36 **with a perceived dilution factor across the entire airspace but dismissed health risks at**  
37 **ground level under individual MOAs/VRs. Commenters were concerned about particulates**  
38 **from low altitude training settling on farms, yards, water, and into lungs.**

39 Response: Under the Clean Air Act, the USEPA developed the NAAQS for criteria air pollutants that  
40 have been determined to impact human health and the environment. The NAAQS are  
41 concentration-based (i.e., mass of pollutant per volume of air). To facilitate NEPA reviews and  
42 determinations of significance in nonattainment/maintenance areas, the USEPA established the  
43 General Conformity Rule with mass-based *de minimis* criteria to determine if a project has potential  
44 for impacts on local or regional air quality or violations of NAAQS. The Air Force's Air Quality EIAP  
45 Guide (AFCEC, 2020) supports the use of these *de minimis* screening criteria for pollutants that are  
46 in attainment. See also Sections 3.3, 4.3, and A.3 of Appendix A in the EA.

1 Total project emissions for this Proposed Action, as modeled using ACAM, would be considered  
2 clearly insignificant for all criteria pollutants because they do not exceed any *de minimis* thresholds.  
3 Even if these operations were concentrated in one area, they would still not exceed the *de minimis*  
4 air criteria. Therefore, the Proposed Action would not cause any pollutant concentrations—  
5 including respirable particulates—to exceed NAAQS.

6 Within MOAs, there are no regular flight tracks or flight patterns wherein those areas underneath  
7 on the ground would experience disproportionately greater amounts of air pollutants. The only  
8 portion of the Proposed Action where aircraft would follow any kind of pattern is along the  
9 proposed MTRs. The estimated time in airspace along the MTRs was modeled at approximately 2%  
10 of the total Proposed Action, so these emissions would not affect the air quality beneath the MTRs.

### 11 **Chaff and Flare**

#### 12 **Comment: Commenters expressed concern about the combustion byproducts of flares on air** 13 **quality and human health.**

14 Response: Studies have consistently supported that flare ash and flare emissions would not result  
15 in air quality or physical effects on the environment (USAF, 1997; USAF, 2011; USAF, 2023a).  
16 Criteria pollutant and greenhouse gas emissions from flares are not included in the Air Force's  
17 ACAM. The USEPA's AP-42 has a draft chapter for detonation emissions factors, including M-206  
18 (DODIC L410). Appendix K summarizes the estimated air emissions from proposed flare use across  
19 the Alpena SUA; these emissions estimates demonstrate that proposed flare use would negligibly  
20 increase criteria pollutant and greenhouse gas emissions over the existing conditions.

#### 21 **Comment: Commenter was concerned that lead and chromium may be discharged from** 22 **flares.**

23 Response: M-206 flares do not contain lead (USAF, 1997; USAF, 2011). The impulse cartridge and  
24 fire mix of the M-206 flare contains chromium. The Air Force has conducted studies to consider the  
25 carcinogenicity of chromium, assuming a worst-case of hexavalent chromium. The health risk  
26 assessment determined that an increased cancer risk is unlikely under typical military flight  
27 exercises (USAF, 1997). The trace amounts of chromium are not sufficient to result in an  
28 environmental impact (USAF, 2011; USAF, 2023a). The significance thresholds used are  
29 conservative levels, based on statistical risk analysis for human populations.

#### 30 **Comment: Commenters expressed concern about chaff fibers on air quality and human** 31 **health.**

32 Response: Studies have consistently supported that chaff fibers and particulates breakdown would  
33 not result in air quality or physical effects on the environment (USAF, 1997; USAF, 2011; USAF,  
34 2023a). Chaff emissions are not included in Air Force's ACAM. No emission factors are available  
35 specifically for chaff in the USEPA's AP-42 (Compilation of Air Emissions Factors). Silica dipoles are  
36 too large to be respirable. However, particulate emissions from chaff use assuming a worst-case  
37 that the silica dipoles would degrade sufficient to be respired are included in Appendix K. Even  
38 worst-case particulate emissions from the Proposed Action would be a negligible increase over the  
39 existing conditions.



1 **Hazardous Air Pollutants**

2 **Comment: Commenters expressed concern about hazardous air pollutants during**  
3 **combustion including metals, polycyclic aromatic hydrocarbons, and toxic and carcinogenic**  
4 **compounds.**

5 Response: Section 112(b) of the Clean Air Act Amendments regulates hazardous air pollutants. Fuel  
6 combustion can release hazardous air pollutants in trace amounts primarily as a subset of volatile  
7 organic compounds. Aircraft gas turbine engines burn fuel more effectively than most mobile  
8 sources. At the high-power cruising speeds typical of MOA operations, greater than 99% of fuel  
9 undergoes complete combustion to carbon dioxide and water (USEPA and FAA, 2009). Hazardous  
10 air pollutant emissions are greatest under idle conditions when engines are operating in a less  
11 efficient cycle, resulting in combustion inefficiencies of hydrocarbons. Idling conditions occur in the  
12 airfield environment but would not occur within the airspace environment.

13 Due to the very low volatile organic compound emissions (less than 1 ton per year across all SUA,  
14 see Section 4.3 of the EA and Appendix K), which reflect the expected operations within the  
15 proposed airspace, hazardous air pollutant emissions would be extremely small and were not  
16 included in the air analysis.

17 **Comment: Commenter expressed concern about deposition of organophosphate esters in**  
18 **air, soil, dust, river water and pine needles, citing a recent study at a New York airport (Li, et**  
19 **al., 2019).**

20 Response: Organophosphate esters are widely used in various consumer and industrial products.  
21 Airports are a source of organophosphate ester release into the environment. Li, et al. (2019)  
22 conclude that leaks from jet fuel oils and lubricants are a source of organophosphate esters in the  
23 outdoor environment surrounding airports. However, emissions generated from the airport and  
24 airfield environment are different from the airspace environment; oil and lubricant leakages and air  
25 emissions would have negligible organophosphate esters emissions or releases within the  
26 proposed airspace.

27 **Greenhouse Gas Emissions and Climate Effects**

28 **Comment: Quantify reasonably foreseeable direct and indirect greenhouse gas emissions.**

29 Response: Greenhouse gas emissions and estimates of CO<sub>2</sub>e (carbon dioxide equivalents) are  
30 discussed in Section 4.3.1 and Appendix K of the EA.

31 **Comment: Identify practices the NGB could take to reduce and mitigate greenhouse gas**  
32 **emissions.**

33 Response: Greenhouse gas emissions and climate effects are recognized as global issues. In  
34 following emerging federal and DOD policy pertaining to climate policy, the Air Force Climate  
35 Action Plan identifies the following priorities: investing in resilient infrastructure and facilities to  
36 ensure air and space dominance in the face of climate risks; making climate-informed decisions in  
37 requirements, acquisition, logistics, supply chain processes, and wargaming; and optimizing energy  
38 use and alternative energy sources (USAF, 2022).

1 **Comment: Use SC-GHG [social cost of greenhouse gas] estimates to consider the climate**  
2 **damages from net changes in direct and indirect emissions of CO<sub>2</sub> and other greenhouse**  
3 **gases from the proposed project.**

4 Response: Per the CEQ interim guidance, “Agencies should exercise judgment when considering  
5 whether to apply this guidance to the extent practicable to an on-going NEPA process.” The Air  
6 Force guidance on applying and conducting a Social Cost of GHG Analysis is currently under  
7 development and not available for reference for EAs and Environmental Impact Statements that are  
8 in preparation.

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## 9 **H10. Noise Comments and Responses**

### 10 **General**

11 **Comment: Commenters questioned the use of Ldnmr and DNL, which are averaged metrics,**  
12 **to determine significance, particularly from low-level sorties over wild and scenic and public**  
13 **areas. Commenters expressed a preference for Lmax data in determining significance of**  
14 **noise levels.**

15 Response: The USEPA has identified 55 decibel (dB) Day-Night Average Sound Average Level (DNL)  
16 as a level that protects public health and welfare with an adequate margin of safety (USEPA, 1974).  
17 This means that 55 dB DNL is a threshold below which adverse noise effects are usually not  
18 expected to occur. The 65 dB DNL is widely used as a noise criterion. It represents a compromise  
19 between acceptable noise and economic practicality. According to the Federal Interagency  
20 Committee on Noise, noise exposure greater than 65 dB DNL is considered generally incompatible  
21 with residential, public use (i.e., schools), or recreational and entertainment areas (FICON, 1992).

22 Overall, DNL provides overall noise impact and Ldnmr is a noise metric that accounts for sudden  
23 onset noise. On the logarithmic scale, a 3 dBA change is barely perceptible to the human ear, while a  
24 5 dBA change is quite noticeable. However, if the increase in noise levels is not higher than the mid-  
25 30–40 dBA DNL/Ldnmr range, individuals on the ground are not likely to notice a major difference,  
26 given that the overall noise levels would be typical of the existing ambient environment.

27 Individually, for a few seconds, people may experience brief episodes of noise from overflights but  
28 as large as the MOAs are, this would be a rare occurrence at any given point. Overall, the existing  
29 Alpena SUA Complex has a total area of 11,049 square nautical miles, and the proposed Alpena SUA  
30 Complex would have a total area of 13,344 square nautical miles. The anticipated noise impacts  
31 associated with the Proposed Action would not exceed 65 dBA DNL/Ldnmr and would be  
32 compatible with all land uses.

33 **Comment: Commenters were concerned about noise levels from low-flying military aircraft.**

34 Response: Most of the MOAs in the Alpena SUA have a floor of 4,000 feet MSL or higher; aircraft that  
35 train in these MOAs would not be conducting low level flights. To estimate how often aircraft would  
36 likely fly at lower altitudes (below 1,000 feet AGL), aircraft sorties within MOAs with floors  
37 proposed below 1,000 feet AGL were estimated.

1 The Grayling West MOA would be established from 500 feet AGL to 17,999 feet MSL and would  
2 cover an area that is approximately 374 square miles. On average, 11% of the total proposed sorties  
3 would be conducted between 500 and 1,000 feet AGL. This equates to 180 sorties per year. The  
4 number of flying days would vary between 13 to 24 days per month or 156 to 288 days per year. As  
5 a result, the number of aircraft flyovers at a single location is expected to be infrequent,  
6 approximately one per flying day. The aircraft that would fly at lower altitudes mainly include  
7 C-17s, C-130s, CH-47s, and MH-60s. F-16s would only fly between 500 and 1,000 feet AGL a few  
8 times a year (approximately 3 times a year). The F-16 would only fly for a total of 30 minutes in the  
9 MOA; most of the time (more than 80%), they would be above 3,000 feet MSL. The EA-18 aircraft  
10 would train above 8,000 feet MSL. Some of the aircraft, such as the CH-47, could fly at lower  
11 elevations in the proposed Grayling West MOA for 45 minutes; however, the majority of aircraft in  
12 any of the MOAs with floors of 500 feet AGL would be in the airspace for 30 minutes or less. Given  
13 the size of the MOAs, it is unlikely that an aircraft would fly over a particular area more than once  
14 per sortie.

15 The proposed VRs would be established between 300 feet AGL and 1,500 feet AGL. Numerous VRs  
16 currently exist within and adjacent to the Alpena SUA, most of which have floors of 500 feet AGL or  
17 lower. As shown on Table 2-16, approximately 234 total sorties are proposed for VR-1601 and  
18 VR-1602. Aircraft flying on these routes would head directly to their destination; as a result, the  
19 total amount of time in the airspace would be fairly low.

20 **Comment: Are there any limits on any other noise metrics (SEL—sound exposure level—for**  
21 **example) reported in an Environmental Assessment or Environmental Impact Statement?**

22 Response: Lmax and SEL are single-event noise levels that are helpful in comparing the levels of  
23 different aircraft. These metrics are not used to determine significance. However, Lmax can be used  
24 in the assessment of speech intelligibility and interference, which is discussed in Section 4.4.1 of the  
25 EA.

26 **Comment: Commenters were concerned about noise levels along the shoreline in Huron**  
27 **County, noting that Figure 3-1 in the EA establishes a noise level of 115 dBA as**  
28 **“uncomfortable” and comparable to a rock concert.**

29 Response: The Steelhead Low North and East MOAs are the two MOAs near the Huron County  
30 points of interest where the Lmax would be 115 dBA. Lmax is maximum individual sound level:  
31 populations would be exposed to this noise level for a very short period of time, and then the noise  
32 level would diminish as the aircraft moves past the observer. See Section 4.4.1 of the EA.

33 **Comment: Why are there no references to the Air Force’s policies on noise levels at and**  
34 **above 115 dBA for its personnel from AFI 48-127?**

35 Response: DAFI 48-127, Occupational Noise and Hearing Conservation Program, is designed to  
36 reduce or eliminate hazardous noise exposure to workers and protect workers from the harmful  
37 effects of hazardous noise. Potential hazardous noise is defined as exposure to steady-state noise  
38 having an 8-hour time weighted average noise level greater than or equal to 85 dBA, or exposure to  
39 impulsive/impact noise levels greater than 140 dB peak sound pressure level, regardless of  
40 duration. Aircraft sorties are roughly no more than 60 minutes, which is well below the time  
41 weighted average, or exposure, for an 8-hour workday and 40-hour workweek. Pilots are provided  
42 and required to wear hearing protection in accordance with DAFI 48-127.

1 **Comment: What is the dBA at ground level generated by an F-16 directly overhead at 500**  
2 **feet AGL in MIL power in the Steelhead Low North and East MOAs?**

3 Response: Table 4-6 in the EA shows the noise level from the loudest aircraft, training at the lowest  
4 elevation they would fly. Most of the aircraft in the airspace would fly at higher elevations and only  
5 a portion of aircraft—approximately 10% in the Steelhead Low MOAs—would be fighter jets.  
6 Therefore, the majority of time, the noise levels heard from aircraft training in the airspace would  
7 produce lower noise levels than those listed in Table 4-6.

8 **Comment: Provide maps, tables, and noise contour maps with sensitive noise receptors**  
9 **(single and multi-family residences, medical facilities, schools, etc.) to disclose how noise**  
10 **and vibrations associated with current daily operations would vary from daily operations of**  
11 **the proposed future operations.**

12 Response: In the EA, Tables 4-2 through 4-6 show the existing and proposed Ldnmr and DNL levels  
13 for each SUA and Ldnmr, DNL, and Lmax levels for points of interest in every SUA. Potential impacts  
14 on the areas within and adjacent to the Alpena SUA Complex, including noise-sensitive receptors,  
15 are discussed in Section 4.4.1 of the EA.

16 The potential effects of noise-generated vibrations due to aircraft flyovers are discussed in the  
17 Cultural Resources section (Section 4.8.1 in the EA). In general, damage from vibration is only  
18 possible for sounds lasting longer than one second at greater than an unweighted sound level of  
19 130 dB (Committee on Hearing, Bioacoustics, and Biomechanics, 1977). Even low-altitude flyovers  
20 of heavy aircraft do not reach the potential for damage (Sutherland, et al., 1990).

21 Although noise contours are included in airport noise analysis, noise contours are not typically  
22 shown for airspace actions. FAA Order 1050.1F states: “For air traffic airspace and procedure  
23 actions where the study area is larger than the immediate vicinity of an airport . . . noise contours  
24 are not required and are not normally used for the analysis of larger scale air traffic airspace and  
25 procedure actions. If the study encompasses a large geographical area, it is not recommended that  
26 contours be created for the representation of results below DNL 55 dB due to fidelity of receptor  
27 sets needed to create an accurate representation of the contour.”

28 The Noise Analysis Report is included as Appendix L in the Final EA.

29 **Comment: Is there any analysis of possible damage to turbines from noise vibration from jet**  
30 **engines?**

31 Response: Please see previous response. The EA (Section 4.2.1) notes that pilots would remain  
32 500 feet above observed turbines, so noise levels would not be expected to result in vibrations that  
33 could damage windmill turbines.

34 **Comment: The Joint Land Use Study with Alpena CRTC and Camp Grayling reportedly called**  
35 **for a “noise study.” What is the status of this study?**

36 Response: The JLUS was completed in 2019 and can be found at:  
37 [www.discovernortheastmichigan.org/jlus.asp](http://www.discovernortheastmichigan.org/jlus.asp). The incompatible use areas are highlighted on pages  
38 2-10 to 2-14 of the JLUS.

39 **Comment: Commenters were concerned about noise levels causing interference with speech**  
40 **communication.**

41 Response: Referencing Figure 3-1 in the EA, speech communication becomes difficult when the  
42 sound levels are above the moderate level. Once the noise level is within the loud range,  
43 approximately 85–90 dBA, communication becomes more difficult.

1 **Noise Model**

2 **Comment: What noise modeling software was used for the noise analysis? The FAA expressly**  
3 **instructs that the military utilize the NOISEMAP system to evaluate noise impact.**

4 Response: The noise analysis was conducted with the Noisemap suite of models through the  
5 BaseOps interface (Version 7.366). The MRNMap noise model, within Noisemap, predicts noise  
6 levels associated with aircraft operations within SUA. The parameters considered in the modeling  
7 included aircraft type, aircraft operations, airspeed, power setting, the time spent within each  
8 airspace block, and the altitude distribution. Noisemap is the primary DOD-approved aircraft noise  
9 model, per DODI 4715.13, DOD Operational Noise Program, and Chapter 11 (Noise and Noise-  
10 Compatible Land Use) of the FAA's 1050.1F Desk Reference (FAA, 2020). The DNL, Ldnmr, and  
11 Lmax levels were obtained from the Noisemap program.

12 **Comment: Commenters questioned how the ambient sound levels were determined.**

13 Response: General ambient noise levels of the region were obtained from National Park Service  
14 data, as discussed in Section 3.4. The noise levels shown in Table 3-3 and discussed in Section 4.4  
15 include the sound from aircraft operations within the Alpena SUA Complex over a 24-hour period.  
16 All of the aircraft sorties that are shown in Tables 2-4 through 2-16 were entered into the Noisemap  
17 program to obtain these levels. The noise levels that are shown in Table 3-3 and discussed in  
18 Section 4.4 come from the results of the Noisemap program for this particular project.

19 **Comment: Would noise extend beyond the airspace?**

20 Response: The noise model predicts levels associated with aircraft operations in SUAs; however,  
21 the noise levels from aircraft operations do not stop at the airspace boundaries, the model gives  
22 results at distances far beyond the aircraft activities.

23 **Aircraft Sortie Numbers and Noise**

24 **Comment: Commenters were concerned about dramatic increases in noise associated with a**  
25 **perceived tenfold increase in flights.**

26 Response: The number of sorties would increase under the Proposed Action by about 2.5 times  
27 more compared to existing conditions if comparing the total baseline sorties to proposed sorties.  
28 Sorties are not additive across airspace because the same aircraft sortie may use more than one  
29 altitude block. Overall, the existing Alpena SUA Complex has a total area of 11,049 square nautical  
30 miles, and the proposed Alpena SUA Complex would have a total area of 13,344 square nautical  
31 miles. This provides an additional 2,295 square nautical miles of airspace for training under the  
32 Proposed Action and more space for the additional sorties. Individually and for a few seconds,  
33 people may experience brief episodes of noise from overflights, but this would be a rare occurrence  
34 at any given point because the SUA Complex is so large.

35 **Comment: Why is an average of sorties used instead of actual numbers of sorties?**

36 Response: The sortie numbers and hours were obtained from Alpena CRTC, Selfridge ANGB, and  
37 Toledo ANGB and represent an average over a year. Existing sortie numbers were taken from  
38 airspace utilization data (FY18–FY19). The proposed sortie numbers and hours are based on a  
39 conservative annual estimate from average operational data and the planned mission and would be  
40 flown after the Proposed Action is implemented. The proposed sortie numbers are the best  
41 estimate of actual sortie numbers. The Proposed Action is not anticipated to exceed the proposed  
42 sortie numbers identified in the EA.

1 **Comment: Commenters were concerned that noise levels of aircraft flying in formation (two**  
2 **or more) were not evaluated.**

3 Response: Aircraft flying in formation would likely account for a low percentage of aircraft utilizing  
4 the airspace, particularly at the lower elevations. If they were flying in formation, the aircraft would  
5 be flying within one nautical mile of each other. The DNL noise metric is a cumulative noise metric  
6 that measures noise based on average annual aircraft operations; therefore, all aircraft operations  
7 within an average year are taken into account. The Lmax noise metric represents the maximum  
8 individual sound level from a single source. For example, as a jet approaches the observer, the  
9 sound gets louder until the jet passes the observer. At that point, the observer would experience the  
10 Lmax noise level, then the sound would diminish as the aircraft moves past the observer. If there is  
11 a doubling of noise, which means the number of aircraft operations double, then the increase in  
12 noise levels would be 3 dBA. However, two aircraft flying in formation would not account for a  
13 doubling of noise levels because they would fly a distance away from each other. Therefore, the  
14 maximum increase in noise may be 1 to 2 dBA, if two aircraft were flying in formation.

15 **Comment: Commenters questioned the lack of decibel level change in the Grayling West MOA**  
16 **stated in the EA for the EA-18G.**

17 Response: The five annual EA-18G sorties that would occur within the proposed Grayling West  
18 MOA are consistent with the annual EA-18G sorties that currently occur within the Grayling  
19 Temporary MOA (see Table 2-15). The boundaries of the proposed Grayling West MOA are  
20 contiguous with the existing Grayling Temporary MOA.

21 **Comment: What is an FA-18A and what is its Lmax at 500 feet?**

22 Response: The F/A-18 Hornet is an all-weather, twin-engine, mid-wing, multi-mission, carrier-  
23 suitable tactical aircraft. In its fighter mode, the F/A-18 is used primarily as a fighter escort and for  
24 fleet air defense; in its attack mode, it is used for force projection, interdiction, and close and deep  
25 air support. The F/A-18 completed its first flight in 1978 and entered operational service in the  
26 mid-1980s. At 500 feet, the Lmax is approximately 115 dBA, which is the maximum noise level that  
27 would be heard at that altitude under the Proposed Action.

## 28 **Human Health Impacts and Noise-Sensitive Receptors**

29 **Comment: Commenters were concerned about health impacts from noise, including heart**  
30 **conditions, anxiety, nervousness, depression, cognitive impairment, developmental delay,**  
31 **dementia, PTSD, and hearing loss.**

32 Response: Studies have been conducted to examine the non-auditory health effects of aircraft noise  
33 exposure, focusing primarily on stress response, blood pressure, birth weight, mortality rates, and  
34 cardiovascular health. Exposure to noise levels higher than those normally produced by aircraft in  
35 the community can elevate blood pressure and also stress hormone levels. However, the response  
36 to such loud noise is typically short in duration: after the noise goes away, the physiological effects  
37 reverse and levels return back to normal (DOD Noise Working Group, 2009). The results of  
38 published studies of aircraft noise on human health (i.e., stress, cardiovascular effects, birth defects,  
39 and mortality rates) are unclear, there is at the present time no sound scientific basis for concluding  
40 that aircraft noise has a negative non-auditory health impact (DOD Noise Working Group, 2013).  
41 The number of aircraft flyovers in the Steelhead Low MOAs at elevations between 500 and  
42 1,000 feet AGL would be approximately one per flying day; consequently, the number of aircraft  
43 flyovers at a single location is expected to be infrequent.

44 **Comment: Commenters were concerned about noise exposure on farmers and children,**  
45 **including speech interference, sleep disturbance or disruption of children's learning.**

46 Response: Speech intelligibility and interference is discussed in Section 4.4.1 in the EA.

1 **Mitigation**

2 **Comment: Explain who is responsible for noise and vibrations mitigation. Describe any**  
3 **authority the NGB has to address noise and vibration issues off-base that are caused by**  
4 **military aircraft.**

5 Response: Mitigation measures for this Proposed Action are not warranted because the noise levels  
6 would not exceed the FAA’s significance threshold for noise as provided in FAA Order 1050.1F.  
7 Damage or injury to property from incidents caused by Alpena CRTC activity would be evaluated on  
8 a case-by-case basis.

9 **Comment: What are the phone numbers for the Camp Grayling and Alpena CRTC noise**  
10 **complaint hotlines? Describe and commit to maintain a comprehensive noise analysis and**  
11 **monitoring program—particularly in low-level airspace for sensitive receptors—for the**  
12 **operation period.**

13 Response: There is a noise complaint hotline. These numbers are posted on the websites of both  
14 installations under the Contact Us menu: Alpena (989-354-6203), Grayling (989-344-6100). The  
15 ANG would continue to provide updated operations and noise information to surrounding  
16 jurisdictions, as well as supply data as requested to support jet noise monitoring efforts undertaken  
17 by the National Park Service for the region of influence under this action.

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18 **H11. Land Use Comments and Responses**

19 **Recreation**

20 **Comment: Commenters expressed concern that the airspace proposal would have a negative**  
21 **and lasting impact on recreation, pleasure, and entertainment.**

22 Response: Several recreational areas in the Alpena SUA Complex were analyzed for operational  
23 noise impacts including the Atlanta State Forest Area, Grayling State Forest Area, the Huron-  
24 Manistee National Forest, and the Pigeon River County State Forest. The existing DNL/Ldnmr levels  
25 in these areas are generally around 35 dBA and would increase to 40 dBA under the Proposed  
26 Action. Given that noise in rural areas is estimated to be approximately 40 dBA DNL, the existing  
27 noise levels in the region from aircraft operations in the Alpena SUA Complex are similar to the  
28 ambient noise levels. Recreational users of some of the lands under the airspace would experience  
29 slight noise increases, but the projected noise would not be considered incompatible with any land  
30 uses, within or outside of the recreational areas.

31 For all land uses, military training in the proposed SUAs would be dispersed throughout the SUA  
32 and individual training events would be relatively short in duration (lasting approximately  
33 10 minutes to an hour). Operations within the SUA would mostly occur between 7:00 a.m. and  
34 10:00 p.m., Monday through Friday. Some activity would occur at night; therefore, people camping  
35 on land beneath the airspace could hear aircraft after dark. Most recreational areas are located  
36 under the existing SUA, which currently experiences military training activities.

37 Individually, for a few seconds, people may experience brief episodes of noise from overflights but  
38 as large as the MOAs are, this would be a rare occurrence at any given point. Overall, the existing  
39 Alpena SUA Complex has a total area of 11,049 square nautical miles, and the proposed Alpena SUA  
40 Complex would have a total area of 13,344 square nautical miles. The anticipated noise impacts  
41 associated with the Proposed Action would not exceed 65 dBA DNL/Ldnmr and would be  
42 compatible with land uses.

1 **Chaff and Flare**

2 **Comment: Commenters expressed concern about visible accumulation of chaff due to**  
3 **deployment at lower altitudes.**

4 Response: As discussed in the NGB’s 2002 EA, which is incorporated by reference in the Alpena SUA  
5 Complex EA and is available online for review, the Air Force conducted a field study (1994) to  
6 evaluate at what distances chaff debris were visible, and whether visibility affected the context.  
7 Overall, chaff debris has low visibility and little effect on the aesthetic quality of the environment.  
8 Chaff debris did not accumulate in quantities that made it objectionable or even noticeable to most  
9 persons in low-use areas.

10 In the context of proposed use in this EA, the existing use of R-188 chaff is 5,103 bundles per  
11 12,382 square miles of airspace footprint, which is 0.41 bundles per square mile. Under the  
12 Proposed Action, use of R-188 chaff would be 6,103 bundles per 12,991 square miles of airspace  
13 footprint, which is 0.47 bundles per square mile. While these numbers are not formal metrics for  
14 evaluation, they demonstrate that the average use of chaff across the airspace would not  
15 dramatically increase. Visible accumulation at any location would be unlikely.

16 **Comment: Commenters expressed concern about the deployment of chaff and flares over or**  
17 **immediately adjacent to highly sensitive areas such as Wilderness Areas, Wild and Scenic**  
18 **Rivers, National Parks and Monuments, and other pristine natural areas.**

19 Response: Portions of the Au Sable River are listed as Wild and Scenic, including a small portion  
20 under the proposed Grayling East MOA and a portion under the Pike West MOA. Huron-Manistee  
21 National Forest is also under portions of the proposed airspace (Grayling West, Grayling East, and  
22 Pike West). Grayling State Forest Area, Atlanta State Forest Area, and Pigeon River Country State  
23 Forest Area are also under portions of the proposed airspace, as shown on Figure 3-2 of the EA.  
24 Potential impacts associated with chaff and flare on water quality to highly sensitive areas such as  
25 Wilderness Areas, Wild and Scenic Rivers, National Parks and Monuments, and other pristine  
26 natural areas, to include the Au Sable River, are discussed in Sections 4.5, Land Use, and 4.6, Water  
27 Resources.

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28 **H12. Water Resources Comments and Responses**

29 **Wild and Scenic Rivers and Natural Rivers**

30 **Comment: Commenters expressed concern about impacts of Grayling East and West MOAs on**  
31 **the Au Sable River, the Manistee River, and their headwaters, noting the Au Sable is a**  
32 **National Wild and Scenic River, and that the AuSable and Manistee are Michigan Natural**  
33 **Rivers and Blue Ribbon Trout Streams.**

34 Response: The Manistee River is not underneath the existing or proposed Alpena SUA. The Pigeon  
35 River (a Michigan Natural River) is beneath the proposed Grayling East MOA. The Au Sable River is  
36 underneath the existing Pike West MOA and the proposed Grayling East and West MOAs. The  
37 portion of the Wild and Scenic River section of the Au Sable is beneath the Pike West MOA and the  
38 proposed Grayling East MOA. No ground disturbance would occur under the Proposed Action.  
39 Effects from potential pollution and chaff and flare on the river, including trout and fish species, are  
40 discussed in Section 4.8 of the EA. The effects from aircraft operations on the Au Sable River and  
41 Pigeon River are discussed in Sections 4.5 and 4.6 of the EA.

42 **Comment: Commenters noted that the Au Sable is a Heritage River.**

43 Response: The American Heritage Rivers Protection Program was enacted under Executive Order  
44 13061, *Federal Support of Community Efforts Along American Heritage Rivers* (1997), as amended.  
45 The Au Sable River is not designated as a Heritage River (USEPA, 1998).



1 **Chaff and Flare**

2 **Comment: Commenters expressed concern that chaff and flare would affect trout streams**  
3 **and confined aquatic habitats.**

4 Response: The 2002 EA, which is incorporated by reference into the EA, provided a literature  
5 review of potential impacts from chaff and flare on aquatic resources and environments—including  
6 significant water bodies under the Pike and Steelhead MOAs—to support the conclusions that chaff  
7 and flare would not affect water quality and biological resources (NGB, 2002). The 2002 EA  
8 considered higher annual deposition rates for chaff and flare in these areas on a “worst-case” basis  
9 for deposited aluminum from spent and dud chaff bundles and magnesium and boron from flare  
10 ash and dud flares in the aquatic environment, including isolated freshwater bodies. The chaff and  
11 flare deposition rates under the Proposed Action are much lower than those analyzed in the 2002  
12 EA as the worst-case scenario across all the SUA.

13 The 2002 EA provided analysis for hypothetical water bodies to model approximate concentrations  
14 of chaff and flare constituents of potential concern in an aquatic environment, compared with water  
15 quality standards or guidelines. Continued use of chaff and flare at the slightly higher levels  
16 proposed would not be expected to affect the ecological or recreational value of water bodies  
17 including small, isolated freshwater resources.

18 **Comment: Commenters were concerned that chaff and flare could pollute drinking water.**

19 Response: Releases of chaff would be expected to have no effect on drinking water, either from  
20 groundwater or surface water. Neither chemical nor physical effects are expected to occur to  
21 drinking water sources exposed to chaff. The quantities of chemicals released are too small to be of  
22 concern, and filtering systems would remove any fibers (USAF, 1997).

23 Based on the Air Force’s most recent technical report on the environmental effects of flare use, the  
24 contents of one flare pellet (an MJU-7A/B flare) may contain 3.08 ounces of PFAS. If it is  
25 conservatively assumed that the Teflon in the flare pellet of a dud flare dissolved completely, then a  
26 dud flare landing in a body of water that is 70,891 acre-feet, or 5.5 square miles on the surface with  
27 an average depth of 20 feet, could result in a concentration of 1 part per trillion of PFAS in that  
28 water body (USAF, 2023a). The USEPA’s health advisories for PFAS vary widely based on the  
29 specific PFAS, from 0.004 parts per trillion for perfluorooctanoic acid (PFOA) to 2,000 parts per  
30 trillion for potassium perfluorobutane sulfonate (PFBS) (USEPA, 2022b).

31 The latest empirical estimate of dud flares is 4 duds per 1,000, or a failure rate of 0.4% (USAF,  
32 2023a). With a proposed annual usage of 9,400 flares, 38 may be duds. An estimated 7,087 square  
33 miles of Lake Huron are under the Alpena SUA Complex, so, statistically, 22–23 dud flares may land  
34 in Lake Huron each year. Given the overall volume of Lake Huron (850 cubic miles) (USEPA, 2022c),  
35 this is a very minor potential contribution of PFAS to Lake Huron as a drinking water source.

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36 **H13. Biological Resources Comments and Responses**

37 **Noise and Vibration on Wildlife and Biological Resource**

38 **Comment: Commenters were concerned that noise and disturbance from sustained or**  
39 **repetitive low-level flights would be stressful for wildlife and disrupt the natural ecosystem**  
40 **(e.g., mating and other animal communication, distract animals from foraging for food and**  
41 **mating, nest failure).**

42 Response: See Section 4.7.1 of the EA for discussion of effects of noise on wildlife.

1 **Comment: Commenters were concerned about noise and vibrations disturbing bats.**

2 Response: While no ground disturbance would occur under the Proposed Action, ground vibrations  
3 associated with airspace use at 300 feet AGL and above are possible. Few researchers have studied  
4 the effects of sound on Indiana bats. The studies that have been completed have indicated that  
5 hibernating Indiana bats and little brown bats did not appear to respond to intense sound  
6 simulations, such as recordings of actual military activities played over a loudspeaker system  
7 (Shapiro & Hohmann, 2005). In addition, bats exposed to low-level flights exhibited no acute  
8 responses, such as panic flights, falling young bats, or startle responses. No significant differences in  
9 bat orienting responses were noted before, during, or after jet flights, but depressed levels of bat  
10 flights were noted for up to 30 minutes following the jet noise.

11 Under the Proposed Action, there could be a limited number of overflights that occur at night when  
12 bat species are active. Some species of bat migrate or hunt at altitudes of 1,100 feet AGL; however,  
13 based on the behavior of migrating bats, it is likely that they are flying just above treetop level. In  
14 addition, bats stop to forage throughout the night, indicating that they are likely flying low enough  
15 to detect areas for feeding, drinking, and roosting (Peurach, et al., 2009; Roby, 2019). Northern  
16 long-eared bats primarily fly through the understory of forested areas while hunting and make  
17 short migrations to their winter hibernacula (USFWS, 2022). A study that looked at 147 recorded  
18 bat strikes, in which the pilots reported awareness of the strikes, concluded that the average  
19 altitude of bat-aircraft strike occurrence is approximately 1,100 feet AGL (Peurach, et al., 2009).

20 Most of the MOAs in the Alpena SUA have a floor of 4,000 feet MSL or higher; aircraft that train in  
21 these MOAs would not be conducting flights below 1,100 feet AGL. In the Grayling West MOA,  
22 approximately 11% of the total proposed sorties (180 sorties) would be conducted at 500–1,000 ft  
23 AGL with less than 1% (4 sorties) flown during the night hours (between 10 p.m. and 7 a.m.), when  
24 bats are active. In the Steelhead Low East MOA and the Steelhead Low North MOA, approximately  
25 22% of the sorties would be conducted at 500–1,000 feet AGL with 3% of the total sorties (33  
26 sorties) flown between 10 p.m. to 7 a.m. The proposed VRs would be established between 300 feet  
27 AGL and 1,500 feet AGL; however, none of the sorties would be flown between 10 p.m. and 7 a.m.  
28 Given the number of aircraft sorties that would be flown below 1,100 feet AGL during the night  
29 hours, the potential for bat-aircraft strikes is low.

30 Section 4.7 of the EA has been revised to include the above discussion.

1 **Aircraft Operations on Wildlife and Biological Resource**

2 **Comment: Commenters were concerned about visual disturbances on eagles and other**  
3 **wildlife.**

4 Response: Visual disturbances to birds varies considerably depending on several factors, including:  
5 the species of birds; season of year; whether the bird (or species) is a solitary bird or in a flock; age  
6 or maturity of the bird; physiological stress due to any number of factors; particular activity  
7 individual birds are performing at the time of the disturbance (i.e., perching, feeding, nesting);  
8 distance of the bird to the potential disturbance and whether that disturbance is approaching the  
9 bird; type of disturbance to be determined by the bird if it is a potential threat (predator) causing  
10 the bird to flee (escape the threat); experience of the bird with similar disturbances and the  
11 determination if it was a threat (nonthreats form habituated responses to conserve energy for more  
12 life-threatening events); and whether there is associated noise with the specific visual stimulus and  
13 the type of noise.

14 Due to all these variables to be considered when assessing the potential for visual disturbances of  
15 aircraft on birds, it is nearly impossible to consider all possible scenarios. It is very well known that  
16 most wildlife, including birds, flush at the presence of humans. Researchers have examined certain  
17 species, like bald eagles, to assess their tendency to be disturbed by various anthropomorphic  
18 sources. For instance, Stalmaster and Kaiser (1997) examined the flushing responses of wintering  
19 bald eagles to military activity. Disturbances included weapons firing, helicopter overflights, and  
20 non-motorized (no noise) boating. They reported 32% of individuals flushed at more than 164 feet  
21 from an approaching disturbance. Forty-seven percent of the eagles exposed to helicopter  
22 overflights (197–394-foot altitudes) flushed, but few eagles flushed when helicopters were further  
23 than 984 feet. Stalmaster and Kaiser noted that adult eagles flushed less than subadults (assumed  
24 to be due to habituation), and nesting eagles tended not to respond to disturbances. Russell, et al.  
25 (1996) described nesting bald eagles at Aberdeen Proving Ground habituated to loud weapons  
26 noise. Stalmaster and Kaiser (1997) found only 8% of the observed eagles flushed to five types of  
27 weapons firing activity. These findings may indicate that close visual disturbances are more likely  
28 to disturb bald eagles than just noise disturbances without visual stimuli. The NGB’s mitigation  
29 measures to avoid known bald eagle nests and areas where they congregate by at least 1,000 feet  
30 will reduce the possibility of visual disturbances to bald eagles. The low frequency of aircraft  
31 overflight events in the Grayling West MOA, Steelhead Low East MOA, and the Steelhead Low North  
32 MOA reduce the chance that a passing aircraft would pose a visual disturbance to wildlife. This is  
33 consistent with the USFWS’s early scoping recommendations on the proposed Alpena SUA proposal  
34 (dated September 27, 2021, Appendix B, page B-35 of the EA).

35 Section 4.7 of the EA has been revised to include this discussion.

36 **Comment: Commenters were concerned about impacts on bald eagles, emphasizing**  
37 **importance of adhering to the National Bald Eagle Management Guidelines and limiting**  
38 **activities around bald eagle habitat and nesting areas.**

39 Response: See Section 4.7 of the EA discussing the National Bald Eagle Management Guidelines and  
40 the Bald Eagle Management Plan for Alpena CRTC. See also previous response about potential  
41 effects on bald eagles.

1 **Threatened and Endangered Species**

2 **Comment: Commenters were concerned about the impact of noise, flight level, air pollution**  
3 **from fuel expenditure, and release of chaff or flare material evaluated on endangered or**  
4 **protected species.**

5 Response: An analysis of noise impacts and low-level flights from the Proposed Action on  
6 threatened and endangered species are discussed in Section 4.7.1 of the EA. Additional information  
7 on these topics is included under other the discussions about noise and vibration and aircraft  
8 operations on wildlife. Correspondence with USFWS is also on pages B-35 and B-36 of Appendix B  
9 and in Appendix D.

10 **Migratory Birds**

11 **Comment: Commenters were concerned about impacts on seasonal migratory bird activity.**  
12 **Commenters noted migrating birds frequently fly at altitudes of 2,000–5,000 feet beginning**  
13 **in April and extending well into November each year, and that Saginaw Bay and its**  
14 **embayments are often used as daytime staging areas during seasonal migration.**

15 Response: BASH is discussed further in Sections 3.2 and 4.2 of the EA. Please also refer to the  
16 following websites for more data:

17 <https://www.usahas.com/>

18 <https://www.safety.af.mil/Divisions/Aviation-Safety-Division/BASH/>

19 **Comment: Would the 1-mile restriction of shoreline flight patterns below 1,500 feet AGL**  
20 **within Steelhead Low airspace between May 15 to September 15 reduce encounters with**  
21 **shorebirds using these areas?**

22 Response: While the proposed shoreline avoidance area between May 15 and September 15 was  
23 intended to reduce potential military training conflicts during the times of the year when most  
24 people are outside along shorelines, it would also reduce BASH somewhat during that time, when  
25 many shorebirds and waterfowl are likely to be present along the lake.

26 **Comment: Has there been any analysis of the impact on Kirtland Warbler habitat?**

27 Response: Yes. Please see Section 4.7.1 of the EA regarding potential impacts on Kirtland warbler  
28 habitat.

1 **Aquatic Species**

2 **Comment: The EA does not address the potential effect of the proposed airspace changes on**  
3 **the trout that live in these streams.**

4 Response: Most fish use their lateral line for sensing vibrations, as their hearing is not as developed  
5 as in air-breathing vertebrates. Lateral lines use particle motion to sense these waves. Most of the  
6 research regarding in-water vibrations looks at huge power sources including pile drivers, seismic  
7 waves, explosions, wind turbines in the water, electric turbines, air guns, lightning, and sonic  
8 booms. Fighter aircraft flying on a low-level route at 300 feet AGL do not generate a wave pulse  
9 strong enough to be significant as the wave enters the water or vibrates the substrate that  
10 transmits the wave into the water. That is not to say that the sound of an aircraft could not be heard  
11 underwater, because it could be. But there are many other variables to consider when assessing the  
12 noise in water: the motion of the water can be much louder than any vibration. This is why bubble  
13 screens work to counter in-water pile driving. Invertebrates and fish make a lot of noise  
14 themselves, and they communicate to each other. Sound waves from the air will reflect off the  
15 water's surface when the incoming wave is greater than 15 degrees. Therefore, aircraft must be  
16 almost overhead before a sound impulse would penetrate the water. Flowing water adds another  
17 dimension to the issue. Furthermore, aircraft training within MOAs would not fly over the same  
18 point at low altitude with any consistency. This means that there would not be high noise areas  
19 where the same fish are inhabiting.

20 Section 4.7 of the EA has been revised to include this discussion.

21 **Livestock and Pets**

22 **Comment: What are the impacts on aircraft noise and low-flying aircraft on livestock?**

23 Response: Head, et al. (1993) studied behavior and milk yield responses of dairy cattle to simulated  
24 jet aircraft noise. Head, et al. found that no dairy cows showed signs of startle, freeze, or retreat  
25 from noise at any time during the exposures to aircraft noise. The cows were not agitated or  
26 aggressive during subsequent milking. Milk yields, milk component percentages, and residual milk  
27 were not affected significantly by noise exposures. LeBlanc, et al. (1991) reported on a study of  
28 pregnant horses exposed to fighter aircraft noise. The researchers found heart rate increased  
29 during noise periods, but without ectopic arrhythmias. Researchers observed adaptations to the  
30 noise with less heart rate increases after successive exposures. Treatment mares experienced a  
31 significant rise in serum cortisol only after the first noise event. Progesterone concentrations were  
32 within normal range. All mares delivered live, normal foals without assistance. Other livestock  
33 studies have been conducted with corroborating results, including pigs, laying hens, turkey poults,  
34 ratites, beef cattle; no injurious events have been observed under controlled conditions (USAF,  
35 1994a; USAF, 1994b).

36 Section 4.7 of the EA has been revised to include this discussion.

37 **Comment: What are the impacts on aircraft noise and low-flying aircraft on pets?**

38 Response: Mammals in particular appear to react to noise at sound levels higher than 90 dB. Typical  
39 mammal responses include the startle response, freezing, and fleeing the noise sources. Studies on  
40 domestic animals suggest that species appear to adjust to some forms of sound disturbance (Manci,  
41 et al., 1988). Anthony and Ackerman (1957) documented "anxiety-like" behavior on laboratory  
42 rodents and rabbits with noise levels between 132 and 140 dB; the animals appeared to adapt in  
43 this study but it was assumed that high levels of noise could overtax the homeostatic adaptive  
44 mechanisms (Manci, et al., 1988). The Lmax values modeled for the proposed Alpena SUA airspace  
45 modifications range from 86 dBA to 128 dBA (see Table 4-6, Section 4.4.1, and Appendix L of the  
46 EA). The points with the highest Lmax values at 127 or 128 dB would experience no change in Lmax  
47 from the existing condition (i.e., those points already experience a high Lmax).

1 Domesticated cats and dogs may react with a startle response to aircraft overflights that are lower,  
2 particularly if outside and accompanied with visual intrusion. Noise levels would not be sustained,  
3 nor would the same location be frequently affected. Following an aircraft overflight, most mammals  
4 including cats and dogs, would return to normal behaviors shortly following the noise exposure.  
5 Section 4.7 of the EA has been revised to include this discussion.

## 6 **Chaff and Flare**

### 7 **Comment: Commenters expressed concern that chaff fibers could be consumed by insects,** 8 **fish, and other animals, adversely affecting wildlife and threatened and endangered species.**

9 Response: Chaff components as proposed in this EA are unlikely to result in adverse effects on  
10 water quality. The NGB 2002 EA addressing chaff and flare deployment in the Steelhead and Pike  
11 MOAs notes that aluminum is not expected to bioconcentrate significantly in aquatic organisms and  
12 is not known to biomagnify in aquatic food chains (Wren, et al., 1983, as cited in NGB, 2002).

13 Chaff components are not unlike diatoms or sponge spicules. The NGB 2002 EA discusses this,  
14 noting that diatoms are a common aquatic organism and an important component of both marine  
15 and freshwater food webs (Naval Research Laboratory, 1999; NGB, 2002); diatoms and sponge  
16 spicules are regularly consumed without harmful effects. Chaff fibers may be inadvertently ingested  
17 along with vegetative matter in the aquatic environment. If we assume that proposed chaff usage in  
18 the Alpena SUA results in 33.3 billion fibers each year, that is approximately 4,005 fibers per acre,  
19 or 1 fiber in 11 square feet; even if the chaff fibers were clustered or clumped, the expected  
20 concentration would still be very low in the environment. It is unlikely that this proposed usage  
21 would adversely affect individual animals if consumed in the aquatic or terrestrial environment,  
22 and it is more unlikely that enough individuals across the many species in the food web would be  
23 adversely affected to result in an observable affect.

24 The NGB 2002 EA discussed the possibility of wildlife encountering a dud chaff. The approximate  
25 rate of dud chaff bundles is very low (1% according to most recent estimates; USAF, 2023a), so this  
26 occurrence is uncommon. Typically, wildlife would not be expected to ingest a dud bundle  
27 (approximate volume of 8 cubic inches; USAF, 1997), if encountered in aquatic or terrestrial  
28 environments. However, birds will occasionally ingest hard objects like stones to aid in digestion;  
29 waterfowl, in particular, are attracted to shiny objects and may consume them. In the Alpena SUA,  
30 with a failure rate of 1%, that would be potentially 62 dud chaff bundles annually across the entire  
31 SUA (0.001% chance in any given acre of the SUA). Chaff would not be expected to result in toxicity,  
32 but ingestion of a dud chaff bundle could cause blockages in an individual if it did not pass through.  
33 Therefore, ingestion of a dud chaff could affect an individual but the occurrence would be too low to  
34 affect species-level dynamics.

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1 **H14. Cultural Resources Comments and Responses**

2 **Traditional Cultural Properties**

3 **Comment: The cultural resources section must consider the significance of 1836 Treaty of**  
4 **Washington territories. The CORA considers these lands and waters as a significant and**  
5 **traditional cultural landscape and equally considers the resources within them as culturally**  
6 **significant, to which both are the basis of supporting Tribal customs, privileges, lifestyles**  
7 **and the economies of Tribal communities.**

8 Response: The Chippewa Ottawa Resource Authority (CORA) gathers all 1836 Treaty fishing tribes  
9 under its mantle. Following the signing of a series of treaties, Tribes retained certain rights, known  
10 as Reserve Treaty Rights. The CORA exercises the Great Lakes fishing rights reserved by the Tribes  
11 in the Treaty of 1836, for which they reserve the right to hunt and fish for commercial, subsistence,  
12 and recreational purposes. The CORA is the governing body that was established to aid in fishery  
13 management and to exercise Reserve Treaty Rights.

14 Please refer to responses in Section H2, Government-to-Government Consultation; Section 4.8 of  
15 the EA; and Appendix F, Government-to-Government Consultation, for further information.

16 **Comment: The State Historic Preservation Officer (SHPO) suggested adjusting the APE to**  
17 **omit the airspace over Sanilac Petroglyphs, or restrict all airspace use over Sanilac**  
18 **Petroglyphs between November through March so as not to impact Saginaw Chippewa**  
19 **Indian Tribe of Michigan use of this traditional cultural property.**

20 Response: Refer to Section 4.8.2 of the EA for more detailed information about the Sanilac  
21 Petroglyphs. NGB will implement a three-nautical-mile-buffer and avoid overflights during certain  
22 times of the year. SHPO concurred the proposed undertaking would have no adverse effect with  
23 these measures (November 7, 2023).

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24 **H15. Socioeconomics and Environmental Justice Comments and Responses**

25 **Property Values**

26 **Comment: Commenters were concerned that the proposed SUA changes would diminish**  
27 **property values.**

28 Response: There are several factors that affect property values that make estimating impacts  
29 difficult. Factors directly related to the property, such as size, improvements, and location of the  
30 property, as well as current conditions in the real estate market, interest rates, and housing sales in  
31 the area, are more likely to have a direct impact on property values. Several studies have analyzed  
32 property values as they relate to military and civilian aircraft noise. In one study, a regression  
33 analysis of property values as they relate to aircraft noise at two military installations was  
34 conducted (Fidell, et al., 1996). This study found that, while aircraft noise at these installations may  
35 have had minor impacts on property values, it was difficult to quantify. The factors previously listed  
36 had a larger impact on property values.

1 Another study examined and summarized the results of 33 studies that attempted to quantify the  
2 impact of noise on property values (Nelson, 2004). It concluded that aircraft noise has the potential  
3 to adversely impact property values; specifically, property values could be discounted between 0.5  
4 and 0.6% per decibel when compared to a similar property that is not affected by aircraft noise. The  
5 data indicated there were impacts when noise levels were above 75 dBA DNL. As illustrated in  
6 Sections 3.4 and 4.4 (Noise) in the EA, the highest DNL expected at any of the municipalities under  
7 the proposed Alpena SUA Complex is 61 dBA DNL, which is an increase of 0 DNL when compared to  
8 existing conditions. This level is lower than the 65 dBA DNL threshold established for land use  
9 restrictions and much lower than 75 dBA DNL that has been indicated to affect property values.  
10 Given the low expected DNL values and the distribution of the training activity across such a large  
11 area, the Proposed Action is not expected to have any quantifiable impacts on the existing housing  
12 values underneath the Alpena SUA Complex.

### 13 **Tourism and Industry**

#### 14 **Comment: Commenters were concerned that environmental effects of the proposed SUA** 15 **changes would negatively impact the local economy.**

16 Response: The EA considered the anticipated impacts to air quality, water resources, biological  
17 resources, and socioeconomics from the Proposed Action, among other resource areas, which could  
18 indirectly affect the local economy. The analysis determined that no significant impacts are  
19 expected as a result of the Proposed Action.

20 While there are possible impacts on recreation and tourism in the parks and natural areas beneath  
21 the proposed Alpena SUA Complex, there are no data to forecast a quantifiable impact on outdoor  
22 recreation and tourism from the proposed overflights. In a 1992 U.S. Forest Service study, most  
23 wilderness users interviewed were not annoyed by overflights (U.S. Forest Service, 1992). The  
24 major emphasis of this study was to determine the effects of aircraft overflights on visitor  
25 enjoyment. No statistically reliable relationships were found between annoyance due to the sight or  
26 sound of overflights and respondents' reported intent to revisit. Intention to revisit was also  
27 unrelated to aspects of visits that respondents reported liking least. Refer to Section 3.5 (Land Use)  
28 of the EA for more details. Given the footprint of the proposed airspace (approximately 8.3 million  
29 acres) and the distribution of proposed training, the likelihood of an individual experiencing an  
30 overflight would be low and intermittent.

31 As described in Section 2.1 of the EA, the NGB has included measures to reduce potential impacts to  
32 recreation along the Lake Huron shoreline as a result of early public scoping efforts and responses,  
33 including avoidance of the Lake Huron shoreline by flying no lower than 1,500 feet AGL within one  
34 nautical mile of the shoreline between May 15 and September 15, and not permitting F-35 aircraft  
35 to use the Steelhead Low MOAs.



1 **Environmental Justice**

2 **Comment: The USEPA commented to use the USEPA’s EJSCREEN mapping tool for initial**  
3 **screening to identify the presence of low-income and/or minority communities within the**  
4 **project areas, and describe activities to engage these communities.**

5 Response: The EJSCREEN tool was used to review the project area to identify the presence of low-  
6 income and minority communities in the EA (see Figure 3-5 and Figure 3-6 in the EA). An analysis  
7 was completed to determine the potential impacts on low-income and minority communities  
8 expected as a result of the Proposed Action. The results of the analysis indicate that impacts on the  
9 communities under the proposed SUA would not be considered significant or disproportionately  
10 higher when compared to other communities located under the affected airspace. Population  
11 characteristics were viewed at the census tract level. No significant human health impacts have  
12 been identified for the Proposed Action, including safety, air quality, and noise. Based on the  
13 analysis in the EA, noise and vibration mitigations would not be required under the Proposed  
14 Action and the alternatives analyzed.

15 All counties located under the Proposed Action were included in the scoping process, and were  
16 notified of the planned EA. A Notice of Availability was published in four newspapers for public  
17 review of the Draft EA, and the Draft EA was distributed to 13 libraries throughout the affected area  
18 and was available electronically. The NGB did not receive any requests for material translation  
19 through written or electronic communications. See Section 1.7 of the EA.

20 **Comment: The NGB did not examine whether or not comparable areas outside of the**  
21 **proposed Alpena SUA footprint would have the same or similar populations in the categories**  
22 **of minority or low-income persons, which could be hypothetically examined in order to**  
23 **determine any disproportionate impact on minority or low-income populations. [Within the**  
24 **comment, the CORA provided an example, hypothetical footprint of the same proposed**  
25 **Alpena SUA footprint transposed to the western half of northern lower Michigan, and**  
26 **reassessed the population characteristics. The full analysis provided in the original**  
27 **comment is found in Appendix F of the EA.]**

28 Response: The NGB appreciates the thoughtful response to the socioeconomic and Environmental  
29 Justice analysis within the EA, in which the CORA suggests that the NGB consider a mirror image  
30 airspace footprint to be examined to determine whether or not comparable areas would have the  
31 same or similar populations to be affected by the proposed Alpena SUA footprint. The purpose of  
32 the Proposed Action within this EA is to amend and establish Alpena CRTC’s SUA supporting  
33 military readiness requirements and is inherently tied to the airspace surrounding Alpena CTRC.  
34 Establishment of new MOA or SUA airspace is not included within the scope of this assessment,  
35 limiting the analysis to the footprints proposed in the alternatives established in the EA. The NGB  
36 carefully selected the three reasonable alternatives considered within the EA to meet the project’s  
37 purpose and need. Objectives of the Proposed Action include providing connecting airspace from  
38 the existing SUA complex to the Grayling Range for continuity and providing low-altitude airspace  
39 closer than the Grayling Range, which would create efficiencies in both flight time and fuel usage.  
40 The theoretical flipping of the airspace would not allow for the flight paths between the installation  
41 and the range, and falls outside of the objectives of the Proposed Action.

42 The threshold used for identifying minority and low-income populations were developed consistent  
43 with CEQ guidance. The analysis in the EA reviewed the populations under the Alpena SUA Complex  
44 and concluded that the impacts of noise on these communities would not be significant or  
45 disproportionately higher in comparison to other communities located within the same region. No  
46 significant human health impacts have been identified for the Proposed Action, including safety, air  
47 quality, and noise.

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## 1 H16. Cumulative Effects Comments and Responses

### 2 **General**

3 **Comment: Commenters expressed concern about emerging issues such as widespread PFAS-**  
4 **containing materials, micro-plastics, and nanoparticle pollution.**

5 Response: We agree that these are large-scale environmental problems that are the result of  
6 extensive past and present practices. PFAS-containing materials are an emerging issue that the DAF  
7 is carefully evaluating to determine the extent to which past practices have affected and continue to  
8 affect the environment and how to effectively address PFAS. Responses in this appendix include  
9 concerns associated with the Proposed Action, to include PFAS from aircraft mishap (Section H8,  
10 page H-19), and PFAS (Section H9, page H-18), plastics (Section H11, page H-26), and toxic air  
11 emissions (Section H9, page H-19) from flare discharges. The extent to which the Proposed Action  
12 would contribute to any of them is negligible.

### 13 **New LATN Areas**

14 **Comment: It is not clear if the LATN Area North is honoring the Quiet Airspace Agreement**  
15 **over Pigeon River Country with MDNR. Additional consideration for the LATN stems from**  
16 **the unprecedented growth of unmanned aircraft systems (UAS) in the private sector. The**  
17 **300-foot AGL floor of the LATN could put military aircraft in conflict with UAS that have a**  
18 **ceiling of 400 feet AGL.**

19 Response: A LATN area is different from other designated military airspace in that it is an area  
20 where the Air Force will operate military aircraft within the NAS fully complying with existing FAA  
21 regulations on speed and maneuvering. Alpena CRTC has identified the Pigeon River State Forest as  
22 an area to either avoid or overfly no lower than 2,000 feet AGL. The LATN Area North is published  
23 to Alpena CRTC users such as the A-10 and C-130 with the Pigeon River Country highlighted as a  
24 noise avoidance area.

### 25 **Joint Threat Emitters**

26 **Comment: Commenters expressed concern about the impacts of the high-density**  
27 **radiofrequency environment associated with JTEs.**

28 Response: The siting of JTEs is not included as part of the Proposed Action. As such, the potential  
29 impacts associated with JTEs are not included as part of this analysis. If JTE sites are proposed in  
30 the future, they will be evaluated as part of a separate action and would require NEPA analysis.

### 31 **Other Military Proposals**

32 **Comment: Commenters were concerned about military mission creep.**

33 Response: The expected usage of the Alpena SUA Complex was determined by the required usage of  
34 the Alpena CRTC based on their training needs and the training needs of other airspace users. A  
35 detailed analysis has been completed for the Proposed Action, including expected sortie numbers,  
36 as described in the EA. The usage of the proposed Alpena SUA Complex would be monitored closely  
37 to ensure that the actual usage does not exceed the levels discussed in the EA. If it is determined  
38 that additional usage of the Alpena SUA Complex is required in the future, a separate NEPA analysis  
39 would be completed.

40 **Comment: The CORA was concerned about the cumulative impacts the lease expansion of**  
41 **MIANG Camp Grayling and the Overwater ranges modernization on the lands and waters**  
42 **protected by Reserved Treaty Rights, and meaningful consultation.**

43 Response: As required for each undertaking, Section 106 consultation, pursuant to the National  
44 Historic Preservation Act, and Government-to-Government consultation would be conducted.

1 **Comment: Commenters were concerned about the individual and cumulative impacts on**  
2 **wildlife, water quality, recreation, tourism, and property values from the proposed**  
3 **expansion of Camp Grayling.**

4 Response: The Camp Grayling expansion proposal is wholly separate from this SUA proposal.  
5 Chapter 5 of the EA has been updated to reflect the current status of the Camp Grayling expansion.  
6 The areas available for limited low-impact training by Michigan Army National Guard are  
7 considerably smaller than the initial concept presented, limited to pre-selected parcels that do not  
8 include protected or sensitive habitats, and would be subject to annual leasing consistent a signed  
9 Memorandum of Agreement.

10 **Comment: Commenters expressed concern about the potential for expanded training in**  
11 **Northern Michigan from the recently described National All-Domain Warfighting Center**  
12 **(NADWC).**

13 Response: The NADWC allows military users to access the full capabilities of both Camp Grayling  
14 and Alpena CRTC. There is not a separate NADWC staff; the staff of both Camp Grayling and Alpena  
15 CRTC serve in the respective roles to facilitate military training across the domains. If there is a  
16 public concern, it should be addressed to either the Camp Grayling or Alpena CRTC public affairs  
17 staff, as appropriate. If the public does not know who to address their concern too, they may contact  
18 either, and the appropriate facility will respond.

19 **Comment: Commenters were concerned about cumulative increases in training within the**  
20 **Alpena SUA from the proposed Foreign Military Sales program at Selfridge ANGB.**

21 Response: The decision has been made to base the FMS program at Ebbing ANGB, Arkansas, with no  
22 action being taken at Selfridge ANGB (USAF, 2023b). Cumulative effects would not be expected with  
23 the selection of Ebbing ANGB for the FMS program. This project was entirely removed from Chapter  
24 5 of the EA.

25 **Wind Turbines**

26 **Comment: Commenters expressed concern about the growth of the industrial wind sector**  
27 **and possible conflicts in the Steelhead Low MOAs.**

28 Response: The MIAANG participates in the NAS with all other users. We are required as military users  
29 to maintain an account on the FAA's Internet Obstruction Evaluation/Airport Airspace Analysis tool.  
30 The FAA requires all developers of towers over a height of 200 feet above ground level to use the  
31 <https://ioeaaa.faa.gov/> website to request permission to erect their structure. Wind turbine  
32 encroachment on military airspace does impact both Military Training Routes and Low Special Use  
33 Airspace. As such, the DOD has developed procedures to evaluate projects and work with developers  
34 to find commonly acceptable solutions.

35 As part of preflight preparations, all obstructions within the proposed Alpena SUA Complex,  
36 including structures, wind turbines, and populated areas, are identified by the pilots. Pilots are  
37 professionally trained to "see and avoid" conflicts while flying within military airspace, including  
38 any structures, including wind turbines, people, or vehicles. Discussion added of existing and future  
39 wind energy projects to include the Riverbend Wind Energy in Sanilac County (Liberty Power,  
40 2023a) and the Deerfield Wind Energy 2 in Huron County (Liberty Power, 2023b).

41 International aviation laws determine who has priority when utilizing an airspace. The first priority  
42 is aircraft in distress. The second priority is air ambulance services, or small private jets or  
43 helicopters that fly to hospitals. Aircrews continually monitor communications related to air  
44 ambulance services. If a pilot is flying and receives an air ambulance notification, the pilot would  
45 leave the area immediately. Immediately upon receiving notification that air ambulance series  
46 require priority within an airspace, air traffic controllers would contact pilots within the airspace  
47 and would evacuate the area immediately. Text has been added to Section 4.1, Airspace  
48 Management, within the proposed MOAs to address airspace deconfliction: Pilots are professionally  
49 trained to "see and avoid" conflicts while flying within military airspace, including any structures,  
50 including wind turbines, people, or vehicles, as discussed in Section 4.2, Safety.



## Appendix I

### Components of Proposed Charted Airspace Descriptions

**Table I-1      Charted Airspace Descriptions**

Component	Attribute
<b>Name</b>	<b>Grayling West MOA (Proposed)</b>
Boundaries	N 44° 56' 00" W 084° 39' 00" N 44° 56' 05" W 084° 22' 03" N 44° 29' 22" W 084° 20' 20" N 44° 34' 00" W 084° 35' 00" N 44° 43' 00" W 084° 38' 00" N 44° 47' 00" W 084° 38' 00" N 44° 47' 00" W 084° 39' 00" to the point of beginning, excluding R-4201A and R-4201B when active
Designated Altitudes	500 feet AGL to 17,999 MSL
Times of Use	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTC
<b>Name</b>	<b>Grayling East MOA (Proposed)</b>
Boundaries	N 44° 56' 00" W 084° 39' 00" N 45° 08' 00" W 084° 39' 00" N 45° 15' 00" W 084° 08' 08" N 44° 41' 00" W 084° 06' 00" N 44° 34' 00" W 083° 59' 11" N 44° 29' 22" W 084° 20' 20" N 44° 56' 05" W 084° 22' 03" to the point of beginning
Designated Altitudes	10,000 feet MSL to 17,999 MSL
Times of Use	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTC
<b>Name</b>	<b>Steelhead MOA</b>
Boundaries *	N 44° 17' 20" W 083° 43' 00" N 44° 20' 07" W 082° 17' 25" N 43° 35' 28" W 082° 07' 22" N 43° 33' 54" W 082° 08' 10" N 43° 30' 00" W 082° 26' 03" N 43° 30' 00" W 082° 59' 11" N 43° 38' 30" W 083° 32' 00" to the point of beginning
Designated Altitudes	6,000 to 17,999 feet MSL
Times of Use *	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTC
Note: *Only the internal lateral boundaries and times of use are proposed to change.	

Component	Attribute
<b>Name</b>	<b>Steelhead Low North MOA (Proposed)</b>
Boundaries	N 44° 17' 20" W 083° 43' 00" N 44° 18' 53" W 083° 00' 12" N 43° 53' 46" W 083° 00' 12" 7DME ARC Counterclockwise centered at N 43° 46' 49" W 082° 59' 08" to N 43° 49' 10" W 083° 08' 14" N 43° 49' 10" W 083° 35' 00" to the point of beginning
Designated Altitudes	500 feet AGL to 5,999 MSL
Times of Use	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTC
Proposed Exclusions	To reduce noise impacts, no F-35 aircraft would be allowed in this MOA. Participating aircraft would be restricted to fly no lower than 1,500 feet AGL within 1 NM of the Lake Huron shoreline seasonally only between May 15 and September 15.
<b>Name</b>	<b>Steelhead Low South MOA (Proposed)</b>
Boundaries	N 43° 30' 00" W 082° 56' 16" N 43° 40' 09" W 082° 56' 16" 7DME ARC Counterclockwise centered at N 43° 46' 49" W 082° 59' 08" to N 43° 49' 10" W 083° 08' 14" N 43° 49' 10" W 083° 35' 00" N 43° 38' 30" W 083° 32' 00" N 43° 30' 00" W 082° 59' 11" to the point of beginning
Designated Altitudes	4,000 feet MSL to 5,999 MSL
Times of Use	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTC
Proposed Exclusions	To reduce noise impacts, no F-35 aircraft would be allowed in this MOA.
<b>Name</b>	<b>Steelhead Low East MOA (Proposed)</b>
Boundaries	N 44° 18' 53" W 083° 00' 12" N 44° 20' 07" W 082° 17' 25" N 43° 35' 28" W 082° 07' 22" N 43° 33' 54" W 082° 08' 10" N 43° 30' 00" W 082° 26' 03" N 43° 30' 00" W 082° 56' 16" N 43° 40' 09" W 082° 56' 16" 7DME ARC Counterclockwise centered at N 43° 46' 49" W 082° 59' 08" to N 43° 53' 46" W 083° 00' 12" to the point of beginning
Designated Altitudes	500 feet AGL to 5,999 MSL
Times of Use	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTC
Proposed Exclusions	To reduce noise impacts, no F-35 aircraft would be allowed in this MOA. Participating aircraft would be restricted to fly no lower than 1,500 feet AGL within 1 NM of the Lake Huron shoreline seasonally only between May 15 and September 15.

Component	Attribute
<b>Name</b>	<b>Pike West MOA</b>
Boundaries *	N 45° 45' 00" W 083° 48' 30" N 45° 22' 00" W 083° 35' 00" N 45° 22' 00" W 083° 29' 00" N 45° 16' 00" W 083° 23' 00" N 44° 59' 15" W 083° 15' 00" N 44° 42' 00" W 083° 09' 00" N 44° 18' 24" W 083° 14' 00" N 44° 17' 20" W 083° 43' 00" N 44° 41' 00" W 084° 06' 00" N 45° 45' 00" W 084° 10' 00" to the point of beginning
Designated Altitudes	6,000 feet to 17,999 feet MSL
Times of Use *	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTCC
Note: *Only the internal lateral boundaries and times of use are proposed to change.	
<b>Name</b>	<b>Pike East MOA</b>
Boundaries *	N 44° 18' 24" W 083° 14' 00" N 44° 42' 00" W 083° 09' 00" N 44° 59' 15" W 083° 15' 00" N 45° 16' 00" W 083° 23' 00" N 45° 22' 00" W 083° 29' 00" N 45° 22' 00" W 083° 35' 00" N 45° 45' 00" W 083° 48' 30" N 45° 45' 00" W 083° 26' 07" N 45° 20' 19" W 082° 31' 07" N 44° 20' 07" W 082° 17' 25" to the point of beginning
Designated Altitudes	300 feet AGL to 17,999 feet MSL
Times of Use *	By NOTAM 4 hours in advance
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	MIANG, Alpena CRTCC
Note: *Only the internal lateral boundaries and times of use are proposed to change.	
<b>Name</b>	<b>R-4201B</b>
Boundaries	N 44°47'00" W 84°29'00" N 44°41'00" W 84°29'00" N 44°41'00" W 84°40'00" N 44°43'00" W 84°40'00" N 44°43'00" W 84°38'00" N 44°47'00" W 84°38'00" to the point of beginning
Designated Altitudes *	Surface to 23,000 feet MSL
Times of Use *	Tuesday–Sunday, 0800–1600 Other times by NOTAM
Controlling Agency	FAA, Minneapolis ARTCC
Using Agency	Commander, Camp Grayling
Note: *Only the designated altitudes and times of use are proposed to change.	

Component		Attribute
<b>Name</b>	<b>VR-1601</b>	<b>VR-1602 (reciprocal)</b>
Boundaries	N 45°-10.0' W 083°-52.0'	N 44°-53.0' W 084°-34.0'
	N 45°-05.0' W 084°-11.0'	N 44°-56.0' W 084°-29.0'
	N 45°-00.0' W 084°-15.0'	N 45°-00.0' W 084°-15.0'
	N 44°-56.0' W 084°-29.0'	N 45°-05.0' W 084°-11.0'
	N 44°-53.0' W 084°-34.0'	N 45°-10.0' W 083°-52.0'
Designated Altitudes	300 feet AGL to 1,500 feet AGL 3 NM on either side of the centerline	
Times of Use	Monday–Friday 0800–1630	
	Other Times by NOTAM	
Controlling Agency	FAA, Minneapolis ARTCC	
Using Agency	MIANG, Alpena CRTC	

Key: AGL = above ground level; ARTCC = Air Route Traffic Control Center; CRTC = Combat Readiness Training Center; FAA = Federal Aviation Administration; MIANG = Michigan Air National Guard; MSL = mean sea level; NM = nautical miles; NOTAM = Notice to Air Missions; R = Restricted Area; VR = Visual Flight Rules Military Training Route.



**Table I-2 Summary of Existing Airspace Areas**

Airspace	Square Miles	Square Nautical Miles
Grayling Temporary MOA	1,150	868
Pike East MOA	4,775	3,606
Pike West MOA	3,522	2,660
Steelhead MOA	2,935	2,216
Hersey MOA	765	578
R-4201A	85	64
R-4201B	55	42
R-4202	7	5
R-4207	1,338	1,010

Note: Areas in square miles were taken directly from the GIS data for the project.

1 square mile = 0.75512 square nautical mile.

**Table I-3 Summary of Proposed Airspace Areas**

Airspace	Square Miles	Square Nautical Miles
Grayling East MOA	842	635
Grayling West MOA	374	282
Pike East MOA	3,877	2,929
Pike West MOA	3,479	2,627
Steelhead MOA	3,800	2,875
Steelhead Low North MOA	1,049	794
Steelhead Low East MOA	2,145	1,623
Steelhead Low South MOA	606	458
R-4201A	85	64
R-4201B	55	42
R-4202	7	5
R-4207	1,337	1,010
VR-1601/1602	286	216

Note: Areas in square miles were taken directly from the GIS data for the project.

1 square mile = 0.75512 square nautical mile.

**Table I-4 Summary of Proposed Airspace Changes in Area**

Area	Square Miles	Square Nautical Miles
Total Existing SUA <sup>1</sup>	14,632	11,049
Total Existing Charted SUA <sup>2</sup>	13,482	10,181
Total Proposed Airspace <sup>3</sup>	17,958	13,560
Total Proposed SUA <sup>4</sup>	17,672	13,344
Change in SUA <sup>5</sup>	+ 3,040	+ 2,295
Total Existing Footprint in Study Area <sup>6</sup>	12,382	9,350
Total Proposed Footprint in Study Area <sup>7</sup>	12,991	9,809

## Notes:

<sup>1</sup> Existing Grayling Temporary MOA, Pike East MOA, Pike West MOA, Steelhead MOA, Hersey MOA, R-4201A, R-4201B, R-4202, and R-4207.

<sup>2</sup> Existing Pike East MOA, Pike West MOA, Steelhead MOA, Hersey MOA, R-4201A, R-4201B, R-4202, and R-4207. As a temporary MOA, the Grayling Temporary MOA is not charted.

<sup>3</sup> Proposed Grayling East MOA, Grayling West MOA, Pike East MOA, Pike West MOA, Steelhead MOA, Steelhead Low North MOA, Steelhead Low East MOA, Steelhead Low South MOA, R-4201A, R-4201B, R-4202, R-4207, and VR-1601/1602.

<sup>4</sup> Proposed Grayling East MOA, Grayling West MOA, Pike East MOA, Pike West MOA, Steelhead MOA, Steelhead Low North MOA, Steelhead Low East MOA, Steelhead Low South MOA, R-4201A, R-4201B, R-4202, and R-4207. The proposed MTRs are not SUA.

<sup>5</sup> Difference between the total proposed SUA and the total existing SUA.

<sup>6</sup> Existing Grayling Temporary MOA, Pike East, Pike West, and Steelhead MOA. R-4201A/B are within the boundaries of the Grayling Temporary MOA, Hersey is beyond the immediate study area, and there would be no change in R-4202 and R-4207.

<sup>7</sup> Proposed Grayling East MOA, Grayling West MOA, Pike East, Pike West, Steelhead Low North MOA, Steelhead Low East MOA, Steelhead Low South MOA, and a 4.4-square-mile portion of R-4201B that would extend beyond Grayling West MOA. The rest of R-4201A/B are within the boundaries of Grayling West MOA, Steelhead MOA is directly above the Steelhead Low MOAs, Hersey is beyond the immediate study area, and there would be no change in R-4202 and R-4207.

## Appendix J

### Airspace Operations

Table J-1 shows the changes in chaff and flare use under the Proposed Action.

**Table J-1 Changes in Chaff and Flare Use within the Alpena SUA Complex**

SUA	Change in Chaff/RR188	Altitude Expended	Change in Flares/M206	Minimum Altitude Expended
R-4201A/B	—	—	—	—
Proposed Grayling West MOA	—	—	—	—
Proposed Grayling East MOA	—	—	—	—
Pike West MOA	—	—	—	—
Pike East MOA	—	—	—	—
Steelhead MOA	-500	6,000 MSL	-625	6,000 MSL
Proposed Steelhead Low North	+100	2,000 AGL	+100	2,000 AGL
Proposed Steelhead Low East	+100	5,000 MSL	+108	5,000 MSL
Proposed Steelhead Low South	+100	2,000 AGL	+100	2,000 AGL
Proposed Steelhead Low South	+100	5,000 MSL	+108	5,000 MSL
Proposed Steelhead Low South	+100	5,000 MSL	+209	5,000 MSL
<b>General/ Distributed over all</b>	<b>+1,000</b>	<b>&gt;2,000 feet AGL</b>	<b>+1,500</b>	<b>2,000 feet AGL</b>

Key: AGL = above ground level; MOA = military operations area; MSL = mean sea level; R = Restricted Area.

Table J-2 summarizes the primary Ready Aircraft Program (RAP) tasking events and other common training types in Alpena SUA, though this is not intended to be an all-inclusive list.

**Table J-2 Ready Aircrew Program (RAP) Tasking Events for A-10 and F-16 Aircraft and Other Common Flying Missions Within the Alpena SUA**

Flying Mission	Definition and Relevance to Alpena SUA
AI/OCA-AO Air Interdiction/Offensive Counter Air-Attack Operations	Involves the suppression of an enemy's military air power. F-16 RAP: Grayling MOAs would link Grayling Range to rest of the Alpena SUA Complex to allow a full-up scenario ending in ordnance delivery at the range.
BFM Basic Fighting Maneuvers	A one-versus-one training mission designed to apply aircraft handling skills to gain proficiency in recognizing and solving range, closure, aspect, angle off, and turning room problems in relation to another aircraft to either attain a position from which weapons may be launched or defeat weapons employed by an adversary.
CAS Close Air Support	Involves air action such as air strikes against hostile targets that are in proximity to friendly forces. A-10 RAP: requires the ability to be 5–10 NM minimum from the target area at scenario start. R-4201A is only 7 NM by 9 NM. The Grayling MOAs for CAS scenarios would hold the non-delivery portion of the event. F-16 RAP: even more important for F-16s to have the Grayling MOAs to give appropriate maneuver room for jets in the CAS Wheel, Offset Racetrack, and IP Hold.
Chaff/Flare	Both chaff and flares are defensive countermeasures deployed by military aircraft. When an aircraft is threatened by radar tracking missiles, chaff is ejected into the turbulent wake of air behind the plane. Flares are used to distract heat-seeking missiles.
CSAR Combat Search and Rescue	A specific mission performed by rescue forces to recover distressed personnel during war or military operations other than war. A-10 RAP: typically requires a low MOA to be truly effective for escorting the Rescue Vehicle and to conduct search operations.
DCA Defensive Counter Air	Involves defensive measures designed to detect, identify, intercept, and destroy or negate enemy forces attempting to attack or penetrate the friendly air environment.
Escort	A-10 RAP: requires low airspace for various formations to escort helicopters and C-130s.
EW Electronic Warfare	Includes military activities that use electromagnetic energy to control the electromagnetic spectrum ("the spectrum") and attack an enemy.
FAC/FIAC Fast-Attack Craft/Fast Inshore Attack Craft	Involves small, fast, agile, and offensive warship armed with anti-ship missiles, gun, or torpedoes. A-10 RAP: adding Steelhead Low MOAs would provide an additional training area in Lake Huron.
Counter FAC/FIAC Counter Fast Attack Craft/Fast Inshore Attack Craft	Involved in direct defense of maritime assets and requires increased integration between air and surface delivered fires and the movement of maritime forces. Primary consideration is rapid response to counter immediate threats and attack targets of opportunity. F-16 RAP: adding Steelhead Low MOAs would provide an additional training area in Lake Huron.

Flying Mission	Definition and Relevance to Alpena SUA
FAC-A Forward Air Controller (Airborne)	Special capability mission designed to develop proficiency in airborne forward air control of armed attack fighters in support of actual or simulated ground forces and can be flown as element lead or the supporting wingman. A-10 RAP: requires the ability to be 5–10 NM minimum from the target area at scenario start. R-4201A is only 7 NM by 9 NM. The Grayling MOAs would hold the non-delivery portion of the event. F-16 RAP: even more important for F-16s to have the Grayling MOAs to give appropriate maneuver room.
LFE Large Force Exercise	LFEs provide training scenarios in which many aircraft are involved. Alpena CRTC supports Operation Northern Strike.
LOWAT Low Altitude Training	Tactical training operations in a certified low altitude block, which is divided into low altitude step-down training (LASDT) categories. This tactical training does not apply to traffic pattern operations or other basic transitions through the low-altitude structure. A LOWAT event involves performing realistic, mission-oriented low altitude operations while in a LOWAT-certified low altitude block, in which pilots practice realistic reactions to air and ground threats. LOWAT is divided into two currencies/events, LOW A/A and LOW A/G. A/A LOWAT is usually in the 0–5,000-foot AGL block of altitude, and there are specific training rules regarding A/A LOWAT engagements.
Low A/A (Low Air–Air)	Mission-oriented A/A operations while in a LOWAT certified LOWAT altitude. A-10 RAP: typically requires up to a 20NM setup to run a 2 v 1 scenario. F-16 RAP: Steelhead Low MOA would provide additional low altitude set-ups at a typical 20 NM range to a targeting solution.
Low A/G (Low Air–Ground)	Mission-oriented A/G operations while in a LOWAT certified LOWAT block. A-10 RAP: accomplished primarily at Grayling Range. F-16 RAP: requires LASDT space that is not an MTR to allow for appropriate maneuvering.
Moving Target Strafe	Tactical strafe attack against a target in motion. Both high angle strafe and low angle strafe are desired. F-16 RAP: Steelhead Low would provide an option for dry moving target strafe training.
MTA Moving Target Attack	Self or buddy-lase laser-guided bomb attack against a target in motion. A-10 RAP: requires low airspace for dry strafe and laser-guided bomb attacks.
SAT Surface Attack Tactics	Mission designed to develop tactical surface attack proficiency. A-10 RAP: typically requires a minimum 10 NM IP prior to target attack. Need the Grayling MOAs for the SAT scenarios to hold the non-delivery portion of the event.
SEAD Suppression of Enemy Air Defenses	Involves suppressing enemy surface-based air defenses, including not only surface-to-air missiles (SAMs) and anti-aircraft artillery (AAA) but also interrelated systems such as early-warning radar and command, control, and communication (C3) functions, while also marking other targets to be destroyed by an air strike. A-10 RAP: requires MOAs to maneuver in relation to threat emitter. Currently accomplished in Pike West. Grayling MOAs would provide a better option for low ingress to Grayling Range.

(ACC/A3TO, 2019a; ACC/A3TO, 2019b; LaFountain, 2020)

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## **Appendix K**

### **Record of Non-Applicability for General Conformity and Air Conformity Applicability Model (ACAM) Reports**

Record of Non-Applicability .....	K-2
Air Conformity Applicability Model Report Record of Conformity Analysis (ROCA) .....	K-3
Detail Air Conformity Applicability Model Report .....	K-5
Summary Table of ACAM Aircraft Inputs .....	K-50
Detailed Utilization Tables to Determine ACAM Aircraft Inputs .....	K-51
Proposed Flare Deployment .....	K-55
Proposed Chaff Deployment .....	K-56

## Record of Non-Applicability

April 24, 2023

This Record of Non-Applicability supports the National Guard Bureau's Environmental Assessment for the proposed modification of the Alpena Special Use Airspace Complex at Michigan Air National Guard Alpena Combat Readiness Training Center, Alpena, Michigan. The Proposed Action includes the following:

- establish five new Military Operations Areas (MOAs; Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East)
- discontinue the annual request for the Grayling Temporary MOA
- modify the internal lateral boundaries of three existing MOAs (Pike East, Pike West, and Steelhead)
- return Hersey MOA to the National Airspace System
- raise the vertical ceiling of R-4201B
- establish two new Military Training Routes (MTRs; VR-1601 and VR-1602)

Aircraft operations would include increased sorties within the newly established low MOAs and MTRs, as well as increased deployment of chaff and flare expenditures. No changes in air-to-ground weapons expenditures are proposed. No construction is proposed.

Huron County, which is underneath the proposed Steelhead Low North and Steelhead Low East MOAs, is subject to maintenance requirements for the revoked 1997 ozone National Ambient Air Quality Standard; the study area is fully in attainment for all other criteria pollutants. Federal actions may be exempt from Conformity Determinations if they do not exceed designated *de minimis* levels for criteria pollutants as set forth in 40 CFR 93.153(c).

The Proposed Action falls under the Record of Non-Applicability category pursuant to 40 Code of Federal Regulations (CFR) Parts 52 and 93. General conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93, Subpart B. Total direct and indirect emissions for ozone precursors (volatile organic compounds and nitrogen oxides), as modeled using the Air Force's Air Conformity Applicability Model (ACAM), do not exceed the applicable thresholds of 100 tons per year as established in 40 CFR 93.153(b). Detailed conformity analyses are therefore not required.

Supported documentation and emission estimates:

Are Attached

Appear in the NEPA Documentation

Other (Not Necessary)



# AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

**1. General Information:** The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** ALPENA ANGB  
**State:** Michigan  
**County(s):** Alcona; Arenac; Alpena; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac; Saginaw  
**Regulatory Area(s):** Huron Co, MI

**b. Action Title:** Alpena SUA Modification

**c. Project Number/s (if applicable):**

**d. Projected Action Start Date:** 9 / 2023

**e. Action Description:**

The Proposed Action would include the following:

- establishing five new MOAs (Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East)
- discontinuing the annual request for the Grayling Temporary MOA
- modifying the internal lateral boundaries of three existing MOAs (Pike East, Pike West, and Steelhead)
- returning Hersey MOA to the NAS
- raising the vertical ceiling of R-4201B
- establishing two new MTRs (VR-1601 and VR-1602)

This air analysis encompasses airspace activities that encompass at least the airspace up to 3,000 feet AGL.

**f. Point of Contact:**

**Name:** Mary Young  
**Title:** Contractor  
**Organization:** Marstel-Day  
**Email:**  
**Phone Number:**

**2. Analysis:** Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are:

\_\_\_\_\_ applicable  
 not applicable

**Conformity Analysis Summary:**

**2023**

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Huron Co, MI			

## AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

<b>VOC</b>	0.135	100	No
<b>NOx</b>	15.328	100	No
<b>CO</b>	1.333		
<b>SOx</b>	0.973		
<b>PM 10</b>	1.818		
<b>PM 2.5</b>	1.634		
<b>Pb</b>	0.000		
<b>NH3</b>	0.000		
<b>CO2e</b>	2940.3		

### 2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Huron Co, MI			
<b>VOC</b>	0.405	100	No
<b>NOx</b>	45.984	100	No
<b>CO</b>	3.999		
<b>SOx</b>	2.918		
<b>PM 10</b>	5.454		
<b>PM 2.5</b>	4.902		
<b>Pb</b>	0.000		
<b>NH3</b>	0.000		
<b>CO2e</b>	8820.8		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

\_\_\_\_\_  
Mary Young, Contractor

\_\_\_\_\_  
DATE

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 1. General Information

---

### - Action Location

**Base:** ALPENA ANGB

**State:** Michigan

**County(s):** Alcona; Arenac; Alpena; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac; Saginaw

**Regulatory Area(s):** Huron Co, MI

- **Action Title:** Alpena SUA Modification

- **Project Number/s (if applicable):**

- **Projected Action Start Date:** 9 / 2023

### - Action Purpose and Need:

The purpose of the Proposed Action is to amend and establish Alpena CRTC's SUA supporting military readiness requirements that would contribute to the overall provision of an integrated, year-round, realistic training environment.

The Director of the ANG has approved a plan to transform Alpena CRTC into the ANG's Close Air Support Center of Excellence. To meet this emerging restructuring, the airspace must be of sufficient, contiguous size and altitude to accommodate Low Altitude Step Down Training (LASDT) and Low Altitude Air-to-Air Training (LOWAT) tactics and standoff weapons employment, to support ANG Instruction 10-110. The Alpena CRTC airspace must also be capable of satisfying the training requirements of fifth-generation fighters, such as the F-22 and F-35, as these assets are programmed for employment by ANG units.

### - Action Description:

The Proposed Action would include the following:

- establishing five new MOAs (Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East)
- discontinuing the annual request for the Grayling Temporary MOA
- modifying the internal lateral boundaries of three existing MOAs (Pike East, Pike West, and Steelhead)
- returning Hersey MOA to the NAS
- raising the vertical ceiling of R-4201B
- establishing two new MTRs (VR-1601 and VR-1602)

This air analysis encompasses airspace activities that encompass at least the airspace up to 3,000 feet AGL.

### - Point of Contact

**Name:** Mary Young

**Title:** Contractor

**Organization:** Marstel-Day

**Email:**

**Phone Number:**

### - Activity List:

	Activity Type	Activity Title
2.	Aircraft	A-10
3.	Aircraft	AC-130H
4.	Aircraft	C-130
5.	Aircraft	C-17
6.	Aircraft	CH-47
7.	Aircraft	F-15E
8.	Aircraft	F-16

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

9.	Aircraft	MH-60/UH-60
10.	Aircraft	AH-1
11.	Aircraft	B-52
12.	Aircraft	CV-22
13.	Aircraft	F/A-18E
14.	Aircraft	F-35A
15.	Aircraft	EA-18G
16.	Aircraft	T-1
17.	Aircraft	AV-8B

Emission factors and air emission estimating methods come from the United States Air Force’s Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

## 2. Aircraft

### 2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?    Add

- Activity Location

County:   Alcona; Arenac; Alpena; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
           Presque Isle; Roscommon; Sanilac  
 Regulatory Area(s):   Huron Co, MI

- Activity Title:    A-10

- Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- Activity Start Date

Start Month:    9  
 Start Year:     2023

- Activity End Date

Indefinite:     Yes  
 End Month:    N/A  
 End Year:      N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.163088
SO <sub>x</sub>	1.454200
NO <sub>x</sub>	14.541996
CO	2.989943
PM 10	3.615113

Pollutant	Emissions Per Year (TONs)
PM 2.5	3.248165
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	4395.2

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CO	0.000000
PM 10	0.000000

CO <sub>2e</sub>	0.0

## 2.2 Aircraft & Engines

### 2.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** OA-10A  
**Engine Model:** TF34-GE-100  
**Primary Function:** Combat  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 2.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	390.00	39.45	1.07	2.10	106.70	8.13	7.32	3234
Approach	920.00	2.19	1.07	5.70	16.30	6.21	5.59	3234
Intermediate	460.00	23.35	1.07	2.60	78.00	8.93	8.04	3234
Military	2710.00	0.12	1.07	10.70	2.20	2.66	2.39	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 2.3 Flight Operations

### 2.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 30090  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**

**Idle (mins):** 0

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Approach (mins):** 0  
**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

## 2.3.2 Flight Operations Formula(s)

### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

$AEM_{POL}$ : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONS

### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)

$AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)

$AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

$AE_{TRIM}$ : Aircraft Emissions (TONs)

$AEPS_{IDLE}$ : Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$ : Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$ : Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$ : Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$ : Aircraft Emissions for After Burner Power Setting (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 3. Aircraft

---

### 3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?    Add

- Activity Location

**County:**   Alpena; Alcona; Arenac; Crawford; Iosco; Huron; Montmorency; Oscoda; Otsego; Ogemaw;  
                   Presque Isle; Roscommon; Saginaw  
**Regulatory Area(s):**   Huron Co, MI

- Activity Title:   AC-130H

- Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- Activity Start Date

**Start Month:**   9  
**Start Year:**     2023

- Activity End Date

**Indefinite:**     Yes  
**End Month:**    N/A  
**End Year:**     N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.023720
SO <sub>x</sub>	0.055174
NO <sub>x</sub>	0.479553
CO	0.108286
PM 10	0.025782

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.023204
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	166.8

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

### 3.2 Aircraft & Engines

#### 3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

**Aircraft Designation:**   AC-130H  
**Engine Model:**            T56-A-15  
**Primary Function:**        Transport - Bomber  
**Aircraft has After burn:**   No  
**Number of Engines:**      4

- Aircraft & Engine Surrogate

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Is Aircraft & Engine a Surrogate?      No  
 Original Aircraft Name:  
 Original Engine Name:

### 3.2.2 Aircraft & Engines Emission Factor(s)

#### - Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	794.00	24.15	1.07	3.90	32.00	0.83	0.75	3234
Approach	1423.00	14.26	1.07	4.40	22.20	0.97	0.87	3234
Intermediate	1825.00	0.58	1.07	9.20	2.40	0.51	0.46	3234
Military	2302.00	0.46	1.07	9.30	2.10	0.50	0.45	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

### 3.3 Flight Operations

#### 3.3.1 Flight Operations Assumptions

##### - Flight Operations

Number of Aircraft: 1  
 Flight Operation Cycle Type: LFP (Low Flight Pattern)  
 Number of Annual Flight Operation Cycles for all Aircraft: 1  
 Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

##### - Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins): 0  
 Approach [Approach] (mins): 0  
 Climb Out [Intermediate] (mins): 0  
 Takeoff [Military] (mins): 672  
 Takeoff [After Burn] (mins): 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

##### - Trim Test

Idle (mins): 0  
 Approach (mins): 0  
 Intermediate (mins): 0  
 Military (mins): 0  
 AfterBurn (mins): 0

### 3.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)  
 TIM: Time in Mode (min)  
 60: Conversion Factor minutes to hours  
 FC: Fuel Flow Rate (lb/hr)  
 1000: Conversion Factor pounds to 1000pounds  
 EF: Emission Factor (lb/1000lb fuel)



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NE: Number of Engines  
FOC: Number of Flight Operation Cycles (for all aircraft)  
2000: Conversion Factor pounds to TONs

## - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)  
 $AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)  
 $AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)  
 $AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)  
 $AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)  
 $AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)  
TD: Test Duration (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
NA: Number of Aircraft  
NTT: Number of Trim Test  
2000: Conversion Factor pounds to TONs

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

$AE_{TRIM}$ : Aircraft Emissions (TONs)  
 $AEPS_{IDLE}$ : Aircraft Emissions for Idle Power Setting (TONs)  
 $AEPS_{APPROACH}$ : Aircraft Emissions for Approach Power Setting (TONs)  
 $AEPS_{INTERMEDIATE}$ : Aircraft Emissions for Intermediate Power Setting (TONs)  
 $AEPS_{MILITARY}$ : Aircraft Emissions for Military Power Setting (TONs)  
 $AEPS_{AFTERBURN}$ : Aircraft Emissions for After Burner Power Setting (TONs)

## 4. Aircraft

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### 4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

#### - Activity Location

**County:** Alcona; Alpena; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
Presque Isle; Roscommon; Sanilac  
**Regulatory Area(s):** Huron Co, MI

- Activity Title: C-130

#### - Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Activity Start Date**

**Start Month:** 9  
**Start Year:** 2023

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.059864
SO <sub>x</sub>	0.139250
NO <sub>x</sub>	1.210300
CO	0.273293
PM 10	0.065070

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.058563
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	420.9

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 4.2 Aircraft & Engines

### 4.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** WC-130H  
**Engine Model:** T56-A-15  
**Primary Function:** Transport - Bomber  
**Aircraft has After burn:** No  
**Number of Engines:** 4

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 4.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	794.00	24.15	1.07	3.90	32.00	0.83	0.75	3234
Approach	1423.00	14.26	1.07	4.40	22.20	0.97	0.87	3234
Intermediate	1825.00	0.58	1.07	9.20	2.40	0.51	0.46	3234
Military	2302.00	0.46	1.07	9.30	2.10	0.50	0.45	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 4.3 Flight Operations

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 4.3.1 Flight Operations Assumptions

### - Flight Operations

<b>Number of Aircraft:</b>		1
<b>Flight Operation Cycle Type:</b>	LFP (Low Flight Pattern)	
<b>Number of Annual Flight Operation Cycles for all Aircraft:</b>		1
<b>Number of Annual Trim Test(s) per Aircraft:</b>		0

- Default Settings Used: No

### - Flight Operations TIMs (Time In Mode)

<b>Taxi [Idle] (mins):</b>	0
<b>Approach [Approach] (mins):</b>	0
<b>Climb Out [Intermediate] (mins):</b>	0
<b>Takeoff [Military] (mins):</b>	1696
<b>Takeoff [After Burn] (mins):</b>	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

### - Trim Test

<b>Idle (mins):</b>	0
<b>Approach (mins):</b>	0
<b>Intermediate (mins):</b>	0
<b>Military (mins):</b>	0
<b>AfterBurn (mins):</b>	0

## 4.3.2 Flight Operations Formula(s)

### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

- AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)
- TIM: Time in Mode (min)
- 60: Conversion Factor minutes to hours
- FC: Fuel Flow Rate (lb/hr)
- 1000: Conversion Factor pounds to 1000pounds
- EF: Emission Factor (lb/1000lb fuel)
- NE: Number of Engines
- FOC: Number of Flight Operation Cycles (for all aircraft)
- 2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

- AE<sub>FOC</sub>: Aircraft Emissions (TONs)
- AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)
- AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)
- AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)
- AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)
- AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)

AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)

AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 5. Aircraft

---

### 5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?    Add

#### - Activity Location

**County:**    Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
                   Presque Isle; Roscommon; Saginaw

**Regulatory Area(s):**    Huron Co, MI

- Activity Title:    C-17

#### - Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

#### - Activity Start Date

**Start Month:**    9

**Start Year:**        2023

#### - Activity End Date

**Indefinite:**        Yes

**End Month:**        N/A

**End Year:**         N/A

#### - Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000709
SO <sub>x</sub>	0.075880
NO <sub>x</sub>	2.484879
CO	0.022693

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.003546
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	229.3

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

PM 10	0.004255
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**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 5.2 Aircraft & Engines

### 5.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** C-17A  
**Engine Model:** F117-PW-100  
**Primary Function:** Transport - Bomber  
**Aircraft has After burn:** No  
**Number of Engines:** 4

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 5.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	978.00	0.37	1.07	3.76	22.70	10.67	9.60	3234
Approach	4645.00	0.05	1.07	15.49	0.51	5.53	4.98	3234
Intermediate	10408.00	0.04	1.07	32.72	0.32	2.31	2.08	3234
Military	13905.00	0.01	1.07	35.04	0.32	0.06	0.05	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 5.3 Flight Operations

### 5.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 153  
**Takeoff [After Burn] (mins):** 0

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

## - Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

## 5.3.2 Flight Operations Formula(s)

### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

$AEM_{POL}$ : Aircraft Emissions per Pollutant & Mode (TONs)  
TIM: Time in Mode (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
FOC: Number of Flight Operation Cycles (for all aircraft)  
2000: Conversion Factor pounds to TONS

### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)  
 $AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)  
 $AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)  
 $AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)  
 $AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)  
 $AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)  
TD: Test Duration (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
NA: Number of Aircraft  
NTT: Number of Trim Test  
2000: Conversion Factor pounds to TONS

### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

$AE_{TRIM}$ : Aircraft Emissions (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)  
 AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)  
 AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)  
 AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)  
 AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 6. Aircraft

---

### 6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?    Add

- Activity Location

**County:**   Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
               Presque Isle; Roscommon; Saginaw  
**Regulatory Area(s):**   Huron Co, MI

- Activity Title:    CH-47

- Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- Activity Start Date

**Start Month:**    9  
**Start Year:**     2023

- Activity End Date

**Indefinite:**     Yes  
**End Month:**    N/A  
**End Year:**     N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000875
SO <sub>x</sub>	0.078060
NO <sub>x</sub>	1.315355
CO	0.021157
PM 10	0.115267

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.103594
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	235.9

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

### 6.2 Aircraft & Engines

#### 6.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Aircraft Designation:** CV-22A  
**Engine Model:** T406-AD-400  
**Primary Function:** Transport - Bomber  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**  
**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

## 6.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	362.00	0.10	1.07	4.15	8.35	1.58	1.42	3234
Approach	663.00	0.02	1.07	6.05	3.47	1.58	1.42	3234
Intermediate	948.00	0.02	1.07	7.87	1.82	1.58	1.42	3234
Military	2507.00	0.01	1.07	18.03	0.29	1.58	1.42	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 6.3 Flight Operations

### 6.3.1 Flight Operations Assumptions

**- Flight Operations**  
**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**  
**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 1746  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**  
**Idle (mins):** 0  
**Approach (mins):** 0  
**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

### 6.3.2 Flight Operations Formula(s)

**- Aircraft Emissions per Mode for Flight Operation Cycles per Year**  
 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)

AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)

AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 7. Aircraft

---

### 7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

#### - Activity Location

**County:** Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Regulatory Area(s):** Huron Co, MI

**- Activity Title:** F-15E

**- Activity Description:**

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

**- Activity Start Date**

**Start Month:** 9

**Start Year:** 2023

**- Activity End Date**

**Indefinite:** Yes

**End Month:** N/A

**End Year:** N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000396
SO <sub>x</sub>	0.003530
NO <sub>x</sub>	0.115491
CO	0.002309
PM 10	0.004091

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.003695
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	10.7

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	0.0

## 7.2 Aircraft & Engines

### 7.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** F-15D

**Engine Model:** F100-PW-100

**Primary Function:** Combat

**Aircraft has After burn:** Yes

**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No

**Original Aircraft Name:**

**Original Engine Name:**

### 7.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	1127.00	3.79	1.07	4.64	49.58	3.13	2.82	3234

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Approach	2765.00	1.06	1.07	12.52	3.99	1.57	1.41	3234
Intermediate	7685.00	0.14	1.07	27.09	0.72	0.72	0.65	3234
Military	10996.00	0.12	1.07	35.01	0.70	1.24	1.12	3234
After Burn	54007.00	0.13	1.07	6.62	9.57	0.87	0.78	3234

## 7.3 Flight Operations

### 7.3.1 Flight Operations Assumptions

#### - Flight Operations

<b>Number of Aircraft:</b>	1
<b>Flight Operation Cycle Type:</b>	LFP (Low Flight Pattern)
<b>Number of Annual Flight Operation Cycles for all Aircraft:</b>	1
<b>Number of Annual Trim Test(s) per Aircraft:</b>	0

- **Default Settings Used:** No

#### - Flight Operations TIMs (Time In Mode)

<b>Taxi [Idle] (mins):</b>	0
<b>Approach [Approach] (mins):</b>	0
<b>Climb Out [Intermediate] (mins):</b>	0
<b>Takeoff [Military] (mins):</b>	18
<b>Takeoff [After Burn] (mins):</b>	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

#### - Trim Test

<b>Idle (mins):</b>	0
<b>Approach (mins):</b>	0
<b>Intermediate (mins):</b>	0
<b>Military (mins):</b>	0
<b>AfterBurn (mins):</b>	0

### 7.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)  
AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)  
AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)  
AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)  
TD: Test Duration (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
NA: Number of Aircraft  
NTT: Number of Trim Test  
2000: Conversion Factor pounds to TONs

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)  
AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)  
AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)  
AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)  
AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)  
AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 8. Aircraft

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### 8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

#### - Activity Location

**County:** Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
Presque Isle; Roscommon; Sanilac

**Regulatory Area(s):** Huron Co, MI

- Activity Title: F-16

#### - Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

#### - Activity Start Date

**Start Month:** 9  
**Start Year:** 2023

#### - Activity End Date

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.117513
SO <sub>x</sub>	0.405609
NO <sub>x</sub>	11.103085
CO	0.125095
PM 10	0.344958

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.310841
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	1225.9

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 8.2 Aircraft & Engines

### 8.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** F-16C  
**Engine Model:** F100-PW-229  
**Primary Function:** Combat  
**Aircraft has After burn:** Yes  
**Number of Engines:** 1

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 8.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	1087.00	0.45	1.07	3.80	10.17	0.67	0.60	3234
Approach	3098.00	0.24	1.07	15.08	1.17	0.70	0.63	3234
Intermediate	5838.00	0.35	1.07	17.54	0.15	0.70	0.63	3234
Military	11490.00	0.31	1.07	29.29	0.33	0.91	0.82	3234
After Burn	20793.00	5.26	1.07	14.30	21.51	0.38	0.35	3234

## 8.3 Flight Operations

### 8.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Flight Operations TIMs (Time In Mode)**

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	3959
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

### 8.3.2 Flight Operations Formula(s)

**- Aircraft Emissions per Mode for Flight Operation Cycles per Year**

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

**- Aircraft Emissions for Flight Operation Cycles per Year**

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

**- Aircraft Emissions per Mode for Trim per Year**

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NTT: Number of Trim Test  
 2000: Conversion Factor pounds to TONS

**- Aircraft Emissions for Trim per Year**

$$AE_{\text{TRIM}} = AEPS_{\text{IDLE}} + AEPS_{\text{APPROACH}} + AEPS_{\text{INTERMEDIATE}} + AEPS_{\text{MILITARY}} + AEPS_{\text{AFTERBURN}}$$

- AE<sub>TRIM</sub>: Aircraft Emissions (TONs)
- AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)
- AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)
- AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)
- AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)
- AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 9. Aircraft

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### 9.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

**County:** Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
 Presque Isle; Roscommon; Sanilac  
**Regulatory Area(s):** Huron Co, MI

**- Activity Title:** MH-60/UH-60

**- Activity Description:**

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

**- Activity Start Date**

**Start Month:** 9  
**Start Year:** 2023

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.002758
SO <sub>x</sub>	0.245895
NO <sub>x</sub>	4.143444
CO	0.066644
PM 10	0.363097

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.326328
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	743.2

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	0.0

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

PM 10	0.000000
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## 9.2 Aircraft & Engines

### 9.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** CV-22A  
**Engine Model:** T406-AD-400  
**Primary Function:** Transport - Bomber  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 9.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	362.00	0.10	1.07	4.15	8.35	1.58	1.42	3234
Approach	663.00	0.02	1.07	6.05	3.47	1.58	1.42	3234
Intermediate	948.00	0.02	1.07	7.87	1.82	1.58	1.42	3234
Military	2507.00	0.01	1.07	18.03	0.29	1.58	1.42	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 9.3 Flight Operations

### 9.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 5500  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**

**Idle (mins):** 0  
**Approach (mins):** 0



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

## 9.3.2 Flight Operations Formula(s)

### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

$AEM_{POL}$ : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONS

### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)

$AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)

$AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

$AE_{TRIM}$ : Aircraft Emissions (TONs)

$AEPS_{IDLE}$ : Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$ : Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$ : Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$ : Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$ : Aircraft Emissions for After Burner Power Setting (TONs)

## 10. Aircraft

---

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 10.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

**- Activity Location**

**County:** Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac  
**Regulatory Area(s):** Huron Co, MI

- Activity Title: AH-1

**- Activity Description:**

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

**- Activity Start Date**

**Start Month:** 9  
**Start Year:** 2023

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.004194
SO <sub>x</sub>	0.008467
NO <sub>x</sub>	0.056026
CO	0.042415
PM 10	0.002057

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.001820
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	25.6

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 10.2 Aircraft & Engines

### 10.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** C-12J  
**Engine Model:** PT6A-65B  
**Primary Function:** General - Turboprop  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Engine Name:

## 10.2.2 Aircraft & Engines Emission Factor(s)

### - Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	131.43	53.66	1.07	1.89	166.43	1.23	1.11	3234
Approach	339.89	3.31	1.07	4.59	20.86	0.74	0.67	3234
Intermediate	570.64	0.72	1.07	6.69	6.72	0.29	0.26	3234
Military	633.06	0.53	1.07	7.08	5.36	0.26	0.23	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 10.3 Flight Operations

### 10.3.1 Flight Operations Assumptions

#### - Flight Operations

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

#### - Flight Operations TIMs (Time In Mode)

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 750  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

#### - Trim Test

**Idle (mins):** 0  
**Approach (mins):** 0  
**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

### 10.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)

$AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)

$AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

$AE_{TRIM}$ : Aircraft Emissions (TONs)

$AEPS_{IDLE}$ : Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$ : Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$ : Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$ : Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$ : Aircraft Emissions for After Burner Power Setting (TONs)

## 11. Aircraft

---

### 11.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

#### - Activity Location

**County:** Alcona; Arenac; Alpena; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
Presque Isle; Roscommon; Sanilac

**Regulatory Area(s):** Huron Co, MI

- Activity Title: B-52

#### - Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- Activity Start Date

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Start Month:** 9  
**Start Year:** 2023

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.016765
SO <sub>x</sub>	0.051252
NO <sub>x</sub>	0.526891
CO	0.062269
PM 10	0.383194

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.344874
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	154.9

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 11.2 Aircraft & Engines

### 11.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** B-52H  
**Engine Model:** TF33-P-3  
**Primary Function:** Transport - Bomber  
**Aircraft has After burn:** No  
**Number of Engines:** 8

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 11.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	846.00	105.76	1.07	1.77	88.53	5.20	4.68	3234
Approach	3797.00	4.36	1.07	7.30	9.01	13.98	12.59	3234
Intermediate	7323.00	0.46	1.07	9.00	1.80	14.00	12.60	3234
Military	9979.00	0.35	1.07	11.00	1.30	8.00	7.20	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 11.3 Flight Operations

### 11.3.1 Flight Operations Assumptions

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Flight Operations**

<b>Number of Aircraft:</b>		1
<b>Flight Operation Cycle Type:</b>	LFP (Low Flight Pattern)	
<b>Number of Annual Flight Operation Cycles for all Aircraft:</b>		1
<b>Number of Annual Trim Test(s) per Aircraft:</b>		0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

<b>Taxi [Idle] (mins):</b>		0
<b>Approach [Approach] (mins):</b>		0
<b>Climb Out [Intermediate] (mins):</b>		0
<b>Takeoff [Military] (mins):</b>		72
<b>Takeoff [After Burn] (mins):</b>		0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**

<b>Idle (mins):</b>		0
<b>Approach (mins):</b>		0
<b>Intermediate (mins):</b>		0
<b>Military (mins):</b>		0
<b>AfterBurn (mins):</b>		0

### 11.3.2 Flight Operations Formula(s)

**- Aircraft Emissions per Mode for Flight Operation Cycles per Year**

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

- AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)
- TIM: Time in Mode (min)
- 60: Conversion Factor minutes to hours
- FC: Fuel Flow Rate (lb/hr)
- 1000: Conversion Factor pounds to 1000pounds
- EF: Emission Factor (lb/1000lb fuel)
- NE: Number of Engines
- FOC: Number of Flight Operation Cycles (for all aircraft)
- 2000: Conversion Factor pounds to TONs

**- Aircraft Emissions for Flight Operation Cycles per Year**

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

- AE<sub>FOC</sub>: Aircraft Emissions (TONs)
- AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)
- AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)
- AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)
- AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)
- AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

**- Aircraft Emissions per Mode for Trim per Year**

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

- AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

TD: Test Duration (min)  
 60: Conversion Factor minutes to hours  
 FC: Fuel Flow Rate (lb/hr)  
 1000: Conversion Factor pounds to 1000pounds  
 EF: Emission Factor (lb/1000lb fuel)  
 NE: Number of Engines  
 NA: Number of Aircraft  
 NTT: Number of Trim Test  
 2000: Conversion Factor pounds to TONS

**- Aircraft Emissions for Trim per Year**

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)  
 AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)  
 AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)  
 AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)  
 AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)  
 AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 12. Aircraft

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### 12.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?**      Remove

**- Activity Location**

**County:**   Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac

**Regulatory Area(s):**   Huron Co, MI

**- Activity Title:**    CV-22

**- Activity Description:**

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

**- Activity Start Date**

**Start Month:**    9  
**Start Year:**      2023

**- Activity End Date**

**Indefinite:**      Yes  
**End Month:**     N/A  
**End Year:**        N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	-0.000080
SO <sub>x</sub>	-0.007153
NO <sub>x</sub>	-0.120537
CO	-0.001939
PM 10	-0.010563

Pollutant	Emissions Per Year (TONs)
PM 2.5	-0.009493
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	-21.6

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	0.0

## 12.2 Aircraft & Engines

### 12.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** CV-22A  
**Engine Model:** T406-AD-400  
**Primary Function:** Transport - Bomber  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 12.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	362.00	0.10	1.07	4.15	8.35	1.58	1.42	3234
Approach	663.00	0.02	1.07	6.05	3.47	1.58	1.42	3234
Intermediate	948.00	0.02	1.07	7.87	1.82	1.58	1.42	3234
Military	2507.00	0.01	1.07	18.03	0.29	1.58	1.42	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 12.3 Flight Operations

### 12.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 160  
**Takeoff [After Burn] (mins):** 0



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

## - Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

## 12.3.2 Flight Operations Formula(s)

### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

$AEM_{POL}$ : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)

$AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)

$AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

$AE_{TRIM}$ : Aircraft Emissions (TONs)

$AEPS_{IDLE}$ : Aircraft Emissions for Idle Power Setting (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)  
 AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)  
 AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)  
 AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 13. Aircraft

### 13.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

**County:** Alpena; Alpena; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac  
**Regulatory Area(s):** Huron Co, MI

- Activity Title: F/A-18E

- Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- Activity Start Date

**Start Month:** 9  
**Start Year:** 2023

- Activity End Date

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.001558
SO <sub>x</sub>	0.083359
NO <sub>x</sub>	2.012310
CO	0.115301
PM 10	0.125429

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.112964
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	251.9

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

### 13.2 Aircraft & Engines

#### 13.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

**Aircraft Designation:** TF/A-18A

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Engine Model:** F404-GE-400  
**Primary Function:** Combat  
**Aircraft has After burn:** Yes  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**  
**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

## 13.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	685.00	3.39	1.07	1.70	110.18	4.47	4.02	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	1.31	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	1.42	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	1.45	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

## 13.3 Flight Operations

### 13.3.1 Flight Operations Assumptions

**- Flight Operations**  
**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**  
**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 604  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**  
**Idle (mins):** 0  
**Approach (mins):** 0  
**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

### 13.3.2 Flight Operations Formula(s)

**- Aircraft Emissions per Mode for Flight Operation Cycles per Year**  
 $AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AE_{PS_{POL}} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AE<sub>PS<sub>POL</sub></sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AE_{PS_{IDLE}} + AE_{PS_{APPROACH}} + AE_{PS_{INTERMEDIATE}} + AE_{PS_{MILITARY}} + AE_{PS_{AFTERBURN}}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AE<sub>PS<sub>IDLE</sub></sub>: Aircraft Emissions for Idle Power Setting (TONs)

AE<sub>PS<sub>APPROACH</sub></sub>: Aircraft Emissions for Approach Power Setting (TONs)

AE<sub>PS<sub>INTERMEDIATE</sub></sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AE<sub>PS<sub>MILITARY</sub></sub>: Aircraft Emissions for Military Power Setting (TONs)

AE<sub>PS<sub>AFTERBURN</sub></sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 14. Aircraft

---

### 14.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

#### - Activity Location

**County:** Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego; Presque Isle; Roscommon; Sanilac

**Regulatory Area(s):** Huron Co, MI

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Activity Title:** F-35A

**- Activity Description:**

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

**- Activity Start Date**

**Start Month:** 9  
**Start Year:** 2023

**- Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.158599
NO <sub>x</sub>	3.260915
CO	0.059289
PM 10	0.173421

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.155635
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	479.4

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2</sub> e	0.0

## 14.2 Aircraft & Engines

### 14.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** F-35A  
**Engine Model:** F135-PW-100  
**Primary Function:** Combat  
**Aircraft has After burn:** Yes  
**Number of Engines:** 1

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 14.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## 14.3 Flight Operations

### 14.3.1 Flight Operations Assumptions

**- Flight Operations**

<b>Number of Aircraft:</b>		1
<b>Flight Operation Cycle Type:</b>	LFP (Low Flight Pattern)	
<b>Number of Annual Flight Operation Cycles for all Aircraft:</b>		1
<b>Number of Annual Trim Test(s) per Aircraft:</b>		0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

<b>Taxi [Idle] (mins):</b>	0
<b>Approach [Approach] (mins):</b>	0
<b>Climb Out [Intermediate] (mins):</b>	0
<b>Takeoff [Military] (mins):</b>	936
<b>Takeoff [After Burn] (mins):</b>	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**

<b>Idle (mins):</b>	0
<b>Approach (mins):</b>	0
<b>Intermediate (mins):</b>	0
<b>Military (mins):</b>	0
<b>AfterBurn (mins):</b>	0

### 14.3.2 Flight Operations Formula(s)

**- Aircraft Emissions per Mode for Flight Operation Cycles per Year**

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

**- Aircraft Emissions for Flight Operation Cycles per Year**

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Aircraft Emissions per Mode for Trim per Year**

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

- AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)
- TD: Test Duration (min)
- 60: Conversion Factor minutes to hours
- FC: Fuel Flow Rate (lb/hr)
- 1000: Conversion Factor pounds to 1000pounds
- EF: Emission Factor (lb/1000lb fuel)
- NE: Number of Engines
- NA: Number of Aircraft
- NTT: Number of Trim Test
- 2000: Conversion Factor pounds to TONS

**- Aircraft Emissions for Trim per Year**

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

- AE<sub>TRIM</sub>: Aircraft Emissions (TONs)
- AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)
- AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)
- AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)
- AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)
- AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 15. Aircraft

---

### 15.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?**    Add

**- Activity Location**

**County:**    Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Presque Isle; Roscommon; Sanilac; Otsego  
**Regulatory Area(s):**    Huron Co, MI

**- Activity Title:**    EA-18G

**- Activity Description:**

Total change in minutes below 3,000 feel AGL across all SUA. See detailed tables at end of air quality appendix.

**- Activity Start Date**

**Start Month:**    9  
**Start Year:**    2023

**- Activity End Date**

**Indefinite:**    Yes  
**End Month:**    N/A  
**End Year:**    N/A

**- Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000650
SO <sub>x</sub>	0.034779

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.047131
Pb	0.000000

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

NO <sub>x</sub>	0.839573
CO	0.048106
PM 10	0.052331

NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	105.1

**- Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 15.2 Aircraft & Engines

### 15.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** F/A-18E  
**Engine Model:** F414-GE-400  
**Primary Function:** Combat  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 15.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
Idle	685.00	3.39	1.07	1.70	110.18	4.47	4.02	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	1.31	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	1.42	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	1.45	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

## 15.3 Flight Operations

### 15.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0



# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**Takeoff [Military] (mins):** 252  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

## - Trim Test

**Idle (mins):** 0  
**Approach (mins):** 0  
**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

## 15.3.2 Flight Operations Formula(s)

### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

$AEM_{POL}$ : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

$AE_{FOC}$ : Aircraft Emissions (TONs)

$AEM_{IDLE\_IN}$ : Aircraft Emissions for Idle-In Mode (TONs)

$AEM_{IDLE\_OUT}$ : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$ : Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$ : Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$ : Aircraft Emissions for Take-Off Mode (TONs)

### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$ : Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AETRIM: Aircraft Emissions (TONs)  
 AEPSIDLE: Aircraft Emissions for Idle Power Setting (TONs)  
 AEPSAPPROACH: Aircraft Emissions for Approach Power Setting (TONs)  
 AEPSINTERMEDIATE: Aircraft Emissions for Intermediate Power Setting (TONs)  
 AEPSMILITARY: Aircraft Emissions for Military Power Setting (TONs)  
 AEPSAFTERBURN: Aircraft Emissions for After Burner Power Setting (TONs)

## 16. Aircraft

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### 16.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?    Add

- Activity Location

**County:**   Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Roscommon; Presque Isle;  
                   Sanilac; Otsego; Oscoda; Ogemaw  
**Regulatory Area(s):**   Huron Co, MI

- Activity Title:    T-1

- Activity Description:

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- Activity Start Date

**Start Month:**   9  
**Start Year:**     2023

- Activity End Date

**Indefinite:**     Yes  
**End Month:**    N/A  
**End Year:**     N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.009418
NO <sub>x</sub>	0.097966
CO	0.000000
PM 10	0.001135

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.001021
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	28.5

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

### 16.2 Aircraft & Engines

#### 16.2.1 Aircraft & Engines Assumptions

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**- Aircraft & Engine**

**Aircraft Designation:** T-1A  
**Engine Model:** JT15D-5B  
**Primary Function:** Trainer  
**Aircraft has After burn:** No  
**Number of Engines:** 2

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

## 16.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	235.50	136.97	1.07	1.66	119.20	0.82	0.74	3234
Approach	524.00	13.46	1.07	4.93	38.60	0.73	0.66	3234
Intermediate	1371.00	1.50	1.07	10.08	1.15	0.23	0.21	3234
Military	1630.00	0.00	1.07	11.13	0.00	0.13	0.12	3234
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3234

## 16.3 Flight Operations

### 16.3.1 Flight Operations Assumptions

**- Flight Operations**

**Number of Aircraft:** 1  
**Flight Operation Cycle Type:** LFP (Low Flight Pattern)  
**Number of Annual Flight Operation Cycles for all Aircraft:** 1  
**Number of Annual Trim Test(s) per Aircraft:** 0

**- Default Settings Used:** No

**- Flight Operations TIMs (Time In Mode)**

**Taxi [Idle] (mins):** 0  
**Approach [Approach] (mins):** 0  
**Climb Out [Intermediate] (mins):** 0  
**Takeoff [Military] (mins):** 324  
**Takeoff [After Burn] (mins):** 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

**- Trim Test**

**Idle (mins):** 0  
**Approach (mins):** 0  
**Intermediate (mins):** 0  
**Military (mins):** 0  
**AfterBurn (mins):** 0

### 16.3.2 Flight Operations Formula(s)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

## - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)

AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)

AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 17. Aircraft

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### 17.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

**County:** Alpena; Alcona; Arenac; Crawford; Huron; Iosco; Montmorency; Ogemaw; Oscoda; Otsego;  
 Presque Isle; Roscommon; Sanilac  
**Regulatory Area(s):** Huron Co, MI

- **Activity Title:** AV-8B

- **Activity Description:**

Total change in minutes below 3,000 feet AGL across all SUA. See detailed tables at end of air quality appendix.

- **Activity Start Date**

**Start Month:** 9  
**Start Year:** 2023

- **Activity End Date**

**Indefinite:** Yes  
**End Month:** N/A  
**End Year:** N/A

- **Activity Emissions:**

Pollutant	Emissions Per Year (TONs)
VOC	0.012555
SO <sub>x</sub>	0.122126
NO <sub>x</sub>	3.917173
CO	0.063917
PM 10	0.189467

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.170064
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	369.1

- **Activity Emissions [Aerospace Ground Equipment (AGE) part]:**

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO <sub>x</sub>	0.000000
NO <sub>x</sub>	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH <sub>3</sub>	0.000000
CO <sub>2e</sub>	0.0

## 17.2 Aircraft & Engines

### 17.2.1 Aircraft & Engines Assumptions

- **Aircraft & Engine**

**Aircraft Designation:** NF-16A  
**Engine Model:** F100-PW-200  
**Primary Function:** Combat  
**Aircraft has After burn:** Yes  
**Number of Engines:** 1

- **Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** No  
**Original Aircraft Name:**  
**Original Engine Name:**

### 17.2.2 Aircraft & Engines Emission Factor(s)

- **Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2e</sub>
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# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Idle	1006.00	2.05	1.07	6.21	24.06	2.47	2.22	3234
Approach	3251.00	0.05	1.07	17.93	1.22	2.37	2.13	3234
Intermediate	5651.00	0.07	1.07	26.55	0.38	1.58	1.42	3234
Military	8888.00	0.11	1.07	34.32	0.56	1.66	1.49	3234
After Burn	40123.00	0.69	1.07	6.63	10.42	3.07	2.76	3234

## 17.3 Flight Operations

### 17.3.1 Flight Operations Assumptions

#### - Flight Operations

Number of Aircraft:	1
Flight Operation Cycle Type:	LFP (Low Flight Pattern)
Number of Annual Flight Operation Cycles for all Aircraft:	1
Number of Annual Trim Test(s) per Aircraft:	0

- Default Settings Used: No

#### - Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	1541
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

#### - Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

### 17.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for Flight Operation Cycles per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

FOC: Number of Flight Operation Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for Flight Operation Cycles per Year

$$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>FOC</sub>: Aircraft Emissions (TONs)

# DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)  
AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)  
AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)  
AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)  
AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

## - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)  
TD: Test Duration (min)  
60: Conversion Factor minutes to hours  
FC: Fuel Flow Rate (lb/hr)  
1000: Conversion Factor pounds to 1000pounds  
EF: Emission Factor (lb/1000lb fuel)  
NE: Number of Engines  
NA: Number of Aircraft  
NTT: Number of Trim Test  
2000: Conversion Factor pounds to TONs

## - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)  
AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)  
AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)  
AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)  
AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)  
AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## Summary Table of ACAM Aircraft Inputs

Aircraft	Total Minutes	Rounded Minutes	Noise Aircraft	Noise Engine	Air Aircraft	Air Engine	Surrogate?
A-10	30,090	30,090	A-10A	TF34-GE-100	A-10A	TF34-GE-100	No
AC-130	672	672	C-130 H&N&P	T56-A-15	AC-130H	T56-A-15	No
AH-1	750	750	AH-1G	T53-L-13	C-12J	PT6A-65B	Yes +
AV-8B	1,540.5	1,541	AV-8B	F402-FF-405	F-16A	F100-PW-200	Yes +
B-2	0	0	—	—	—	—	—
B-52	72	72	B-52H	TF33-P-3	B-52H	TF33-P-3	No
C-130	1,695.2	1,696	C-130 H&N&P	T56-A-15	WC-130H	T56-A-15	No
C-17	152.0286	153	C-17	F117-PW-100	C-17A	F117-PW-100	No
CH-47	1746	1,746	CH-47D	T55-L-712	CV-22A	T406-AD-400	Yes +
CV-22	-160	-160	CH-47D	T55 Turbo	CV-22A	T406-AD-400	No
EA-18G	252	252	F-18E/F	F414-GE-400	F/A-18E	F414-GE-400	No
F-15E	17.28	18	F-15E	F100-PW-100	F-15D	F100-PW-100	No
F-16	3,958.5	3,959	F-16C	PW229	F-16C	F100-PW-229	No
F-35A	936	936	F-35A	F-135-PW-100	F-35A	F135-PW-100	No
FA-18A	604	604	F-18A/C	F404-GE-400&402	F/A-18A	F404-GE-400	No
KC-135	0	0	—	—	—	—	—
MC-12	0	0	—	—	—	—	—
MH-60/	5,500	5,500	UH-60A	T700-CE-700	CV-22A	T-406-AD-400	Yes +
UH-60	324	324	T-1	JT15D-5	T-1A	JT15D-5B	No
T-1	672	672	C-130 H&N&P	T56-A-15	AC-130H	T56-A-15	No
	<b>48,149.51</b>	<b>48,153</b>					



## Detailed Utilization Tables to Determine ACAM Aircraft Inputs

Aircraft	Baseline Sorties	Baseline Time (Min/Sorties)	Proposed Sorties	Proposed Time (Min/Sorties)	Utilization <3,000 ft AGL	Baseline Time <3,000 ft AGL	Proposed Time <3,000 ft AGL	Change in Minutes <3,000 ft AGL
<b>Grayling West MOA<sup>1</sup></b>								
A-10*	0	0	75	30	75%	0	1,687.5	1,687.5
A-10	0	0	1,190	10	60%	0	7,140	7,140
F-16*	0	0	80	30	57%	0	1,368	1,368
F-16	0	0	18	5	50%	0	45	45
B-2	0	0	5	30	0%	0	0	0
B-52H	0	0	40	60	0%	0	0	0
AV-8B	0	0	45	25	75%	0	843.75	843.75
C-17	0	0	5	15	80%	0	60	60
C-130	0	0	50	15	80%	0	600	600
EA-18G	0	0	5	25	0%	0	0	0
MC-12	0	0	5	60	0%	0	0	0
MH-60/ UH-60	0	0	50	45	100%	0	2,250	2,250
CH-47	0	0	25	60	100%	0	1,500	1,500
AC-130	0	0	10	60	70%	0	420	420
<b>R-4102A<sup>2</sup></b>								
A-10*	66	23	75	20	75%	11,38.5	1,125	-13.5
A-10	1,320	27	1,190	20	40%	14,256	9,520	-4,736
F-16*	50	23	80	20	57%	655.5	912	256.5
F-16	231	27	165	20	20%	1247.4	660	-587.4
B-2	1	18	5	20	0%	0	0	0
B-52H	20	95	40	80	0%	0	0	0
AV-8B	28	14	45	17	75%	294	573.75	279.75
C-17	2	9	5	10	100%	18	50	32
C-130	7	14	50	10	100%	98	500	402
EA-18G	0	0	5	17	0%	0	0	0
MC-12	3	104	5	80	0%	0	0	0
MH-60/ UH-60	35	36	50	30	100%	1,260	1,500	240
CH-47	19	59	25	40	100%	1,121	1,000	-121
AC-130	8	162	10	121	70%	907.2	847	-60.2

Aircraft	Baseline Sorties	Baseline Time (Min/Sorties)	Proposed Sorties	Proposed Time (Min/Sorties)	Utilization <3,000 ft AGL	Baseline Time <3,000 ft AGL	Proposed Time <3,000 ft AGL	Change in Minutes <3,000 ft AGL
<b>R-4102B<sup>3</sup></b>								
A-10*	66	3	75	10	75%	148.5	562.5	414
A-10	0	1	1190	2	40%	0	952	952
F-16*	50	3	80	10	57%	85.5	456	370.5
F-16	77	1	55	3	20%	15.4	33	17.6
B-2	1	2	5	10	0%	0	0	0
B-52H	20	11	40	40	0%	0	0	0
AV-8B	28	2	45	8	75%	42	270	228
C-17	2	1	5	5	100%	2	25	23
C-130	7	2	50	5	100%	14	250	236
EA-18G	0	0	5	8	0%	0	0	0
MC-12	3	12	5	40	0%	0	0	0
MH-60/ UH-60	35	4	50	15	100%	140	750	610
CH-47	19	7	25	20	100%	133	500	367
AC-130	8	18	10	59	70%	100.8	413	312.2
<b>Pike East<sup>4</sup></b>								
A-10	40	95	40	90	85%	3,230	3,060	-170
AH-1	10	240	10	240	100%	2,400	2,400	0
B-52	48	165	70	120	15%	1,188	1,260	72
EA-18G	13	120	20	120	30%	468	720	252
F-16	66	95	100	40	55%	3,448.5	2,200	-1,248.5
F-16	3	5	3	5	20%	3	3	0
FA-18A	7	35	15	35	55%	134.75	288.75	154
KC-135	27	270	40	270	0%	0	0	0
MH-60	70	190	70	190	100%	13300	13,300	0
C-130	8	180	10	180	55%	792	990	198
CV-22	13	220	15	180	100%	2860	2,700	-160
F-35A	2	30	80	30	40%	24	960	936
MC-12	1	120	5	120	0%	0	0	0

Aircraft	Baseline Sorties	Baseline Time (Min/Sorties)	Proposed Sorties	Proposed Time (Min/Sorties)	Utilization <3,000 ft AGL	Baseline Time <3,000 ft AGL	Proposed Time <3,000 ft AGL	Change in Minutes <3,000 ft AGL
<b>Steelhead Low East<sup>5</sup></b>								
A-10*	0	0	180	45	100%	0	8,100	8,100
A-10	0	0	690	15	100%	0	10,350	10,350
AH-1	0	0	10	60	100%	0	600	600
F-16*	0	0	60	30	100%	0	1,800	1,800
F-16	0	0	30	10	100%	0	300	300
FA-18A	0	0	10	30	100%	0	300	300
MH-60	0	0	40	45	100%	0	1,800	1,800
<b>Steelhead Low North<sup>6</sup></b>								
A-10*	0	0	180	15	100%	0	2,700	2,700
A-10	0	0	690	5	100%	0	3,450	3,450
AH-1	0	0	10	15	100%	0	150	150
F-16*	0	0	60	15	100%	0	900	900
F-16	0	0	30	10	100%	0	300	300
FA-18A	0	0	10	15	100%	0	150	150
MH-60	0	0	40	15	100%	0	600	600
<b>VR-1601/1602<sup>7</sup></b>								
A-10	0	0	35	216	100%	0	216	216
AV-8B	0	0	35	189	100%	0	189	189
F-15E	0	0	4	17.28	100%	0	17.28	17.28
F-16	0	0	30	129.6	100%	0	129.6	129.6
F-16	0	0	64	307.2	100%	0	307.2	307.2
C-130	0	0	30	259.2	100%	0	259.2	259.2
C-17	0	0	6	37.02857143	100%	0	37.02857143	37.02857143
T-1	0	0	30	324	100%	0	324	324
<b>Grand Total</b>								<b>48,149.51</b>

## Notes:

- <sup>1</sup> Grayling West MOA utilization includes blocks at 500–999 feet AGL, 1,000–2,999 feet MSL, and 3,000–7,999 feet MSL. Therefore, utilization is conservative as aircraft sorties would extend above the mixing level of 3,000 feet AGL.
- <sup>2</sup> R-4201A utilization includes blocks at 0–99 feet AGL; 100–499 feet AGL; 500–1,999 feet MSL; and 2,000–4,999 feet MSL. Therefore, utilization is conservative as aircraft sorties would extend well above the mixing level of 3,000 feet AGL.
- <sup>3</sup> R-4201B utilization includes blocks at 0–99 feet AGL; 100–499 feet AGL; 500–1,999 feet MSL; and 2,000–4,999 feet MSL. Therefore, utilization is conservative as aircraft sorties would extend well above the mixing level of 3,000 feet AGL.
- <sup>4</sup> Pike East MOA utilization includes blocks at 300–499 feet AGL; 500–999 feet AGL; 1,000 feet AGL–2,999 feet MSL; and 3,000–4,999 feet MSL. Therefore, utilization is conservative as aircraft sorties would extend well above the mixing level of 3,000 feet AGL.
- <sup>5</sup> Steelhead Low East utilization included 100% of proposed sorties because the topmost altitude block included 3,000–5,999 feet MSL. Therefore, utilization is conservative as aircraft sorties would extend well above the mixing level of 3,000 feet AGL.
- <sup>6</sup> Steelhead Low North utilization included 100% of proposed sorties because the topmost altitude block included 3,000–5,999 feet MSL. Therefore, utilization is conservative as aircraft sorties would extend well above the mixing level of 3,000 feet AGL.
- <sup>7</sup> VR-1601/1602 utilization included 100% of proposed sorties because the entire MTR would be below 3,000 feet AGL.

## Proposed Flare Deployment

Metric	VOC (tpy)	NO <sub>x</sub> (tpy)	CO (tpy)	SO <sub>x</sub> (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	CO <sub>2</sub> (tpy)
EF for L410 Explosive (in pounds per item)	0.0004	0.00013	0.0013	0.000007 9	0.0062	0.0062	0.0110
Emissions (tpy)	0.0004	0.0001	0.001	0.000008	0.006	0.006	0.01

(USEPA, 2009)

Note: Change in deployed flares below 3,000 feet includes +208 in Steelhead Low North, +208 in Steelhead Low East, and +1,500 generalized distribution across proposed SUA as a maximum impact scenario, for a total of +1,916 flares.

Emissions (tpy) = No. Flares per year × EF ÷ 2,000 pounds.

Key: CO = carbon monoxide; CO<sub>2</sub> = carbon dioxide; EF = Emissions Factor; NO<sub>x</sub> = nitrogen oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 micrometers; PM<sub>10</sub> = particulate matter less than or equal to 10 micrometers; SO<sub>x</sub> = sulfur oxides; tpy = tons per year; VOC = volatile organic compounds, using total nonmethane hydrocarbons.

## Proposed Chaff Deployment

As criteria air pollutants, PM<sub>10</sub> and PM<sub>2.5</sub> emissions are monitored for their potentially adverse effects on human health and safety. Diameter of chaff is approximately 25 micrometers, which is larger than regulated particulates. The silicon dioxide within the silica core accounts for an average of 54% by weight of a chaff bundle, and the weight of all chaff materials in a bundle is 0.33 pounds (USAF, 2023a; Naval Research Laboratory, 1999).

If we assume the chaff silica dipoles were respirable particulates:

Existing Particulate Emissions = 0.33 pounds × 54% × 5,103 total chaff bundles ÷ 2,000 pounds =  
0.46 tons per year

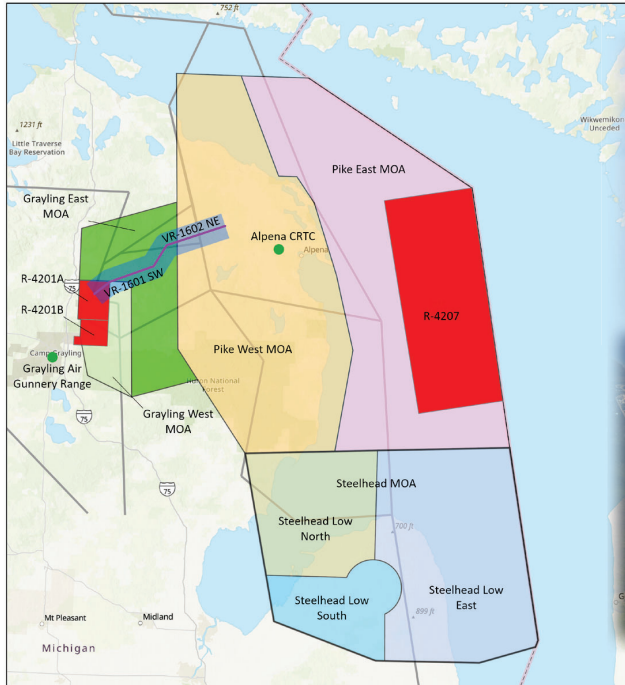
Proposed Particulate Emissions = 0.33 pounds × 54% × 6,103 total chaff bundles ÷ 2,000 pounds =  
0.54 tons per year

Therefore, the change in silica particulate emissions would be an increase of approximately 0.08 tons per year. This would not be locally or regionally significant. Furthermore, extreme abrasion would need to degrade the dipoles from 25 micrometers to less than 10 micrometers and distributed across the entire Alpena SUA for these emissions to be respirable.

# **Appendix L**

## **Noise Analysis Report**

Final  
Noise Analysis Report  
Modification and Addition of Airspace at the  
Alpena Special Use Airspace Complex



Michigan Air National Guard  
Alpena Combat Readiness Training Center  
Alpena, Michigan



November 2023



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*Cover graphics: (Left) Points of Interest within Alpena SUA Complex; (Upper Right) A-10 Thunderbolt at the Grayling Range (Public Affairs 2019); (Lower Right) F-16 Fighting Falcon over Mackinaw Bridge, Michigan (180 FW 2015)*

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## Acronyms and Abbreviations

%HA	Percent Highly Annoyed
127 WG	127th Wing
180 FW	180th Fighter Wing
AGL	above ground level
ANG	Air National Guard
ANGB	Air National Guard Base
CRTC	Combat Readiness Training Center
dB	decibels
dBA	A-weighted decibels
DNL	Day-Night Average Sound Level
DOD	Department of Defense
DODI	Department of Defense Instruction
EA	Environmental Assessment
FAA	Federal Aviation Administration
FL	Flight Level
IFR	Instrument Flight Rules
Ldnmr	Onset-Adjusted Monthly DNL
Lmax	Maximum Sound Level
LFE	Large Force Exercise
MIANG	Michigan Air National Guard
MOA	Military Operations Area
MSL	mean sea level
MTR	military training route
NGB	National Guard Bureau
R-/RA	Restricted Area
SUA	Special Use Airspace
VR	Visual Route

## Section 1. Introduction and Airspace Descriptions

### 1.1 Introduction

This Noise Analysis Report is in support of the Environmental Assessment (EA) for the Modification of the Alpena Special Use Airspace (SUA) Complex. Specifically, this report includes noise modeling to identify the noise exposure and associated effects from the operations conducted in the SUA complex under baseline (or existing) conditions, the Proposed Action, two action alternatives, and the No Action Alternative.

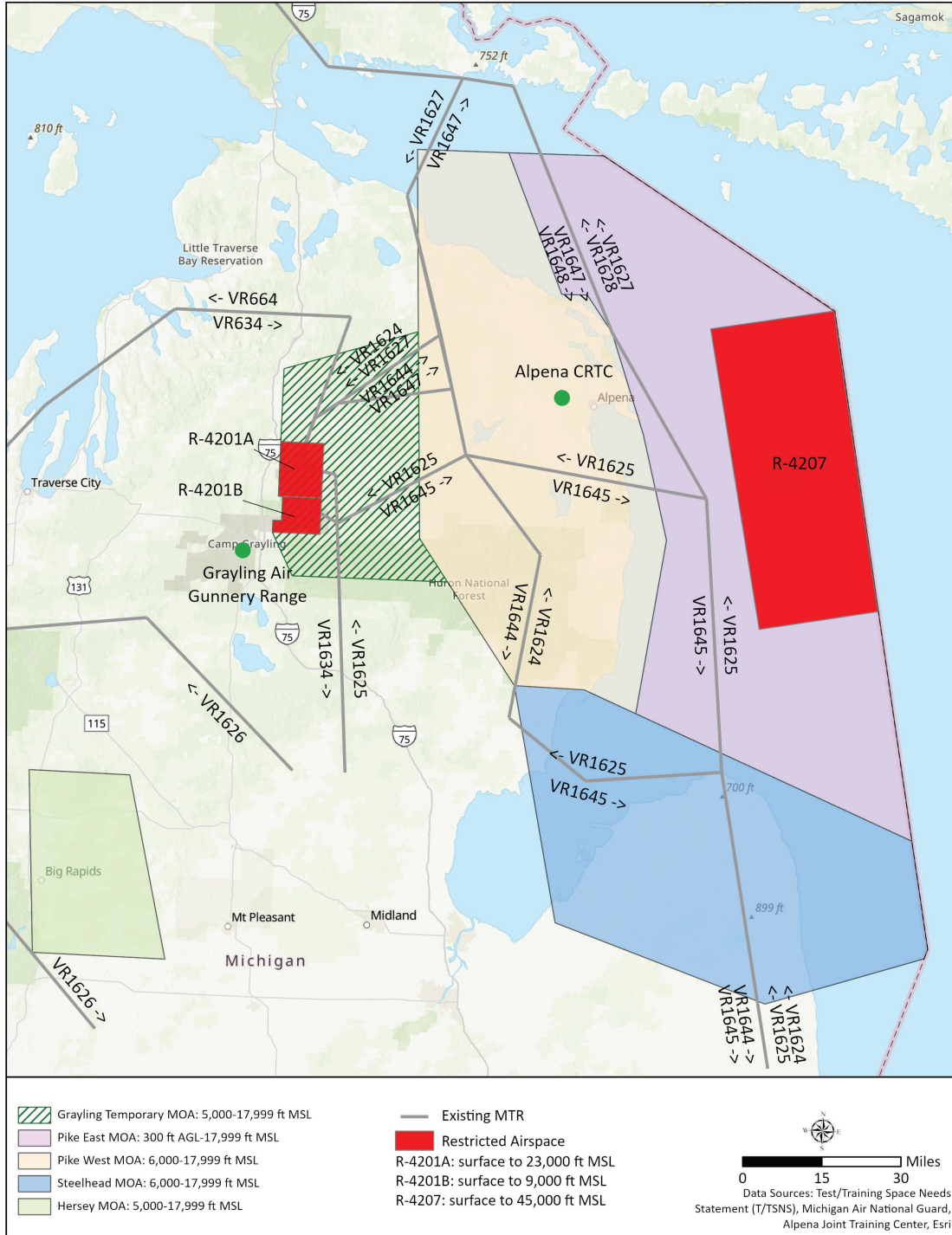
This Noise Analysis Report has been prepared in accordance with Department of Defense (DOD) Instruction (DODI) 4715.13, *DoD Operational Noise Program*, and Federal Aviation Administration (FAA) Order 1050.1F, *Appendix B. Federal Aviation Administration Requirements for Assessing Impacts Related to Noise and Noise-Compatible Land Use and Section 4(f) of the Department of Transportation Act (49 USC § 303)*.

### 1.2 Military Operations Area and Air Traffic Control Assigned Airspace

The Alpena Combat Readiness Training Center (CRTC) is at the Alpena County Regional Airport in Alpena, Michigan. The CRTC schedules and hosts local, regional, and deployed unit training exercises within the existing Alpena Complex. The Alpena Complex is over Lake Huron and all or parts of the following Michigan counties: Alcona, Alpena, Arenac, Cheboygan, Crawford, Huron, Iosco, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, Sanilac, and Tuscola.

Figure 1 shows the existing Military Operations Areas (MOAs) within the Alpena Complex and Restricted Areas (RA; R-) associated with the Grayling Air Gunnery Range (“Grayling Range”). The existing SUA charted below Class A airspace, which begins at 18,000 feet above mean sea level (MSL), includes the Pike East MOA, Pike West MOA, and Steelhead MOA, as well as Hersey MOA to the south that can be used due to inclement weather. The Grayling Temporary MOA is requested for annual activation during large force exercises (LFEs); as a temporary MOA, it is uncharted. Existing SUA with an operational floor below 500 feet above ground level (AGL) includes R-4201A/B surrounding the Grayling Range and the Pike East MOA over Lake Huron. Other than R-4201A/B, there is no overland SUA with an operational floor below 500 feet AGL in the Alpena SUA Complex; therefore, all current low-altitude training in the region is concentrated at this location. In addition, the Alpena SUA Complex includes five air traffic control assigned airspace (ATCAA) segments—Molson, Lumberjack, Firebird, Steelhead, and Garland—all beginning at Flight Level (FL) 180 (18,000 feet) within ATCAAs, and rising to different altitudes, depending on the designated use. R-4201A/Grayling Range is the primary training range for the 180th Fighter Wing (180 FW) and the 127th Wing (127 WG) and visiting units that regularly access Alpena CRTC. Currently, there are eight military training routes (MTRs) between Grayling Range and Alpena CRTC.

**Figure 1 Location of Alpena Combat Readiness Training Center and Extent of Existing Alpena Special Use Airspace Complex**



The National Guard Bureau (NGB) and the Michigan Air National Guard (MIANG) propose to modify and expand the existing airspace complex as follows (see also Figure 2):

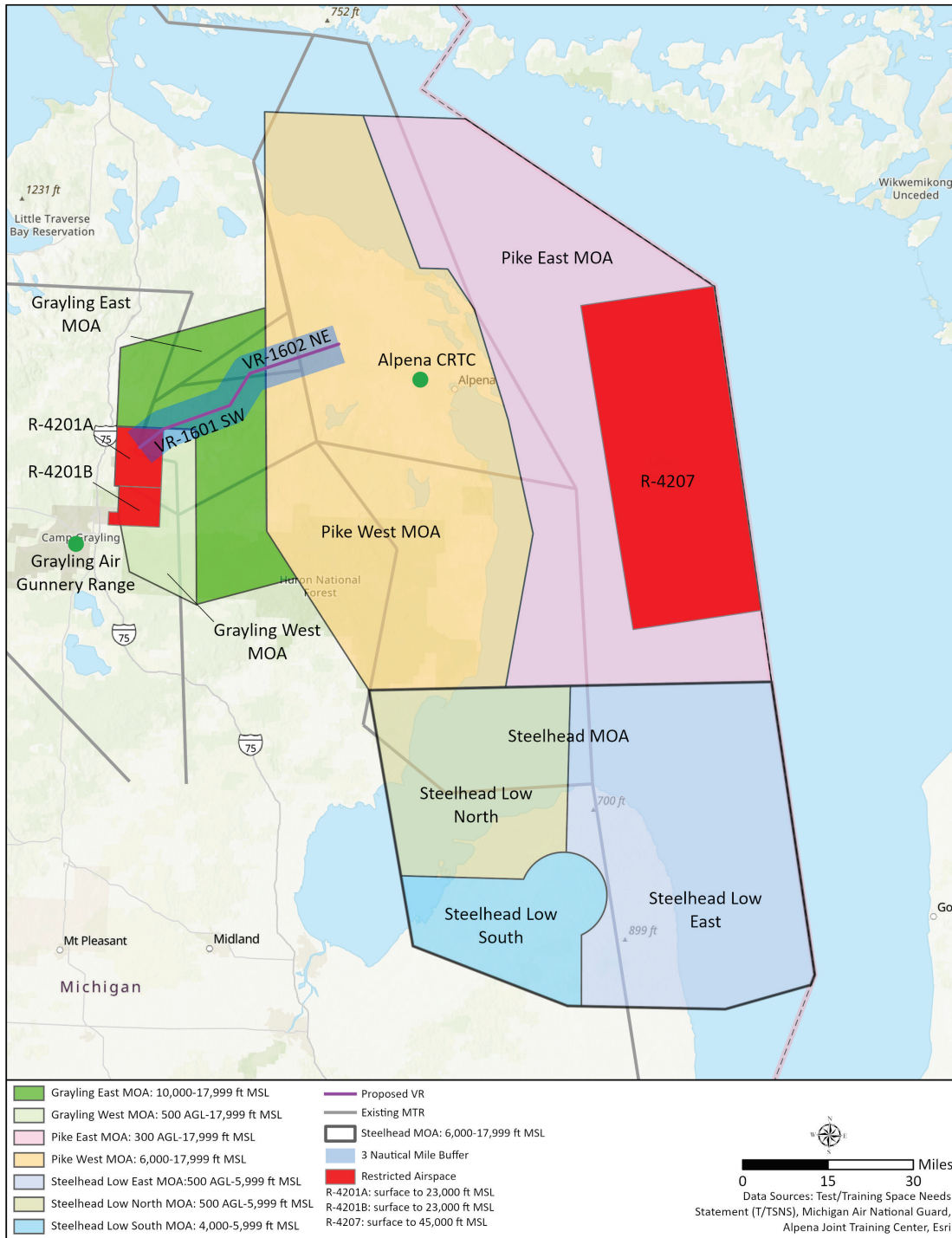
- establishing five new MOAs (Grayling East, Grayling West, Steelhead Low North, Steelhead Low South, and Steelhead Low East)
- discontinuing annual request for the Grayling Temporary MOA
- modifying the lateral boundaries of three existing MOAs (Pike East, Pike West, and Steelhead)
- returning Hersey MOA to the National Airspace System
- raising the vertical ceiling of an existing restricted area (R-4201B)
- establishing two new MTRs (Visual Route [VR]-1601 and VR-1602)

In addition to the Proposed Action (or Alternative A), NGB is also considering the following alternatives:

- Alternative B, which includes the above aspects, except that the three Steelhead Low MOAs would not be established
- Alternative C, which includes the above aspects, except that the Grayling East and Grayling West MOAs would not be established, the Grayling Temporary MOA would continue to be requested annually to support LFEs, and the Hersey MOA would remain with MIANG
- No Action Alternative, which would result in no change to the Alpena Complex as currently charted

This Noise Analysis Report examines the operational noise environment pertaining to changes in airspace of the Proposed Action or alternatives.

**Figure 2 Proposed Modifications to Alpena Special Use Airspace Complex**

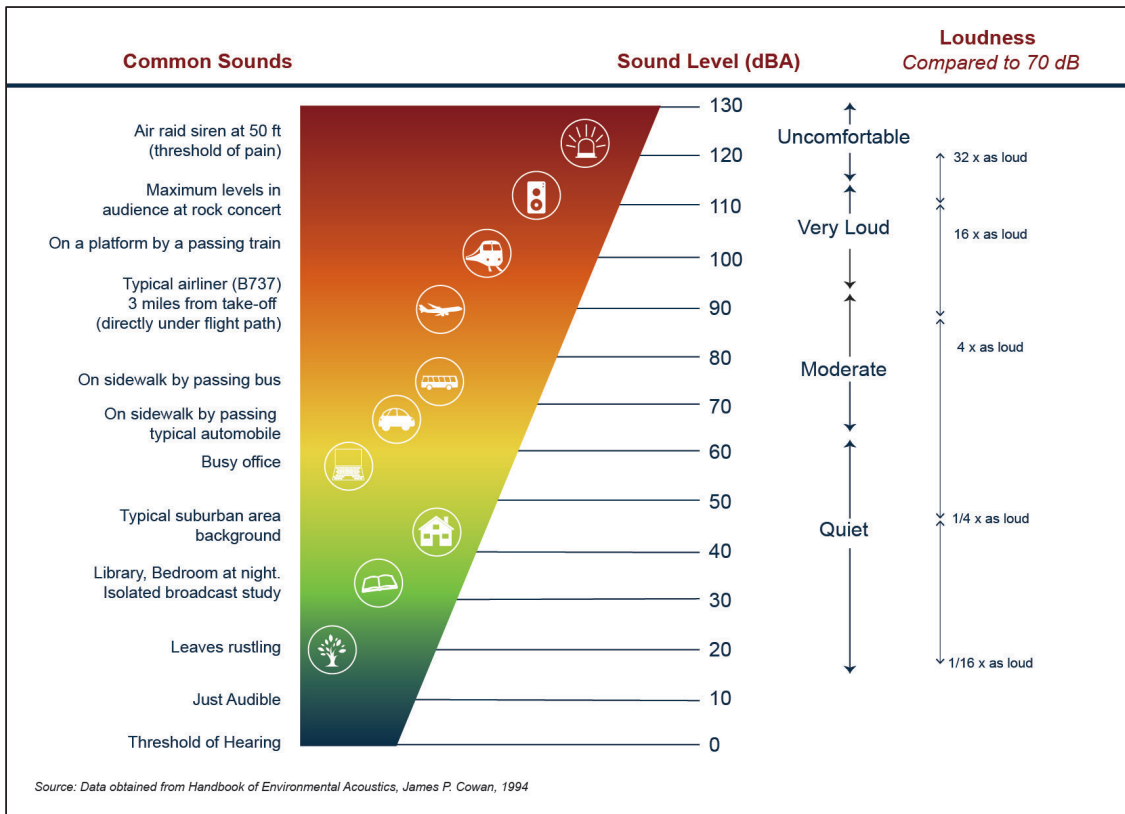


## Section 2. Noise Metrics and Modeling

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community’s quality of life, such as aircraft operations, construction, or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The decibel is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. “A-weighting,” measured in A-weighted decibels (dBA), approximates a frequency response expressing the perception of sound by humans. Figure 3 compares the A-weighted sound level of common sounds. The sound pressure level noise metric describes steady noise levels, although few noises are, in fact, constant; therefore, additional noise metrics have been developed to describe noise. This Noise Analysis Report will use the metrics presented in Sections 2.1 and 2.2.

**Figure 3 A-Weighted Sound Levels from Common Sources**





## 2.1 Primary Noise Metric and Modeling

Day-Night Average Sound Level (DNL) is the primary noise metric used to describe the aviation noise environment, per DODI 4715.13, *DoD Operational Noise Program*. DNL is defined as the average sound energy in a 24-hour period with an adjustment (in decibels) added to nighttime noise events occurring between the hours of 2200 and 0700. DNL is a useful descriptor for aircraft noise because (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. DNL provides a measure of the overall acoustical environment, but it does not directly represent the sound level at any given time. DNL contours are based on the average annual day and averaged over 365 days for long-term compatible land use planning.

Onset-Adjusted Monthly DNL (Ldnmr) is the average sound energy in a 24-hour period with a 10 dB adjustment added to the nighttime levels (similar to DNL), and up to an additional 11 dB adjustment for acoustical events with onset rates greater than 15 dB per second, such as high-speed jets operating near the ground. Ldnmr is assessed for the month (30 days) with the highest number of events, and, as with DNL, it does not directly represent the sound level at any given time. Because of the penalties for rapid onset, Ldnmr is always equal to or greater than DNL.

## 2.2 Supplemental Metrics

Maximum Sound Level (Lmax) is the maximum sound level from a single aircraft event. It is the highest A-weighted sound level that occurs during the aircraft overflight.

## 2.3 Methodology

Baseline data for the Alpena SUA Complex were collected during virtual site visits in December 2020. Air operational data for the proposed SUA Complex were provided by ANG operational personnel.

This operational noise analysis is conducted with the Noisemap suite of models through the BaseOps interface (Version 7.366). The MRNMap noise model predicts noise levels associated with aircraft operations in SUA. The parameters considered in the modeling included aircraft type, aircraft operations, airspeed, power setting, the time spent within each airspace block, and the altitude distribution. Noisemap is the primary DOD-approved aircraft noise model, per DODI 4715.13, *DoD Operational Noise Program*, and Chapter 11 (Noise and Noise-Compatible Land Use) of the FAA's *1050.1F Desk Reference* (FAA 2020).

Since the study encompasses a large geographical area, operational noise effects are of medium intensity over a large area, as opposed to high intensity over a smaller area (e.g., noise near a military installation). This operational noise analysis will identify noise-sensitive areas and land uses, including Section 4(f) properties (e.g., noise-sensitive areas within national parks, national wildlife and waterfowl refuges, historic sites, traditional cultural properties, and others), and then examine the change in operational noise exposure.

Change-of-exposure tables will report the following changes in noise level:

- for 65 dB DNL and higher, an increase of 1.5 dB DNL
- for 60 dB DNL to <65 dB, an increase of 3 dB DNL
- for 45 dB DNL to <60 dB, an increase of 5 dB DNL

Furthermore, any newly non-compatible uses due to increases in DNL values at a site, based on the land use compatibility guidelines in 14 CFR part 150, Appendix A, Table 1, will also be disclosed.

In analyses pursuant to the National Environmental Policy Act, the FAA has identified the following noise criteria as significant for FAA actions (FAA Order 1050.1F, Table 4-1):

- noise increase of 1.5 dB DNL or more for a noise-sensitive area that is exposed to noise at or above the 65 dB DNL noise exposure level
- noise exposure at or above the 65 dB DNL level due to a 1.5 dB DNL or greater increase, when compared to the No Action Alternative for the same timeframe
- special consideration for increases in noise or changes in noise exposure on noise-sensitive Section 4(f) properties below 65 dB DNL

## Section 3. Proposed Flight Areas, Sorties, and Flight Profiles

### 3.1 Modeled Flight Areas

Given the Proposed Action as discussed in Section 1.2, two scenarios were modeled to determine operational noise impacts. As shown in Table 1, SUA that were modeled under the existing conditions include Steelhead MOA, Pike East MOA, Pike West MOA, Hersey MOA, R-4201A/B, and the Grayling Temporary MOA.

As a temporary MOA, the establishment of the Grayling Temporary MOA must be requested every year; as a result, the floor and ceiling can vary slightly. This MOA was modeled with a floor of 5,000 feet MSL and a ceiling of 17,999 feet MSL. Training in the Grayling Temporary MOA normally occurs for only two weeks per year, and the mix of aircraft changes annually.

As shown in Figure 1, numerous VRs are within and adjacent to the Alpena SUA; they include: VR 634, 664, 1624, 1625, 1626, 1627, 1628, 1644, 1645, 1647, and 1648. These VRs have low annual utilization rates. The highest number of sorties was 13 during one year on VR 1648 and the lowest was 0 on several VRs with an average of only 2 sorties are flown on each VR per year (Alpena 2018 and 2019). Given the low number of annual and monthly sorties, the existing VRs were not included in the noise model.

The controlling agency for all of the SUAs in Table 1 is FAA, Minneapolis Air Route Traffic Control Center. The using agency for Steelhead MOA, Pike East MOA, Pike West MOA, and the Grayling Temporary MOA is the U.S. Air Force, Alpena CRTC. The using agency for R-4201A/B is the Commander, Camp Grayling.

**Table 1 SUAs Analyzed Under Existing Conditions**

SUA	Floor	Ceiling	Area
Steelhead MOA	6,000 feet MSL	17,999 feet MSL	2,935 sq miles
Pike East MOA	300 feet AGL	17,999 feet MSL	4,775 sq miles
Pike West MOA	6,000 feet MSL	17,999 feet MSL	3,522 sq miles
Hersey MOA	5,000 feet MSL	17,999 feet MSL	765 sq miles
R-4201A	Surface	23,000 feet MSL	85 sq miles
R-4201B	Surface	9,000 feet MSL	55 sq miles
Grayling Temporary MOA	5,000 feet MSL	17,999 feet MSL	1,150 sq miles

Key: AGL = above ground level; MOA = military operations area; MSL = mean sea level; R = Restricted Area; sq = square; SUA = Special Use Airspace

As shown in Table 2, SUAs that were modeled under the Proposed Action include Grayling West and East MOAs; Steelhead MOA; Steelhead Low East, Low North, and Low South MOAs; Pike East and West MOAs; R-4201A/B; and the MTRs, VR-1601 and VR-1602. Hersey MOA would be returned to the National Airspace System under the Proposed Action. Additional information about the proposed SUAs is discussed below.

The proposed Grayling West MOA would be established around the eastern and southern boundaries of R-4201A/B, sharing the western Grayling Range boundary to accommodate Instrument Flight Rules traffic transiting west of the airspace. This MOA would be established from 500 feet AGL to 17,999 feet MSL and cover an area that is approximately 374 square miles. The proposed boundaries of Grayling West MOA are shown in Table 3.

The proposed Grayling East MOA would be established to the north and east of the Grayling West MOA boundaries and adjoin the western boundary of Pike West MOA. This MOA would be established from 10,000 to 17,999 feet MSL and cover an area that is approximately 842 square miles. The proposed boundaries of Grayling East MOA are shown in Table 4.

**Table 2 SUAs Analyzed Under Proposed Action**

SUA	Floor	Ceiling	Area
Grayling West MOA (new)	500 feet AGL	17,999 feet MSL	374 sq miles
Grayling East MOA (new)	10,000 feet MSL	17,999 feet MSL	842 sq miles
Steelhead MOA	6,000 feet MSL	17,999 feet MSL	3,800 sq miles
Steelhead Low East MOA (new)	500 feet AGL	5,999 feet MSL	2,145 sq miles
Steelhead Low North MOA (new)	500 feet AGL	5,999 feet MSL	1,049 sq miles
Steelhead Low South MOA (new)	4,000 feet MSL	17,999 feet MSL	606 sq miles
Pike East MOA	300 feet AGL	17,999 feet MSL	3,877 sq miles
Pike West MOA	6,000 feet MSL	17,999 feet MSL	3,479 sq miles
R-4201A	Surface	23,000 feet MSL	85 sq miles
R-4201B	Surface	23,000 feet MSL	55 sq miles
VR-1601 (new)	500 feet AGL	1,500 feet AGL	36 NM length
VR-1602 (new)	500 feet AGL	1,500 feet AGL	36 NM length

Key: AGL = above ground level; MOA = military operations area; MSL = mean sea level; NM = nautical miles; R = Restricted Area; sq = square; SUA = Special Use Airspace; VR = Visual Route.

**Table 3 New Grayling West MOA Coordinates**

Latitude	Longitude
N 44° 56' 00"	W 084° 39' 00"
N 44° 56' 05"	W 084° 22' 03"
N 44° 29' 22"	W 084° 20' 20"
N 44° 34' 00"	W 084° 35' 00"
N 44° 43' 00"	W 084° 38' 00"
N 44° 47' 00"	W 084° 38' 00"
N 44° 47' 00"	W 084° 39' 00"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

**Table 4 New Grayling East MOA Coordinates**

Latitude	Longitude
N 44° 56' 00"	W 084° 39' 00"
N 45° 08' 00"	W 084° 39' 00"
N 45° 15' 00"	W 084° 08' 08"
N 44° 41' 00"	W 084° 06' 00"
N 44° 34' 00"	W 083° 59' 11"
N 44° 29' 22"	W 084° 20' 20"
N 44° 56' 05"	W 084° 22' 03"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The existing Steelhead MOA would be modified under the Proposed Action. The northern border would be aligned to the Firebird/Steelhead ATCAA and to the modified Pike East MOA and Pike West MOA southern boundaries. In addition, the southern tip of the MOA would be eliminated to align with the Steelhead ATCAA. The altitude range of the Steelhead MOA would remain 6,000 to 17,999 feet MSL; however, the area would increase from 2,935 square miles under existing conditions to 3,800 square miles under the Proposed Action. The proposed boundaries are shown in Table 5.

**Table 5      Modified Steelhead MOA Coordinates**

Latitude	Longitude
N 44° 17' 20"	W 083° 43' 00"
N 44° 20' 07"	W 082° 17' 25" (new)
N 43° 35' 28"	W 082° 07' 22"
N 43° 33' 54"	W 082° 08' 10"
N 43° 30' 00"	W 082° 26' 03" (new)
N 43° 30' 00"	W 082° 59' 11" (new)
N 43° 38' 30"	W 083° 32' 00"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The proposed Steelhead Low North MOA would be established under the existing Steelhead MOA and south of the Pike West MOA. The northern border would align with the Firebird/Steelhead ATCAA. The Steelhead Low North MOA would be established from 500 feet AGL to 5,999 feet MSL and cover an area that is approximately 1,049 square miles. Participating aircraft would fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline from May 15 through September 15. In addition, F-35 aircraft would not be allowed to utilize the Steelhead Low North MOA at any time. The proposed boundaries are shown in Table 6.

**Table 6      New Steelhead Low North MOA Coordinates**

Latitude	Longitude
N 44° 17' 20"	W 083° 43' 00"
N 44° 18' 53"	W 083° 00' 12"
N 43° 53' 46"	W 083° 00' 12"
7DME ARC Counterclockwise centered at	
N 43° 46' 49"	W 082° 59' 08"
N 43° 49' 10"	W 083° 08' 14"
N 43° 49' 10"	W 083° 35' 00"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The proposed Steelhead Low South MOA would be created under the existing Steelhead MOA and south of the proposed Steelhead Low North MOA. This MOA would be established from 4,000 to 17,999 feet MSL and cover an area that is approximately 606 square miles. No F-35 aircraft would be allowed to utilize the Steelhead Low South MOA. The proposed boundaries are shown in Table 7.

**Table 7      New Steelhead Low South MOA Coordinates**

Latitude	Longitude
N 43° 30' 00"	W 082° 56' 16"
N 43° 40' 09"	W 082° 56' 16"
7DME ARC Counterclockwise centered at	
N 43° 46' 49"	W 082° 59' 08"
N 43° 49' 10"	W 083° 08' 14"
N 43° 49' 10"	W 083° 35' 00"
N 43° 38' 30"	W 083° 32' 00"
N 43° 30' 00"	W 082° 59' 11"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The proposed Steelhead Low East MOA would be established under a portion of the existing Steelhead MOA and south of the Pike East MOA. The northern border would align with the Firebird/Steelhead ATCAA. The Steelhead Low East MOA would be established from 500 feet AGL to 5,999 feet MSL and cover an area that is approximately 2,145 square miles. Participating aircraft would fly no lower than 1,500 feet AGL within one nautical mile of the Lake Huron shoreline from May 15 through September 15. In addition, F-35 aircraft would not be allowed to utilize the Steelhead Low North MOA at any time. The proposed boundaries are shown in Table 8.

**Table 8      New Steelhead Low East MOA Coordinates**

Latitude	Longitude
N 44° 18' 53"	W 083° 00' 12"
N 44° 20' 07"	W 082° 17' 25"
N 43° 35' 28"	W 082° 07' 22"
N 43° 33' 54"	W 082° 08' 10"
N 43° 30' 00"	W 082° 26' 03"
N 43° 30' 00"	W 082° 56' 16"
N 43° 40' 09"	W 082° 56' 16"
7DME ARC Counterclockwise centered at	
N 43° 46' 49"	W 082° 59' 08"
N 43° 53' 46"	W 083° 00' 12"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The existing Pike West MOA would be modified under the Proposed Action. The southern border would be straightened and aligned with ATCAA boundaries above and shifted slightly north. The Pike West MOA would remain from 6,000 to 17,999 feet MSL; however, the area would decrease slightly from 3,522 square miles under existing conditions to 3,479 square miles under the Proposed Action. The proposed boundaries are shown in Table 9.

**Table 9      Modified Pike West MOA Coordinates**

<b>Latitude</b>	<b>Longitude</b>
N 45° 45' 00"	W 083° 48' 30"
N 45° 22' 00"	W 083° 35' 00"
N 45° 22' 00"	W 083° 29' 00"
N 45° 16' 00"	W 083° 23' 00"
N 44° 59' 15"	W 083° 15' 00"
N 44° 42' 00"	W 083° 09' 00"
N 44° 18' 24"	W 083° 14' 00" (new)
N 44° 17' 20"	W 083° 43' 00"
N 44° 41' 00"	W 084° 06' 00"
N 45° 45' 00"	W 084° 10' 00"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The existing Pike East MOA would be modified under the Proposed Action. The southern border would be straightened and aligned with ATCAA boundaries above and shifted north. The Pike East MOA would remain from 300 feet AGL to 17,999 feet MSL; however, the area would decrease slightly from 4,775 square miles under existing conditions to 3,877 square miles under the Proposed Action. The proposed boundaries are shown in Table 10.

**Table 10      Modified Pike East MOA Coordinates**

<b>Latitude</b>	<b>Longitude</b>
N 44° 18' 24"	W 083° 14' 00" (new)
N 44° 42' 00"	W 083° 09' 00"
N 44° 59' 15"	W 083° 15' 00"
N 45° 16' 00"	W 083° 23' 00"
N 45° 22' 00"	W 083° 29' 00"
N 45° 22' 00"	W 083° 35' 00"
N 45° 45' 00"	W 083° 48' 30"
N 45° 45' 00"	W 083° 26' 07"
N 45° 20' 19"	W 082° 31' 07"
N 44° 20' 07"	W 082° 17' 25" (new)

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

The existing R-4201B would be modified by raising the airspace ceiling from 9,000 to 23,000 feet MSL in order to match the current ceiling of R-4201A that is 23,000 feet MSL. No lateral changes are proposed.

VR-1601 and VR-1602 would be established on a fairly direct route between Alpena CRTC and Grayling Range in R-4201A/B. VR-1601 would begin about 10 NM west of Alpena CRTC and head southwest towards Grayling Range. VR-1602 would begin at Grayling Range and head northeast towards Alpena CRTC. The route would be four legs of approximately the same length covering approximately 36 NM. These MTRs would be charted as 300 feet AGL to 1,500 feet AGL and 3 NM on either side of centerline. The proposed coordinates are shown in Table 11.

**Table 11 Proposed VR-1601 and VR-1602 Coordinates**

Latitude	Longitude
N 45° 09' 60"	W 083° 51' 60"
N 45° 05' 00"	W 084° 11' 00"
N 45° 00' 00"	W 084° 15' 00"
N 44° 55' 60"	W 084° 29' 00"
N 44° 52' 60"	W 084° 33' 60"

Note: These latitude and longitude coordinates may change slightly upon implementation but are listed in this table as they were modeled for the analysis.

### 3.2 Sorties and Flight Profiles

The 180 FW, flying F-16 Block 42 aircraft out of Toledo Air National Guard Base (ANGB), and the 127 WG, flying A-10C and KC-135 tankers out of Selfridge ANGB, use the Alpena SUA Complex and Grayling Range on a regular basis. As a result, most of the sorties conducted in the Alpena SUA Complex are with the F-16 and A-10 aircraft for both existing and proposed scenarios. Alpena CRTC hosts multiple air-to-air and air-to-ground LFEs each year, with aircraft and ground support elements from across the United States and allied nations and with multiple Services participating. Scheduled aircraft include fighters, bombers, tankers, tactical airlift, cargo, mobility, command and control platforms, helicopters, and unmanned aircraft systems. Consequently, a variety of other aircraft types also utilize the SUAs including B-2, C-130, F-18, F-35, KC-135, and MC-12.

Table 12 shows the total existing and proposed sorties in the Alpena SUA Complex, and Table 13 through Table 25 show the details for each SUA. These tables identify each aircraft that was modeled, the number of sorties for existing and proposed scenarios, the day/night split, flight profile data, and the altitude distribution. The tables also identify any substitute aircraft that were used in the model (MRNMap). Substitute aircraft were only chosen when the actual aircraft was not available in the model. For example, the UH-60 was used as a substitute for the MH-60.

Daytime sorties include those that occur during the hours of 0700 to 2200 and nighttime sorties are those that occur during 2200 to 0700. The flight profile includes average power setting and indicated airspeed. Altitude distribution data that were collected include the approximate percentage of time that aircraft fly in different altitude bands. The modeled altitude bands are narrower for the lower altitudes and wider for higher altitudes to account for the potential operational noise impacts that typically occur from aircraft flying at lower altitudes.



**Table 12 Existing and Proposed Annual Sorties within Alpena SUA Complex**

Airspace	Existing Sorties	Proposed Sorties
Grayling West MOA	0	1,603
Grayling East MOA	0	1,528
Steelhead MOA	1,413	1,640
Steelhead Low North MOA	0	1,020
Steelhead Low South MOA	0	1,020
Steelhead Low East MOA	0	1,020
Pike West MOA	690	914
Pike East MOA	308	478
Hersey MOA	2	0
R-4201A	1,790	1,750
R-4201B	316	1,640
Grayling Temporary MOA	309	0
VR-1601 and VR-1602	0	234

Note: The sorties are not additive across airspace units because the same aircraft sortie may affect more than one altitude block.

Key: MOA = Military Operations Area; R = Restricted Area; VR = Visual Route.

**Table 13 Proposed Annual Sorties within New Grayling West MOA**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile			Altitude Distribution (Percent)				
			Day (0700-2200)	Night (2200-0700)	Total	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	500-999 ft AGL	1,000 ft AGL-2,999 ft MSL	3,000-7,999 ft MSL	≥8,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	55	20	75	30	60 %NC	300	10%	25%	40%	25%	100%
A-10	A-10A	TF34-GE-100	1,190	0	1,190	10	60 %NC	250-300	8%	22%	30%	40%	100%
F-16	F-16C	PW229	50	30	80	30	90 %NC	450	2%	15%	40%	43%	100%
F-16	F-16C	PW229	13	5	18	5	90 %NC	400	5%	5%	40%	50%	100%
B-2	B-2A	F118-GE-100	5	0	5	30	70 PLA	300	0%	0%	0%	100%	100%
B-52H	B-52H	TF33-P-3	30	10	40	60	2110 LBS/HR	300	0%	0%	0%	100%	100%
AV-8B	AV-8B	F402-FF-405	35	10	45	25	75% RPM	300	10%	25%	40%	25%	100%
C-17	C-17	F117-PW-100	5	0	5	15	1.3 EPR	350	25%	25%	30%	20%	100%
C-130	C-130H&N&P	T56-A-15	50	0	50	15	900 C TIT	250	25%	25%	30%	20%	100%
EA-18G	F-18E/F	F414-GE-400	5	0	5	25	92 %NC	300	0%	0%	0%	100%	100%
MC-12	C-12	PT6A-38	0	5	5	60	70 %RPM	200	0%	0%	0%	100%	100%
MH-60	UH-60A	T700-CE-700	50	0	50	45	70 kts	80	75%	25%	0%	0%	100%
CH-47	CH-47D	T55-L-712	25	0	25	60	70 kts	80	75%	25%	0%	0%	100%
AC-130	C-130H&N&P	T56-A-15	5	5	10	60	800 C TIT	200	0%	10%	60%	30%	100%
<b>Total</b>			<b>1,518</b>	<b>85</b>	<b>1,603</b>								

**Table 14 Proposed Annual Sorties within New Grayling East MOA**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile			Altitude Distribution (Percent)		Total
			Day (0700-2200)	Night (2200-0700)	Total	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	10,000-14,999 ft MSL	≥15,000 ft MSL	
A-10	A-10A	TF34-GE-100	55	20	75	30	60 %NC	300	60%	40%	100%
A-10	A-10A	TF34-GE-100	1,190	0	1,190	5	60 %NC	250-300	60%	40%	100%
F-16	F-16C	PW229	50	30	80	30	90 %NC	450	50%	50%	100%
F-16	F-16C	PW229	13	5	18	5	90 %NC	400	50%	50%	100%
B-2	B-2A	F118-GE-100	5	0	5	30	70 PLA	300	10%	90%	100%
B-52H	B-52H	TF33-P-3	30	10	40	60	2110 LBS/HR	300	10%	90%	100%
AV-8B	AV-8B	F402-FF-405	35	10	45	25	75% RPM	300	60%	40%	100%
C-17	C-17	F117-PW-100	5	0	5	15	1.3 EPR	350	50%	50%	100%
C-130	C-130H&N&P	T56-A-15	50	0	50	15	900 C TIT	250	50%	50%	100%
EA-18G	F-18E/F	F414-GE-400	5	0	5	25	92 %NC	300	40%	60%	100%
MC-12	C-12	PT6A-38	0	5	5	60	70 %RPM	200	60%	40%	100%
AC-130	C-130H&N&P	T56-A-15	5	5	10	30	800 C TIT	200	60%	40%	100%
<b>Total</b>			<b>1,443</b>	<b>85</b>	<b>1,528</b>						

**Table 15 Existing and Proposed Annual Sorties within Steelhead MOA**

Aircraft Type	Aircraft Modeled	Engine	Baseline Sorties Per Year			Proposed Sorties Per Year			Flight Profile				Altitude Distribution (in Percent)		
			Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Baseline Time in Airspace Per Sortie (Minutes)	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	6,000-9,999 ft MSL	≥10,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	130	46	176	140	40	180	44	30	60 %NC	300	60%	40%	100%
A-10	A-10A	TF34-GE-100	560	0	560	690	0	690	60	30	50 %NC	240	50%	50%	100%
B-2	B-2A	F118-GE-100	8	0	8	10	10	20	30	15	70 PLA	300	0%	100%	100%
B-52	B-52H	TF33-P-3	5	0	5	15	5	20	90	15	2110 LBS/HR	300	0%	100%	100%
F-16	F-16C	PW229	44	0	44	45	15	60	90	30	90 %NC	400	50%	50%	100%
F-16	F-16C	PW229	395	132	527	383	127	510	25	10	90 %NC	400	25%	75%	100%
FA-18A	F-18A/C	F404-GE-400&402	8	0	8	10	0	10	60	30	92 %NC	400	50%	50%	100%
KC-135	KC-135R	F108-CF-100	60	23	83	70	30	100	169	180	84 %NF	300	0%	100%	100%
F-35	F-35A	F-135-PW-100	2	0	2	40	10	50	30	30	75% ETR	400	40%	60%	100%
<b>Total</b>			<b>1,212</b>	<b>201</b>	<b>1,413</b>	<b>1,403</b>	<b>237</b>	<b>1,640</b>							

**Table 16 Proposed Annual Sorties within New Steelhead Low North MOA**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile			Altitude Distribution (in Percent)			
			Day (0700-2200)	Night (2200-0700)	Total	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	500-999 ft AGL	1,000 ft AGL-2,999 ft MSL	3,000-5,999 ft MSL	Total
A-10	A-10A	TF34-GE-100	140	40	180	15	60 %NC	300	60%	20%	20%	100%
A-10	A-10A	TF34-GE-100	690	0	690	5	50 %NC	240-300	5%	35%	60%	100%
AH-1	AH-1G	T53-L-13	10	0	10	15	100%	85	80%	10%	10%	100%
F-16	F-16C	PW229	45	15	60	15	90 %NC	400	60%	20%	20%	100%
F-16	F-16C	PW229	22	8	30	10	90 %NC	400	5%	20%	75%	100%
FA-18A	F-18A/C	F404-GE-400&402	10	0	10	15	92 %NC	400	60%	20%	20%	100%
MH-60	UH-60A	T700-CE-700	40	0	40	15	100 kts	85	80%	10%	10%	100%
<b>Total</b>			<b>957</b>	<b>63</b>	<b>1,020</b>							

**Table 17 Proposed Annual Sorties within New Steelhead Low South MOA**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile			Altitude Distribution (in Percent)		
			Day (0700-2200)	Night (2200-0700)	Total	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	4,000-4,999 ft MSL	5,000-5,999 ft MSL	Total
A-10	A-10A	TF34-GE-100	140	40	180	15	60 %NC	300	80%	20%	100%
A-10	A-10A	TF34-GE-100	690	0	690	10	50 %NC	240-300	50%	50%	100%
AH-1	AH-1G	T53-L-13	10	0	10	5	100%	85	90%	10%	100%
F-16	F-16C	PW229	45	15	60	15	90 %NC	400	80%	20%	100%
F-16	F-16C	PW229	22	8	30	10	90 %NC	400	10%	90%	100%
FA-18A	F-18A/C	F404-GE-400&402	10	0	10	15	92 %NC	400	80%	20%	100%
MH-60	UH-60A	T700-CE-700	40	0	40	5	100 kts	85	90%	10%	100%
<b>Total</b>			<b>957</b>	<b>63</b>	<b>1,020</b>						

**Table 18 Proposed Annual Sorties within New Steelhead Low East MOA**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile			Altitude Distribution (in Percent)			
			Day (0700-2200)	Night (2200-0700)	Total	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	500-999 ft AGL	1,000 ft AGL -2,999 ft MSL	3,000-5,999 ft MSL	Total
A-10	A-10A	TF34-GE-100	140	40	180	45	60 %NC	300	60%	20%	20%	100%
A-10	A-10A	TF34-GE-100	690	0	690	15	50 %NC	240-300	5%	35%	60%	100%
AH-1	AH-1G	T53-L-13	10	0	10	60	100%	85	80%	10%	10%	100%
F-16	F-16C	PW229	45	15	60	30	90 %NC	400	60%	20%	20%	100%
F-16	F-16C	PW229	22	8	30	10	90 %NC	400	5%	20%	75%	100%
FA-18A	F-18A/C	F404-GE-400&402	10	0	10	30	92 %NC	400	60%	20%	20%	100%
MH-60	UH-60A	T700-CE-700	40	0	40	45	100 kts	85	80%	10%	10%	100%
<b>Total</b>			<b>957</b>	<b>63</b>	<b>1,020</b>							

**Table 19 Existing and Proposed Annual Sorties within Pike West MOA**

Aircraft Type	Aircraft Modeled	Engine	Baseline Sorties Per Year			Proposed Sorties Per Year			Flight Profile				Altitude Distribution (in Percent)		
			Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Baseline Time in Airspace Per Sortie (Minutes)	Proposed Time in Airspace per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	6,000-9,999 ft MSL	≥10,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	80	10	90	80	30	110	85	90	60 %NC	300	70%	30%	100%
B-52	B-52H	TF33-P-3	30	10	40	40	20	60	100	100	2110 LBS/HR	300	5%	95%	100%
B-2	B-2A	F118-GE-100	1	0	1	5	0	5	105	100	70 PLA	300	0%	100%	100%
EA-18G	F-18E/F	F414-GE-400	13	0	13	15	5	20	120	120	92 %NC	300	0%	100%	100%
F-16	F-16C	PW229	66	0	66	80	20	100	90	60	90 %NC	400	25%	75%	100%
F-16	F-16C	PW229	311	104	415	318	106	424	30	15	90 %NC	400	25%	75%	100%
FA-18A	F-18A/C	F404-GE-400&402	7	0	7	15	5	20	35	45	92 %NC	400	25%	75%	100%
KC-135	KC-135R	F108-CF-100	40	12	52	60	20	80	180	180	84 %NF	300	0%	100%	100%
C-130	C-130H&N&P	T56-A-15	4	0	4	10	5	15	180	180	900 C TIT	200	50%	50%	100%
F-35	F-35A	F-135-PW-100	2	0	2	50	30	80	30	30	75% ETR	400	25%	75%	100%
<b>Total</b>			<b>554</b>	<b>136</b>	<b>690</b>	<b>673</b>	<b>241</b>	<b>914</b>							

**Table 20 Existing and Proposed Annual Sorties within Pike East MOA**

Aircraft Type	Aircraft Modeled	Engine	Baseline Sorties Per Year			Proposed Sorties Per Year			Flight Profile				Altitude Distribution (in Percent)					
			Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Baseline Time in Airspace Per Sortie (Minutes)	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	300-499 ft AGL	500-999 ft AGL	1,000 ft AGL -2,999 ft MSL	3,000-4,999 ft MSL	≥5,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	40	0	40	40	0	40	95	90	60 %NC	300	10%	25%	25%	25%	15%	100%
AH-1	AH-1G	T53-L-13	10	0	10	10	0	10	240	240	100%	85	80%	10%	10%	0%	0%	100%
B-52	B-52H	TF33-P-3	48	0	48	50	20	70	165	120	2110 LBS/HR	300	0%	0%	5%	10%	85%	100%
EA-18G	F-18E/F	F414-GE-400	13	0	13	15	5	20	120	120	92 %NC	350	0%	5%	10%	15%	70%	100%
F-16	F-16C	PW229	66	0	66	70	30	100	95	40	90 %NC	400	5%	10%	15%	25%	45%	100%
F-16	F-16C	PW229	2	1	3	2	1	3	5	5	90 %NC	400	0%	5%	5%	10%	80%	100%
FA-18A	F-18A/C	F404-GE-400&402	7	0	7	10	5	15	35	35	92 %NC	350	5%	10%	15%	25%	45%	100%
KC-135	KC-135R	F108-CF-100	20	7	27	30	10	40	270	270	84 %NF	300	0%	0%	0%	0%	100%	100%
MH-60	UH-60A	T700-CE-700	70	0	70	70	0	70	190	190	100 kts	85	80%	10%	10%	0%	0%	100%
C-130	C-130H&N&P	T56-A-15	8	0	8	10	0	10	180	180	900 C TIT	250	10%	10%	10%	25%	45%	100%
CV-22	CH-47D	T55 Turbo	13	0	13	10	5	15	220	180	120 kts	150	80%	10%	10%	0%	0%	100%
F-35A	F-35A	F-135-PW-100	2	0	2	50	30	80	30	30	75% ETR	350	0%	10%	15%	15%	60%	100%
MC-12	C-12	PT6A-38	0	1	1	0	5	5	120	120	70 %RPM	200	0%	0%	0%	0%	100%	100%
<b>Total</b>			<b>299</b>	<b>9</b>	<b>308</b>	<b>367</b>	<b>111</b>	<b>478</b>										

**Table 21 Existing Annual Sorties within Hersey MOA**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile			Altitude Distribution (in Percent)		
			Day (0700-2200)	Night (2200-0700)	Total	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	5,000-9,999 ft MSL	≥10,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	1.5	0.5	2	45	60 %NC	300	60%	40%	100%
<b>Total</b>			<b>1.5</b>	<b>0.5</b>	<b>2</b>						

**Table 22 Existing and Proposed Annual Sorties within R-4201A**

Aircraft Type	Aircraft Modeled	Engine	Baseline Sorties Per Year			Proposed Sorties Per Year			Flight Profile				Altitude Distribution (in Percent)					
			Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Baseline Time in Airspace Per Sortie (Minutes)	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	Sfc-99 ft AGL	100-499 ft AGL	500 ft AGL-1,999 ft MSL	2,000-4,999 ft MSL	≥5,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	50	16	66	55	20	75	23	20	60 %NC	300	0%	10%	25%	40%	25%	100%
A-10	A-10A	TF34-GE-100	1,320	0	1,320	1190	0	1,190	27	20	60 %NC	250-300	0%	2%	18%	20%	60%	100%
F-16	F-16C	PW229	50	0	50	50	30	80	23	20	90 %NC	450	1%	6%	33%	20%	40%	100%
F-16	F-16C	PW229	174	57	231	124	41	165	27	20	90 %NC	400	1%	2%	3%	4%	90%	100%
B-2	B-2A	F118-GE-100	1	0	1	5	0	5	18	20	70 PLA	300	0%	0%	0%	0%	100%	100%
B-52H	B-52H	TF33-P-3	14	6	20	30	10	40	95	80	2110 LBS/HR	300	0%	0%	0%	0%	100%	100%
AV-8B	AV-8B	F402-FF-405	28	0	28	35	10	45	14	17	75% RPM	300	0%	10%	25%	40%	25%	100%
C-17	C-17	F117-PW-100	2	0	2	5	0	5	9	10	1.3 EPR	350	0%	50%	50%	0%	0%	100%
C-130	C-130H&N&P	T56-A-15	7	0	7	50	0	50	14	10	900 C TIT	250	0%	35%	35%	30%	0%	100%
EA-18G	F-18E/F	F414-GE-400	0	0	0	5	0	5	0	17	90 %NC	300	0%	0%	0%	0%	100%	100%
MC-12	C-12	PT6A-38	0	3	3	0	5	5	104	80	70 %RPM	200	0%	0%	0%	0%	100%	100%
MH-60	UH-60A	T700-CE-700	35	0	35	50	0	50	36	30	70 kts	80	25%	50%	25%	0%	0%	100%
CH-47	CH-47D	T55-L-712	19	0	19	25	0	25	59	40	70 kts	80	25%	50%	25%	0%	0%	100%
AC-130	C-130H&N&P	T56-A-15	4	4	8	5	5	10	162	121	800 C TIT	200	0%	0%	10%	60%	30%	100%
<b>Total</b>			<b>1,704</b>	<b>86</b>	<b>1,790</b>	<b>1,629</b>	<b>121</b>	<b>1,750</b>										

**Table 23 Existing and Proposed Annual Sorties within R-4201B**

Aircraft Type	Aircraft Modeled	Engine	Baseline Sorties Per Year			Proposed Sorties Per Year			Flight Profile				Altitude Distribution (in Percent)					
			Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Baseline Time in Airspace Per Sortie (Minutes)	Proposed Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	Sfc-99 ft AGL	100-499 ft AGL	500 ft AGL-1,999 ft MSL	2,000-4,999 ft MSL	≥5,000 ft MSL	Total
A-10*	A-10A	TF34-GE-100	50	16	66	55	20	75	3	10	60 %NC	300	0%	10%	25%	40%	25%	100%
A-10	A-10A	TF34-GE-100	0	0	0	1,190	0	1,190	1	2	60 %NC	250-300	0%	2%	18%	20%	60%	100%
F-16*	F-16C	PW229	50	0	50	50	30	80	3	10	90 %NC	450	1%	6%	33%	20%	40%	100%
F-16	F-16C	PW229	58	19	77	41	14	55	1	3	90 %NC	400	1%	2%	3%	4%	90%	100%
B-2	B-2A	F118-GE-100	1	0	1	5	0	5	2	10	70 PLA	300	0%	0%	0%	0%	100%	100%
B-52H	B-52H	TF33-P-3	14	6	20	30	10	40	11	40	2110 LBS/HR	300	0%	0%	0%	0%	100%	100%
AV-8B	AV-8B	F402-FF-405	28	0	28	35	10	45	2	8	75% RPM	300	0%	10%	25%	40%	25%	100%
C-17	C-17	F117-PW-100	2	0	2	5	0	5	1	5	1.3 EPR	350	0%	50%	50%	0%	0%	100%
C-130	C-130H&N&P	T56-A-15	7	0	7	50	0	50	2	5	900 C TIT	250	0%	35%	35%	30%	0%	100%
EA-18G	F-18E/F	F414-GE-400	0	0	0	5	0	5	0	8	90 %NC	300	0%	0%	0%	0%	100%	100%
MC-12	C-12	PT6A-38	0	3	3	0	5	5	12	40	70 %RPM	200	0%	0%	0%	0%	100%	100%
MH-60	UH-60A	T700-CE-700	35	0	35	50	0	50	4	15	70 kts	80	25%	50%	25%	0%	0%	100%
CH-47	CH-47D	T55-L-712	19	0	19	25	0	25	7	20	70 kts	80	25%	50%	25%	0%	0%	100%
AC-130	C-130H&N&P	T56-A-15	4	4	8	5	5	10	18	59	800 C TIT	200	0%	0%	10%	60%	30%	100%
<b>Total</b>			<b>268</b>	<b>48</b>	<b>316</b>	<b>1,546</b>	<b>94</b>	<b>1,640</b>										

**Table 24 Existing Annual Sorties within Grayling Temporary MOA**

Aircraft Type	Aircraft Modeled	Engine	Baseline Sorties Per Year			Flight Profile			Altitude Distribution (in Percent)		
			Day (0700-2200)	Night (2200-0700)	Total	Baseline Time in Airspace Per Sortie (Minutes)	Average % Power Setting	Indicated Airspeed (Knots)	5,000-9,999 ft MSL	≥10,000 ft MSL	Total
A-10	A-10A	TF34-GE-100	69	8	77	17	60 %NC	300	70%	30%	100%
F-16	F-16C	PW229	112	0	112	9	90 %NC	450	25%	75%	100%
B-52	B-52H	TF33-P-3	13	5	18	15	2110 LBS/HR	300	5%	95%	100%
C-130	C-130H&N&P	T56-A-15	3	0	4	4	900 C TIT	200	50%	50%	100%
EA-18G	F-18E/F	F414-GE-400	13	0	13	13	92 %NC	300	0%	100%	100%
KC-135	KC-135R	F108-CF-100	12	3	15	36	84 %NF	300	0%	100%	100%
MH-60	UH-60A	T700-CE-700	70	0	70	11	100 kts	85	100%	0%	100%
<b>Total</b>			<b>292</b>	<b>16</b>	<b>309</b>						



**Table 25 Proposed Annual Sorties within VR-1601 and VR-1602**

Aircraft Type	Aircraft Modeled	Engine	Proposed Sorties Per Year			Flight Profile		Altitude Distribution (in Percent)			
			VR-1601: APN to R-4201 Day (0700- 2200)	VR-1602: R-4201 to APN) Day (0700- 2200)	Total	Average % Power Setting	Indicated Airspeed (Knots)	300-499 ft AGL	500 ft-999 ft AGL	1,000-1,500 ft AGL	Total
A-10	A-10A	TF34-GE-100	20	15	35	87 %NC	350	60%	30%	10%	100%
AV-8B	AV-8B	F402-FF-405	20	15	35	75% RPM	400	60%	30%	10%	100%
F-15E	F-15E	F100-PW-100	4	0	4	82 %NC	500	40%	50%	10%	100%
F-16	F-16C	PW229	20	10	30	90 %NC	500	40%	50%	10%	100%
F-16	F-16C	PW229	32	32	64	90 %NC	450	1%	49%	50%	100%
C-130	C-130H&N&P	T56-A-15	20	10	30	900 C TIT	250	60%	30%	10%	100%
C-17	C-17	F117-PW-100	4	2	6	1.3 EPR	350	40%	50%	10%	100%
T-1	T-1	JT15D-5	20	10	30	85 %NC	200	10%	80%	10%	100%
<b>Total</b>			<b>140</b>	<b>94</b>	<b>234</b>						

## Section 4. Noise Exposure

### 4.1 Proposed Action

Using the operational data described in Section 3, MRNMap was used to calculate noise levels for sorties within the existing and proposed SUAs. As shown in Table 26, most of the operational noise levels are at or below 45 dBA Ldnmr. The Grayling West MOA and Pike East MOA show levels of 45 dBA Ldnmr under the Proposed Action; the floors of those MOAs are 500 feet AGL and 300 feet AGL, respectively. The Steelhead Low North and East MOAs also have low floors (500 feet AGL); however, as shown in the previous tables (Table 16, Table 18), the majority of the sorties (870 sorties) are conducted with the A-10 aircraft. In the Pike East MOA, only 40 sorties are conducted annually with the A-10; 80 sorties are conducted with the F-35 aircraft under the Proposed Action. The proposed Grayling West MOA was modeled with approximately 600 more sorties as compared to the Steelhead Low North and East MOAs.

Within R-4201A the noise level under Existing Conditions is 62 dBA Ldnmr, which increases to 63 dBA Ldnmr under the Proposed Action. Although the total number of sorties within R-4201A decreases slightly, the number of nighttime sorties increases from 86 to 121, which is an increase from approximately 5 percent to 7 percent. Ldnmr (and DNL) include a 10 dB adjustment added to the nighttime operations. Within R-4201B, the noise level for Existing Conditions is 45 dBA Ldnmr, which increases to 57 dBA Ldnmr under the Proposed Action. The number of sorties within R-4201B increases from 323 to 1,665; however, the ceiling would also increase from 9,000 feet MSL to 23,000 feet MSL, providing higher altitudes for pilots to train.

**Table 26 Existing and Proposed Ldnmr Values within the Alpena SUA Complex**

Airspace	Existing Ldnmr	Proposed Ldnmr
Grayling West MOA	<35 dBA	45 dBA
Grayling East MOA	<35 dBA	<35 dBA
Steelhead MOA	35 dBA	40 dBA
Steelhead Low North MOA	35 dBA	40 dBA
Steelhead Low South MOA	35 dBA	40 dBA
Steelhead Low East MOA	35 dBA	40 dBA
Pike West MOA	35 dBA	35 dBA
Pike East MOA	35 dBA	45 dBA
Hersey MOA	<35 dBA	<35 dBA
R-4201A	62 dBA	63 dBA
R-4201B	45 dBA	57 dBA
Grayling Temporary MOA	<35 dBA	45 dBA
VR-1601 and VR-1602	<35 dBA	35 dBA

Key: dBA = A-weighted decibels; Ldnmr = Onset-Adjusted Monthly Day-Night Average Sound Level; MOA = military operations area; R = Restricted; VR = Visual Route.

Similar to Ldnmr, the DNL noise levels shown in Table 27 are mostly at or below 45 dBA DNL. The Grayling West MOA and Pike East MOA show levels of 45 dBA DNL; the floors of those MOAs are 500 feet AGL and 300 feet AGL, respectively. The 61 dBA DNL noise level within R-4201A remains at 61 dBA DNL under the Proposed Action. The 44 dBA DNL noise level within R-4201B increases to 56 dBA DNL under the Proposed Action.

**Table 27 Existing and Proposed DNL Values within the Alpena SUA Complex**

Airspace	Existing DNL	Proposed DNL
Grayling West MOA	<35 dBA	45 dBA
Grayling East MOA	<35 dBA	<35 dBA
Steelhead MOA	35 dBA	40 dBA
Steelhead Low North MOA	35 dBA	40 dBA
Steelhead Low South MOA	35 dBA	40 dBA
Steelhead Low East MOA	35 dBA	40 dBA
Pike West MOA	35 dBA	35 dBA
Pike East MOA	35 dBA	45 dBA
Hersey MOA	<35 dBA	<35 dBA
R-4201A	61 dBA	61 dBA
R-4201B	44 dBA	56 dBA
Grayling Temporary MOA	<35 dBA	45 dBA
VR-1601 and VR-1602	<35 dBA	<35 dBA

Key: dBA = A-weighted decibels; DNL = Day-Night Average Sound Level; MOA = military operations area; R = Restricted; VR = Visual Route.

Points of interest within the Alpena SUA complex were chosen to assess operational noise levels at specific locations or reference points. These points of interest are shown in Figure 4 and include state forests, residences, and cultural sites. Several points are located beneath the proposed Steelhead Low MOAs including Bay Port, Harbor Beach, Huron City, Sanilac Park, Sleeper State Park, and Tawas Lighthouse. As shown in Table 28, most of the noise levels are below 40 dBA Ldnmr. Guthrie Lakes is a residence underneath R-4201A and KP Lakes is a residence underneath R-4201B. The Ldnmr level increases at Guthrie Lakes by 1 dBA. As previously discussed, although the total number of sorties within R-4201A decreases slightly, the number of nighttime sorties increases from 86 to 121. The Ldnmr level increases at KP Lakes by 8 dBA, which is the result of the increase in sorties in R-4201B; however, the noise level would remain well below 65 dBA. Currently, there are noise abatement areas around Guthrie Lakes and KP Lakes (1,500 feet horizontal and vertical); this means aircraft do not fly below 1,500 feet AGL within a 1,500-foot radius of each property.

The South Branch Campground noise level increases by 12 dBA under the Proposed Action to 47 dBA Ldnmr. This point is underneath the proposed Grayling West MOA, which has a floor of 500 feet AGL. Shupac Lake State Forest Campground is also located within the proposed Grayling West MOA; however, it is adjacent to R-4201A, which is why the noise level is higher at 62 dBA Ldnmr and only increases by 1 dBA. Turtle Lake Road, which is 63 dBA Ldnmr, is below the proposed VR-1601 and VR-1602 and within R-4201A, also increases by 1 dBA Ldnmr under the Proposed Action.

Based on the results of the Ldnmr levels for the points of interest, the DNL levels were assessed for the points with levels at 45 dBA or above. KP Lakes increases by 7 dBA and remains below 50 dBA DNL. The other points of interest remain the same.

**Table 28 Ldnmr Values for Points of Interest**

Airspace	Existing Ldnmr	Change under Proposed Action
Alpena City	36 dBA	2 dBA
Atlanta State Forest	35 dBA	None
Bay Port Historic Commercial Fishing District	38 dBA	6 dBA
Grayling State Forest	35 dBA	None
Guthrie Lakes	62 dBA	1 dBA
Harbor Beach	38 dBA	6 dBA
Huron City Historic District	38 dBA	6 dBA
Huron National Forest	36 dBA	2 dBA
KP Lakes	48 dBA	8 dBA
Pigeon River Country State Forest	35 dBA	None
Sanilac Petroglyphs Historic State Park	38 dBA	3 dBA
Shupac Lake State Forest Campground	62 dBA	1 dBA
Sleeper State Park	38 dBA	6 dBA
South Branch Campground	35 dBA	12 dBA
Tawas Point Lighthouse	37 dBA	7 dBA
Turtle Lake Road	63 dBA	1 dBA

Key: dBA = A-weighted decibels; Ldnmr = Onset-Adjusted Monthly Day-Night Average Sound Level.

**Table 29 DNL Values for Points of Interest**

Airspace	Existing DNL	Change under Proposed Action
Guthrie Lakes	61 dBA	None
KP Lakes	48 dBA	7 dBA
Shupac Lake State Forest Campground	61 dBA	None
Turtle Lake Road	61 dBA	None

Key: dBA = A-weighted decibels; DNL = Day-Night Average Sound Level.

**Figure 4 Points of Interest within Alpena SUA Complex**

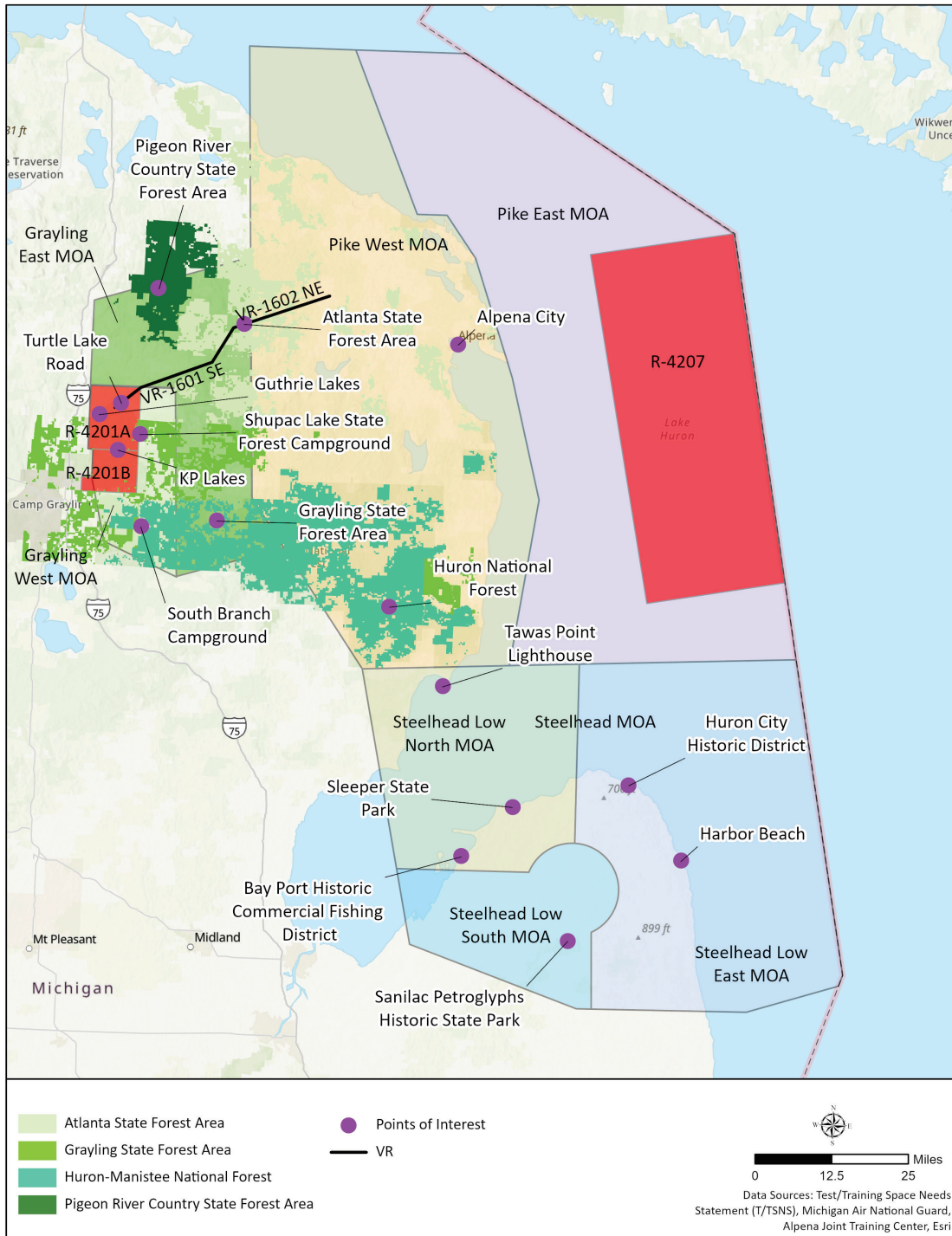


Table 30 shows the L<sub>max</sub> levels for the points of interest in the Alpena Complex under existing conditions and Proposed Action. As previously discussed, L<sub>max</sub> are single-event noise levels. The L<sub>max</sub> noise levels for Grayling State Forest and Pigeon Forest are lower under the Proposed Action as compared to existing conditions because the proposed Grayling East MOA covers some of the same area as the existing Grayling Temporary MOA. However, Grayling East MOA has a floor of 10,000 feet MSL, where the Grayling Temporary MOA was modeled with a floor of 5,000 feet MSL. South Branch Campground L<sub>max</sub> increases from 86 dBA to 110 dBA because it is under the proposed Grayling West MOA, which has a floor of 500 feet AGL. As previously discussed, Shupac Lake State Forest Campground is under the proposed Grayling West MOA, but also adjacent to R-4201A, which is why the L<sub>max</sub> level is high; however, the noise level does not change under the Proposed Action as compared to current conditions.

The L<sub>max</sub> noise levels for points under the proposed Steelhead Low MOAs, such as Harbor Beach and Sleeper State Park, are higher under the Proposed Action because the existing Steelhead MOA has a floor of 6,000 feet MSL and the proposed Steelhead Low East and North MOAs have a floor of 500 feet AGL. Given the proposed floor of these Steelhead Low MOAs, the following measures would be implemented to reduce potential impacts:

- In the Steelhead Low MOAs, participating aircraft would fly no lower than 1,500 feet AGL, within one nautical mile of the Lake Huron shoreline from May 15 through September 15.
- No F-35 aircraft would be allowed in the Steelhead Low North, South, and East MOAs.

To model the worst-case scenario, aircraft were modeled without the seasonal shoreline measure implemented within one nautical mile of the Lake Huron shoreline. As shown in Table 30, the noise level under the Steelhead Low MOAs without the seasonal shoreline measure is 115 dBA L<sub>max</sub> (Bay Port, Harbor Beach, Huron City, Sleeper State Park, and Tawas Lighthouse). With the seasonal shoreline measure implemented, L<sub>max</sub> would be 102 dBA. As a result, single event noise levels would be lower during these periods along the shoreline. These measures would reduce the number of instances that populations would be exposed to high single-event noise events.

The L<sub>max</sub> levels for Guthrie Lakes and KP Lakes are high because those points are directly underneath the restricted areas. These levels are high under both the existing and proposed scenarios and do not increase under the Proposed Action.

**Table 30 Lmax Noise Values for Points of Interest**

<b>Airspace</b>	<b>Existing Lmax</b>	<b>Proposed Lmax</b>
Alpena City	86 dBA	86 dBA
Atlanta State Forest	86 dBA	88 dBA
Bay Port Historic Commercial Fishing District	86 dBA	115 dBA
Grayling State Forest	86 dBA	78 dBA
Guthrie Lakes	128 dBA	128 dBA
Harbor Beach	86 dBA	115 dBA
Huron City Historic District	86 dBA	115 dBA
Huron National Forest	86 dBA	86 dBA
KP Lakes	127 dBA	127 dBA
Pigeon River Country State Forest	85 dBA	77 dBA
Sanilac Petroglyphs Historic State Park	86 dBA	91 dBA
Shupac Lake State Forest Campground	128 dBA	128 dBA
Sleeper State Park	86 dBA	115 dBA
South Branch Campground	86 dBA	110 dBA
Tawas Point Lighthouse	86 dBA	115 dBA
Turtle Lake Road	128 dBA	128 dBA

Key: dBA = A-weighted decibels; Lmax = maximum sound level.

To determine the impacts on daytime speech interference, the 75 dBA Lmax metric is used for evaluation. An average of 1 to 4 events per hour at or above 75 dBA Lmax is a threshold that many people find intrusive to communication and other activities in the outdoor environment (DOD Noise Working Group 2009). As previously discussed, most of the Lmax levels for the points of interest either stay the same or decrease, with the exception of those areas under the Steelhead Low MOAs and the Grayling West MOA.

To determine speech interference under the Steelhead Low MOAs, the number of flyover events in that area was assessed. The number of flying days in the Steelhead MOA is approximately 22 days per month, which is approximately 264 flying days per year. The number of flying days in the proposed Steelhead Low MOAs is assumed to be about the same. Given that there are 1,020 sorties per year in each Steelhead Low MOA, there would be about 4 sorties per day. (Four sorties per day is an average; there could be a surge in aircraft sorties during peak training periods and fewer sorties at other times.) Speech interference typically occurs when there are 1 to 4 events per hour at or above 75 dBA Lmax. The sorties in the Steelhead Low North and South MOAs would only be in those airspaces for approximately 15 minutes. Therefore, it is unlikely that 1 to 4 flyover events would occur per hour in one particular area. In the Steelhead Low East MOA, aircraft would spend more time, with approximately 22 percent (or 230 sorties per year) spending 45 to 60 minutes in the airspace (see Table 16 to Table 18). However, the Steelhead Low East MOA has more square acreage than the other MOAs, with 2,145 square miles; as a result, there is a low probability that a particular area would experience 4 aircraft flyover events per hour on a regular basis.

The proposed Grayling West MOA would have approximately 1,603 annual sorties. The majority of the sorties—1,190 with the A-10 aircraft—would only spend 10 minutes in the MOA. It is unlikely that these sorties would fly over the same area more than once. The remaining sorties (413) would

fly in the MOA between 5 to 60 minutes. Given that the Grayling West MOA is approximately 374 square miles, there is a low probability that a particular area would experience 4 aircraft flyover events per hour on a regular basis.

Research on sleep disturbance from a study in 2002 showed critical tolerance levels of 6 nighttime events of outdoor single event noise levels above 75 dB Lmax (DOD Noise Working Group 2009). Aircraft flying in the Steelhead Low MOAs or the Grayling West MOA would likely be one per flying day. In the Steelhead Low MOAs, aircraft flying between 10 p.m. and 7 a.m. would account for six percent of the total operations; in the Grayling West MOA it would be five percent. Therefore, the chances that a particular location would experience one aircraft flyover at night would be rare. Aircraft flying at night in all of the MOAs would account for a lower percentage of operations than during the daytime hours of 7 a.m. to 10 p.m. Given that the Proposed Action would not have adverse impacts on speech interference and sleep disturbance, it is not expected that children's learning would be affected.

Hearing loss from noise is the result of continuous long-term exposure to noise levels. Noise from aircraft flyovers is not continuous but consists of individual events where the noise levels exceed the background levels for a limited time. At 86 dBA, a person would have to be exposed to more than 6 hours of noise on a daily basis (HQ AF/SG3/P 2016). Since aircraft flights are intermittent and not continuous, individuals underneath the Alpena SUA Complex are not exposed to long-term continuous noise.

#### **4.2 Alternatives B and C and No Action Alternative**

In addition to the Proposed Action (Alternative A), two other alternatives and the No Action Alternatives were evaluated. Alternative B includes all of the aspects of the Proposed Action, except that the three Steelhead Low MOAs would not be established. Alternative C would include all of the aspects of the Proposed Action, except that the Grayling East and Grayling West MOAs would not be established, the Grayling Temporary MOA would continue to be requested to support annual exercises, and the Hersey MOA would remain with MIANG.

Under either Alternative B or C, the sorties would be redistributed as compared to the Proposed Action, but they would not fly in a new airspace complex. For example, under the Proposed Action, one F-16 sortie for one hour could fly in the following MOAs:

- Pike East: 20 min
- Pike West: 20 min
- Steelhead: 15 min
- Steelhead Low: 5 min

Under Alternative B, (with no Steelhead Low MOAs), the same sortie could be redistributed in the MOAs as follows:

- Pike East: 20 min
- Pike West: 20 min
- Steelhead: 20 min



The time would be redistributed in the same airspace complex; the sortie would not be flown in a new airspace. As a result, the change in noise levels between the Proposed Action and Alternative B or C would be minor. In addition, under Alternative B, the Steelhead Low MOAs would not be established; therefore, sorties would need to be conducted at higher altitudes in that airspace complex and the noise levels would be lower as compared to the Proposed Action. Under Alternative C, the Grayling West MOA, which would have a floor of 500 feet AGL, would not be established and the Grayling Temporary MOA, which typically has a higher floor (5,000 feet MSL), would be utilized. As a result, noise levels under Alternative C would be lower as compared to the Proposed Action.

The No Action Alternative (Alternative D) would result in no change to the Alpena Complex as currently charted. Operational noise impacts from Alternatives B, C, and the No Action would be the same or less than the impacts from the Proposed Action.

## Section 5. Geo-Spatial Analysis of Special Management Areas

The land underneath the Alpena SUA complex consists of several forest regions, small- to medium-sized municipalities, and rural areas. Forested portions would be classified as rural and are estimated to be approximately 40 dB (Federal Interagency Committee on Noise 1992). Average noise levels would be higher, approximately 55 to 60 dB, in cities and towns, due primarily to greater development and higher volumes of traffic.

Several recreational areas in the Alpena SUA Complex were analyzed for operational noise impacts and include the Atlanta State Forest Area, Grayling State Forest Area, the Huron-Manistee National Forest, and the Pigeon River County State Forest (see Figure 5 and Table 29). These forests contain hiking trails and campgrounds; the Pigeon River County State Forest has free-roaming elk herds.

The Atlanta State Forest Area is 272,399 acres located between the cities of Alpena and Gaylord north of Michigan Highway 32. This forest area is underneath the existing Grayling Temporary MOA and Pike West MOA. Under the Proposed Action, forest area would be underneath the Grayling East MOA and the Pike West MOA (see Table 30 and Table 31).

Grayling State Forest Area is 170,739 acres and dispersed underneath the existing Grayling Temporary MOA, Pike West MOA, and 400 to 500 acres under R-4201A and R-4201B. Under the Proposed Action, the forest area would be underneath the Grayling East MOA, Grayling West MOA, Pike West MOA, and R-4201. Although there would be slight modifications to the acreage under the Grayling and Pike MOAs, the lateral boundaries of R-4201 would not change under the Proposed Action.

The Huron-Manistee National Forest encompasses 978,900 acres between the east coast near the cities of Oscoda and Grayling. This area is underneath the Grayling Temporary MOA and the Pike West MOA. Under the Proposed Action, forest area would be underneath the Grayling East MOA, Grayling West MOA, and Pike West MOA.

The Pigeon River County State Forest is 98,104 acres and northeast of Gaylord. It is underneath the existing Grayling Temporary MOA and would be under the Grayling East MOA under the Proposed Action.

Collectively, the forest areas are underneath the Grayling Temporary MOA and Pike West MOA under existing conditions and under the Grayling East MOA, Grayling West MOA, and Pike West MOA under the Proposed Action with a few acres underneath Pike East MOA and R-4201A/B. As shown in Table 26 and Table 27, the existing Ldnmr and DNL levels in these areas are generally around 35 dBA and would increase to 40 dBA under the Proposed Action. Given that noise in rural areas is estimated to be approximately 40 dB DNL, the existing noise levels in the region from aircraft operations in the Alpena SUA Complex are similar to the ambient noise levels.

As previously discussed, the operational noise levels for the Atlanta State Forest, Grayling State Forest, and Pigeon Forest are lower under the Proposed Action as compared to existing conditions because the proposed Grayling East MOA covers some of the same area as the existing Grayling Temporary MOA. However, Grayling East MOA has a floor of 10,000 feet MSL, where the Grayling Temporary MOA was modeled with a floor of 5,000 feet MSL. As a result, the Lmax levels are lower under the Proposed Action. Consequently, no significant impacts are expected under the Proposed Action or any of the alternatives.

**Table 31 Recreational Areas in Alpena Complex**

Unit Name	Total Area (acres)
Atlanta State Forest Area	272,399
Grayling State Forest Area	170,739
Huron-Manistee National Forest	978,900
Pigeon River Country State Forest Area	98,104

**Table 32 Recreational Areas in Alpena Complex under Existing Conditions**

Airspace	Atlanta State Forest Area (acres)	Grayling State Forest Area (acres)	Huron-Manistee National Forest (acres)	Pigeon River Country State Forest Area (acres)
Grayling Temporary MOA	90,008	85,312	75,727	39,441
Pike West MOA	137,259	27,830	286,601	—
Pike East MOA	10	—	—	—
R-4201A	—	465	—	—
R-4201B	—	418	—	—

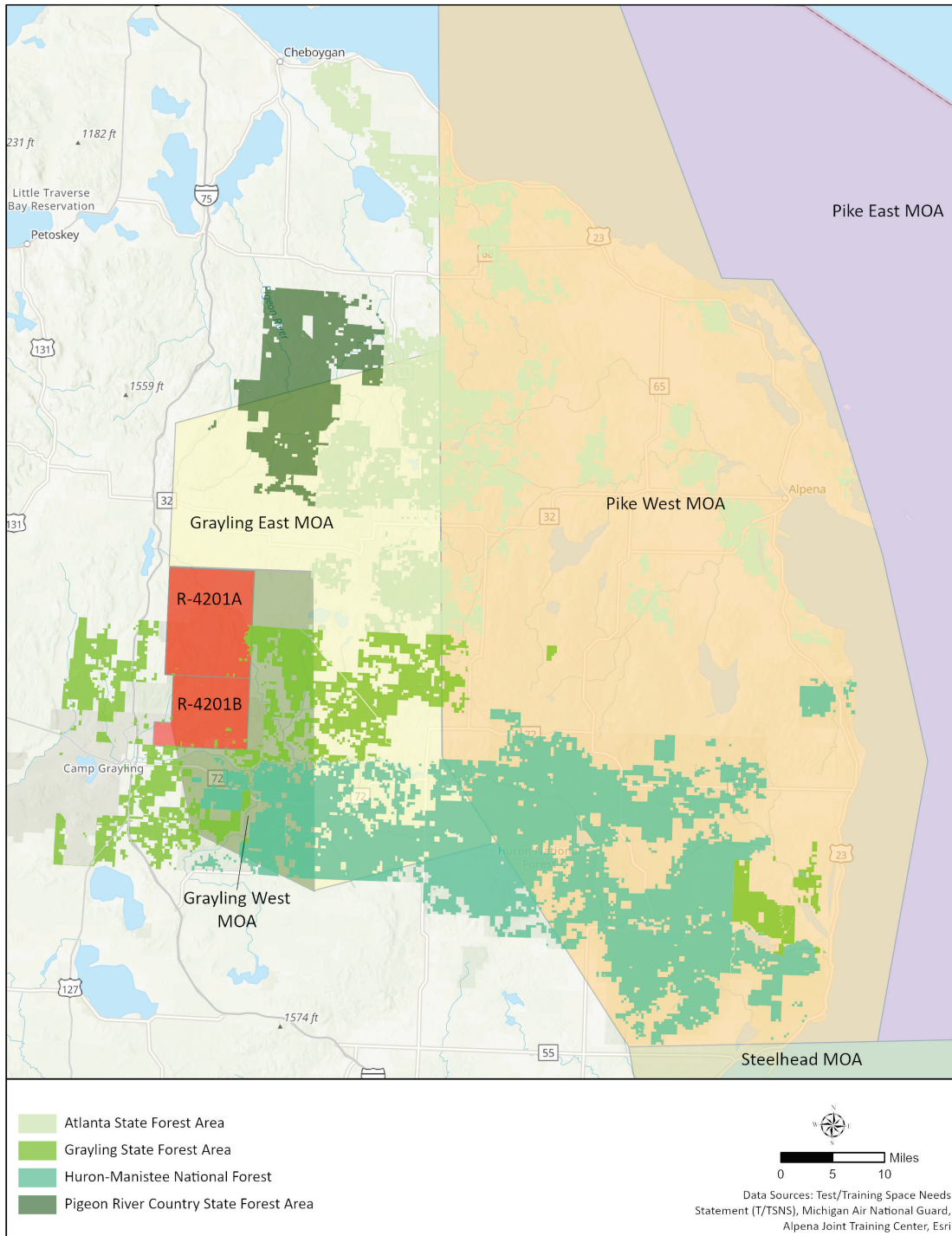
Key: MOA = military operations area; R = Restricted Area.

**Table 33 Recreational Areas in Alpena Complex under Proposed Action**

Airspace	Atlanta State Forest Area (acres)	Grayling State Forest Area (acres)	Huron-Manistee National Forest (acres)	Pigeon River Country State Forest Area (acres)
Grayling West MOA	162	37,777	42,838	—
Grayling East MOA	89,990	45,651	74,280	37,525
Pike West MOA	136,838	27,396	286,167	—
Pike East MOA	10	—	—	—
R-4201A	—	465	—	—
R-4201B	—	418	—	—

Key: MOA = military operations area; R = Restricted Area.

**Figure 5 Forest Areas Within and Adjacent to Alpena SUA Complex**



## Section 6. References

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## **Appendix A**

### **Flight Profile and Sortie Data Entered into BaseOps**

# Airspace Profile Details

## A10-GE-P\_A - A-10 Grayling East Proposed

Notes

Annual Day Ops	55		
Annual Night Ops	20		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	60 % NC Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Grayling East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	14,999 MSL	60
	15,000 MSL	17,999 MSL	40

## A10-GE-P\_B - A-10 Grayling East Proposed

Notes

Annual Day Ops	1190		
Annual Night Ops	0		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	60 % NC Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Grayling East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	14,999 MSL	60
	15,000 MSL	17,999 MSL	40

## A10-GT-E - A-10 Grayling Temporary Existing

Notes

Annual Day Ops	69		
Annual Night Ops	8		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	60 % NC Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Grayling Temporary MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,999 MSL	70
	10,000 MSL	17,999 MSL	30

## A10-GW-P-A - A-10 Grayling West Proposed

Notes

Annual Day Ops	55		
Annual Night Ops	20		
Aircraft	A-10A		L-41
Engine	TF34-GE-100		

<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	25
	3,000 MSL	7,999 MSL	40
	8,000 MSL	17,999 MSL	25

## A10-GW-P\_B - A-10 Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	1190		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	8
	1,000 AGL	2,999 MSL	22
	3,000 MSL	7,999 MSL	30
	8,000 MSL	17,999 MSL	40

## A10-HE - A-10 Hersey Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	1.5		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Hersey MOA - HERSEY MOA, MI		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,999 MSL	60
	10,000 MSL	17,999 MSL	40

## A10-PE-E - A-10 Pike East Existing

<b>Notes</b>	
<b>Annual Day Ops</b>	40
<b>Annual Night Ops</b>	0
<b>Aircraft</b>	A-10A
<b>Engine</b>	TF34-GE-100
<b>Power Setting</b>	60 % NC Variable
<b>Airspeed</b>	300 kts



<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	10
	500 AGL	999 AGL	25
	1,000 AGL	2,999 MSL	25
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	15

## A10-PE-P - A-10 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	40		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	10
	500 AGL	999 AGL	25
	1,000 AGL	2,999 MSL	25
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	15

## A10-PW-E - A-10 Pike West Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	80		
<b>Annual Night Ops</b>	10		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	70
	10,000 MSL	17,999 MSL	30

## A10-PW-P - A-10 Pike West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	80		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	70
	10,000 MSL	17,999 MSL	30

## A10-RA-E-A - A-10 R-4201A Existing

### Notes

Annual Day Ops	50
Annual Night Ops	16
Aircraft	A-10A
Engine	TF34-GE-100
Power Setting	60 % NC Variable
Airspeed	300 kts
Profile Type	MOA
Area or Route	R-4201A - Camp Grayling Existing and Proposed
Altitude Bands	Floor Ceiling Relative Utilization
	ft ft
	100 AGL 499 AGL 10
	500 AGL 1,999 MSL 25
	2,000 MSL 4,999 MSL 40
	5,000 MSL 23,000 MSL 25

## A10-RA-E-B - A-10 R-4201A Existing

### Notes

Annual Day Ops	1320
Annual Night Ops	0
Aircraft	A-10A
Engine	TF34-GE-100
Power Setting	60 % NC Variable
Airspeed	300 kts
Profile Type	MOA
Area or Route	R-4201A - Camp Grayling Existing and Proposed
Altitude Bands	Floor Ceiling Relative Utilization
	ft ft
	100 AGL 499 AGL 2
	500 AGL 1,999 MSL 18
	2,000 MSL 4,999 MSL 20
	5,000 MSL 23,000 MSL 60

## A10-RA-P-A - A-10 R-4201A Proposed

### Notes

Annual Day Ops	55
Annual Night Ops	20
Aircraft	A-10A
Engine	TF34-GE-100
Power Setting	60 % NC Variable
Airspeed	300 kts
Profile Type	MOA
Area or Route	R-4201A - Camp Grayling Existing and Proposed
Altitude Bands	Floor Ceiling Relative Utilization
	ft ft
	100 AGL 499 AGL 10
	500 AGL 1,999 MSL 25
	2,000 MSL 4,999 MSL 40
	5,000 MSL 23,000 MSL 25

## A10-RA-P-B - A-10 R-4201A Proposed

### Notes

Annual Day Ops	1190
Annual Night Ops	0
Aircraft	A-10A

<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	2
	500 AGL	1,999 MSL	18
	2,000 MSL	4,999 MSL	20
	5,000 MSL	23,000 MSL	60

## A10-RB-E - A-10 R-4201B Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	16		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Existing - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	10
	500 AGL	1,999 MSL	25
	2,000 MSL	4,999 MSL	40
	5,000 MSL	9,000 MSL	25

## A10-RB-P-A - A-10 R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	55		
<b>Annual Night Ops</b>	20		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	10
	500 AGL	1,999 MSL	25
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	25

## A10-RB-P-B - A-10 R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	1190		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	2
	500 AGL	1,999 MSL	18
	2,000 MSL	4,999 MSL	20
	5,000 MSL	23,000 MSL	60

## A10-S-E\_A - A-10 Steelhead Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	130		
<b>Annual Night Ops</b>	46		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	60
	10,000 MSL	17,999 MSL	40

## A10-S-E\_B - A-10 Steelhead Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	560		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	50 % NC Variable		
<b>Airspeed</b>	240 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## A10-S-P\_A - A-10 Steelhead Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	140		
<b>Annual Night Ops</b>	40		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	60
	10,000 MSL	17,999 MSL	40

## A10-S-P\_B - A-10 Steelhead Proposed

### Notes

Annual Day Ops	690		
Annual Night Ops	0		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	50 % NC Variable		
Airspeed	240 kts		
Profile Type	MOA		
Area or Route	Steelhead MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## A10-SE-P\_A - A-10 Steelhead Low East Proposed

### Notes

Annual Day Ops	140		
Annual Night Ops	40		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	60 % NC Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Steelhead Low East-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	60
	1,000 AGL	2,999 MSL	20
	3,000 MSL	5,999 MSL	20

## A10-SE-P\_B - A-10 Steelhead Low East Proposed

### Notes

Annual Day Ops	690		
Annual Night Ops	0		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	50 % NC Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Steelhead Low East-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	35
	3,000 MSL	5,999 MSL	60

## A10-SN-P\_A - A-10 Steelhead Low North Proposed

### Notes

Annual Day Ops	140		
Annual Night Ops	40		
Aircraft	A-10A		
Engine	TF34-GE-100		
Power Setting	60 % NC Variable		
Airspeed	300 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low North-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	60
	1,000 AGL	2,999 MSL	20
	3,000 MSL	5,999 MSL	20

## A10-SN-P\_B - A-10 Steelhead Low North Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	690		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	50 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low North-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	35
	3,000 MSL	5,999 MSL	60

## A10-SS-P\_A - A-10 Steelhead Low South Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	140		
<b>Annual Night Ops</b>	40		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	60 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low South-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	4,000 MSL	4,999 MSL	80
	5,000 MSL	5,999 MSL	20

## A10-SS-P\_B - A-10 Steelhead Low South Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	690		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	50 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low South-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	4,000 MSL	4,999 MSL	50
	5,000 MSL	5,999 MSL	50

## A10-VR - A-10 VR Proposed

**Notes**

<b>Annual Day Ops</b>	35		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	A-10A		
<b>Engine</b>	TF34-GE-100		
<b>Power Setting</b>	87.1 % NC Training Route		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MTR		
<b>Area or Route</b>	VR-16		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	60
	500 AGL	999 AGL	30
	1,000 AGL	1,500 AGL	10

## AC130-GE-P - AC-130 Grayling East Proposed

**Notes**

<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	800 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	14,999 MSL	60
	15,000 MSL	17,999 MSL	40

## AC130-GW-P - AC-130 Grayling West Proposed

**Notes**

<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	800 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	1,000 AGL	2,999 MSL	10
	3,000 MSL	7,999 MSL	60
	8,000 MSL	17,999 MSL	30

## AC130-RA-E - AC-130 R-4201A Existing

**Notes**

<b>Annual Day Ops</b>	4		
<b>Annual Night Ops</b>	4		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	800 C TIT Variable		
<b>Airspeed</b>	200 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	1,999 MSL	10
	2,000 MSL	4,999 MSL	60
	5,000 MSL	23,000 MSL	30

## AC130-RA-P - AC-130 R-4201A Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	800 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	1,999 MSL	10
	2,000 MSL	4,999 MSL	60
	5,000 MSL	23,000 MSL	30

## AC130-RB-E - AC-130 R-4201B Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	4		
<b>Annual Night Ops</b>	4		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	800 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Existing - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	1,999 MSL	10
	2,000 MSL	4,999 MSL	60
	5,000 MSL	9,000 MSL	30

## AC130-RB-P - AC-130 R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	800 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	1,999 MSL	10
	2,000 MSL	4,999 MSL	60
	5,000 MSL	23,000 MSL	30



## AH-PE-E - AH-1 Pike East Existing

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	AH-1G		
Engine	T53-L-13		
Power Setting	Lfo Lite 100 kts		
Airspeed	85 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	300 AGL	499 AGL	80
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	10

## AH-PE-P - AH-1 Pike East Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	AH-1G		
Engine	T53-L-13		
Power Setting	Lfo Lite 100 kts		
Airspeed	85 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	300 AGL	499 AGL	80
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	10

## AH-SE-P - AH-1 Steelhead Low East Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	AH-1G		
Engine	T53-L-13		
Power Setting	Lfo Lite 100 kts		
Airspeed	85 kts		
Profile Type	MOA		
Area or Route	Steelhead Low East-Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	500 AGL	999 AGL	80
	1,000 AGL	2,999 MSL	10
	3,000 MSL	5,999 MSL	10

## AH-SN-P - AH-1 Steelhead Low North Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	AH-1G		
Engine	T53-L-13		
Power Setting	Lfo Lite 100 kts		L-51
Airspeed	85 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low North-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	80
	1,000 AGL	2,999 MSL	10
	3,000 MSL	5,999 MSL	10

## AH-SS-P - AH-1 Steelhead Low South Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	10		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	AH-1G		
<b>Engine</b>	T53-L-13		
<b>Power Setting</b>	Lfo Lite 100 kts		
<b>Airspeed</b>	85 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low South-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	4,000 MSL	4,999 MSL	90
	5,000 MSL	5,999 MSL	10

## AV8-GE-P - AV-8B Grayling East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	35		
<b>Annual Night Ops</b>	10		
<b>Aircraft</b>	AV-8B		
<b>Engine</b>	F402-RR-405		
<b>Power Setting</b>	75 % RPM Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	14,999 MSL	60
	15,000 MSL	17,999 MSL	40

## AV8-GW-P - AV-8B Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	35		
<b>Annual Night Ops</b>	10		
<b>Aircraft</b>	AV-8B		
<b>Engine</b>	F402-RR-405		
<b>Power Setting</b>	75 % RPM Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	25
	3,000 MSL	7,999 MSL	40
	8,000 MSL	17,999 MSL	25

## AV8-RA-E - AV-8B R-4201A Existing

### Notes

Annual Day Ops	28		
Annual Night Ops	0		
Aircraft	AV-8B		
Engine	F402-RR-405		
Power Setting	75 % RPM Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	100 AGL	499 AGL	10
	500 AGL	1,999 MSL	25
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	25

## AV8-RA-P - AV-8B R-4201A Proposed

### Notes

Annual Day Ops	35		
Annual Night Ops	10		
Aircraft	AV-8B		
Engine	F402-RR-405		
Power Setting	75 % RPM Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	100 AGL	499 AGL	10
	500 AGL	1,999 MSL	25
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	25

## AV8-RB-E - AV-8B R-4201B Existing

### Notes

Annual Day Ops	28		
Annual Night Ops	0		
Aircraft	AV-8B		
Engine	F402-RR-405		
Power Setting	75 % RPM Variable		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201B-Existing - Camp Grayling		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	100 AGL	499 AGL	10
	500 AGL	1,999 MSL	25
	2,000 MSL	4,999 MSL	40
	5,000 MSL	9,000 MSL	25

## AV8-RB-P - AV-8B R-4201B Proposed

### Notes

Annual Day Ops	35		
Annual Night Ops	10		L-53
Aircraft	AV-8B		

<b>Engine</b>	F402-RR-405		
<b>Power Setting</b>	75 % RPM Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	10
	500 AGL	1,999 MSL	25
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	25

## AV8-VR - AV-8B VR Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	35		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	AV-8B		
<b>Engine</b>	F402-RR-405		
<b>Power Setting</b>	75 % RPM Traffic Pattern		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MTR		
<b>Area or Route</b>	VR-16		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	300 AGL	499 AGL	60
	500 AGL	999 AGL	30
	1,000 AGL	1,500 AGL	10

## B2-GE-P - B-2 Grayling East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	B-2A		
<b>Engine</b>	F118-GE-100		
<b>Power Setting</b>	70 PLA Intermediate		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling East MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	14,999 MSL	10
	15,000 MSL	17,999 MSL	90

## B2-GW-P - B-2 Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	B-2A		
<b>Engine</b>	F118-GE-100		
<b>Power Setting</b>	70 PLA Intermediate		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	8,000 MSL	17,999 MSL	100

## B2-PW-E - B-2 Pike West Existing

### Notes

Annual Day Ops	1		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Pike West MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## B2-PW-P - B-2 Pike West Proposed

### Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Pike West MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## B2-RA-E - B-2 R-4201A Existing

### Notes

Annual Day Ops	1		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## B2-RA-P - B-2 R-4201A Proposed

### Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## B2-RB-E - B-2 R-4201B Existing

### Notes

Annual Day Ops	1		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201B-Existing - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,000 MSL	100

## B2-RB-P - B-2 R-4201B Proposed

### Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201B-Proposed - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## B2-S-E - B-2 Steelhead Existing

### Notes

Annual Day Ops	8		
Annual Night Ops	0		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Steelhead MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## B2-S-P - B-2 Steelhead Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	10		
Aircraft	B-2A		
Engine	F118-GE-100		
Power Setting	70 PLA Intermediate		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Steelhead MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## B52-GE-P - B-52 Grayling East Proposed

### Notes

Annual Day Ops	30		
Annual Night Ops	10		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Grayling East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	14,999 MSL	10
	15,000 MSL	17,999 MSL	90

## B52-GT-E - B-52 Grayling Temporary Existing

### Notes

Annual Day Ops	13		
Annual Night Ops	5		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Grayling Temporary MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,999 MSL	5
	10,000 MSL	17,999 MSL	95

## B52-GW-P - B-52 Grayling West Proposed

### Notes

Annual Day Ops	30		
Annual Night Ops	10		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Grayling West MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	8,000 MSL	17,999 MSL	100

## B52-PE-E - B-52 Pike East Existing

### Notes

Annual Day Ops	48		
Annual Night Ops	0		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	1,000 AGL	2,999 MSL	5
	3,000 MSL	4,999 MSL	10
	5,000 MSL	17,999 MSL	85

## B52-PE-P - B-52 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	20		
<b>Aircraft</b>	B-52H		
<b>Engine</b>	TF33-P-3		
<b>Power Setting</b>	2110 LBS/HR Cruise		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	1,000 AGL	2,999 MSL	5
	3,000 MSL	4,999 MSL	10
	5,000 MSL	17,999 MSL	85

## B52-PW-E - B-52 Pike West Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	30		
<b>Annual Night Ops</b>	10		
<b>Aircraft</b>	B-52H		
<b>Engine</b>	TF33-P-3		
<b>Power Setting</b>	2110 LBS/HR Cruise		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	5
	10,000 MSL	17,999 MSL	95

## B52-PW-P - B-52 Pike West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	40		
<b>Annual Night Ops</b>	20		
<b>Aircraft</b>	B-52H		
<b>Engine</b>	TF33-P-3		
<b>Power Setting</b>	2110 LBS/HR Cruise		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	5
	10,000 MSL	17,999 MSL	95



## B52-RA-E - B-52 R-4201A Existing

### Notes

Annual Day Ops	14		
Annual Night Ops	6		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## B52-RA-P - B-52 R-4201A Proposed

### Notes

Annual Day Ops	30		
Annual Night Ops	10		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## B52-RB-E - B-52 R-4201B Existing

### Notes

Annual Day Ops	14		
Annual Night Ops	6		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201B-Existing - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,000 MSL	100

## B52-RB-P - B-52 R-4201B Proposed

### Notes

Annual Day Ops	30		
Annual Night Ops	10		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	R-4201B-Proposed - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## B52-S-E - B-52 Steelhead Existing

### Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Steelhead MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## B52-S-P - B-52 Steelhead Proposed

### Notes

Annual Day Ops	15		
Annual Night Ops	5		
Aircraft	B-52H		
Engine	TF33-P-3		
Power Setting	2110 LBS/HR Cruise		
Airspeed	300 kts		
Profile Type	MOA		
Area or Route	Steelhead MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## C12-GE-P - MC-12 Grayling East Proposed

### Notes

Annual Day Ops	0		
Annual Night Ops	5		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	Grayling East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	14,999 MSL	60
	15,000 MSL	17,999 MSL	40

## C12-GW-P - MC-12 Grayling West Proposed

### Notes

Annual Day Ops	0		
Annual Night Ops	5		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	Grayling West MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization L-60
	8,000 MSL	17,999 MSL	100

## C12-PE-E - MC-12 Pike East Existing

### Notes

Annual Day Ops	0		
Annual Night Ops	1		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	5,000 MSL	17,999 MSL	100

## C12-PE-P - MC-12 Pike East Proposed

### Notes

Annual Day Ops	0		
Annual Night Ops	5		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	5,000 MSL	17,999 MSL	100

## C12-RA-E - C-12 R-4201A Existing

### Notes

Annual Day Ops	0		
Annual Night Ops	3		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	5,000 MSL	23,000 MSL	100

## C12-RA-P - C-12 R-4201A Proposed

### Notes

Annual Day Ops	0		
Annual Night Ops	5		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	5,000 MSL	23,000 MSL	100

## C12-RB-E - C-12 R-4201B Existing

Notes

Annual Day Ops	0		
Annual Night Ops	3		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	R-4201B-Existing - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	5,000 MSL	9,000 MSL	100

## C12-RB-P - C-12 R-4201B Proposed

Notes

Annual Day Ops	0		
Annual Night Ops	5		
Aircraft	C-12		
Engine	PT6A-38		
Power Setting	70 % RPM Variable		
Airspeed	200 kts		
Profile Type	MOA		
Area or Route	R-4201B-Proposed - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	5,000 MSL	23,000 MSL	100

## C17-GE-P - C-17 Grayling East Proposed

Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	C-17		
Engine	F117-PW-100		
Power Setting	1.3 EPR Variable		
Airspeed	350 kts		
Profile Type	MOA		
Area or Route	Grayling East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	10,000 MSL	14,999 MSL	50
	15,000 MSL	17,999 MSL	50

## C17-GW-P - C-17 Grayling West Proposed

Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	C-17		
Engine	F117-PW-100		
Power Setting	1.3 EPR Variable		
Airspeed	350 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	25
	1,000 AGL	2,999 MSL	25
	3,000 MSL	7,999 MSL	30
	8,000 MSL	17,999 MSL	20

## C17-RA-E - C-17 R-4201A Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	2		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-17		
<b>Engine</b>	F117-PW-100		
<b>Power Setting</b>	1.3 EPR Variable		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	50

## C17-RA-P - C-17 R-4201A Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-17		
<b>Engine</b>	F117-PW-100		
<b>Power Setting</b>	1.3 EPR Variable		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	50

## C17-RB-E - C-17 R-4201B Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	2		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-17		
<b>Engine</b>	F117-PW-100		
<b>Power Setting</b>	1.3 EPR Variable		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Existing - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	50

## C17-RB-P - C-17 R-4201B Proposed

### Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	C-17		
Engine	F117-PW-100		
Power Setting	1.3 EPR Variable		
Airspeed	350 kts		
Profile Type	MOA		
Area or Route	R-4201B-Proposed - Camp Grayling		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	50

## C17-VR - C-17 VR Proposed

### Notes

Annual Day Ops	6		
Annual Night Ops	0		
Aircraft	C-17		
Engine	F117-PW-100		
Power Setting	1.3 EPR Variable		
Airspeed	350 kts		
Profile Type	MTR		
Area or Route	VR-16		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	300 AGL	499 AGL	40
	500 AGL	999 AGL	50
	1,000 AGL	1,500 AGL	10

## C130-GE-P - C-130 Grayling East Proposed

### Notes

Annual Day Ops	50		
Annual Night Ops	0		
Aircraft	C-130H&N&P		
Engine	T56-A-15		
Power Setting	900 C TIT Variable		
Airspeed	250 kts		
Profile Type	MOA		
Area or Route	Grayling East MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	14,999 MSL	50
	15,000 MSL	17,999 MSL	50

## C130-GT-E - C-130 Grayling Temporary Existing

### Notes

Annual Day Ops	3		
Annual Night Ops	0		
Aircraft	C-130H&N&P		
Engine	T56-A-15		
Power Setting	900 C TIT Variable		
Airspeed	200 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling Temporary MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## C130-GW-P - C-130 Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	900 C TIT Variable		
<b>Airspeed</b>	250 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	25
	1,000 AGL	2,999 MSL	25
	3,000 MSL	7,999 MSL	30
	8,000 MSL	17,999 MSL	20

## C130-PE-E - C-130 Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	8		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	900 C TIT Variable		
<b>Airspeed</b>	250 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	300 AGL	499 AGL	10
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	10
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	45

## C130-PE-P - C-130 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	10		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	900 C TIT Variable		
<b>Airspeed</b>	250 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	10
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	10
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	45

## C130-PW-E - C-130 Pike West Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	4		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	900 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## C130-PW-P - C-130 Pike West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	10		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	900 C TIT Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## C130-RA-E - C-130 R-4201A Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	7		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	C-130H&N&P		
<b>Engine</b>	T56-A-15		
<b>Power Setting</b>	900 C TIT Variable		
<b>Airspeed</b>	250 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	100 AGL	499 AGL	35
	500 AGL	1,999 MSL	35
	2,000 MSL	4,999 MSL	30



## C130-RA-P - C-130 R-4201A Proposed

### Notes

Annual Day Ops	50												
Annual Night Ops	0												
Aircraft	C-130H&N&P												
Engine	T56-A-15												
Power Setting	900 C TIT Variable												
Airspeed	250 kts												
Profile Type	MOA												
Area or Route	R-4201A - Camp Grayling Existing and Proposed												
Altitude Bands	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>100 AGL</td><td>499 AGL</td><td>35</td></tr><tr><td>500 AGL</td><td>1,999 MSL</td><td>35</td></tr><tr><td>2,000 MSL</td><td>4,999 MSL</td><td>30</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	100 AGL	499 AGL	35	500 AGL	1,999 MSL	35	2,000 MSL	4,999 MSL	30
Floor ft	Ceiling ft	Relative Utilization											
100 AGL	499 AGL	35											
500 AGL	1,999 MSL	35											
2,000 MSL	4,999 MSL	30											

## C130-RB-E - C-130 R-4201B Existing

### Notes

Annual Day Ops	7												
Annual Night Ops	0												
Aircraft	C-130H&N&P												
Engine	T56-A-15												
Power Setting	900 C TIT Variable												
Airspeed	250 kts												
Profile Type	MOA												
Area or Route	R-4201B-Existing - Camp Grayling												
Altitude Bands	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>100 AGL</td><td>499 AGL</td><td>35</td></tr><tr><td>500 AGL</td><td>1,999 MSL</td><td>35</td></tr><tr><td>2,000 MSL</td><td>4,999 MSL</td><td>30</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	100 AGL	499 AGL	35	500 AGL	1,999 MSL	35	2,000 MSL	4,999 MSL	30
Floor ft	Ceiling ft	Relative Utilization											
100 AGL	499 AGL	35											
500 AGL	1,999 MSL	35											
2,000 MSL	4,999 MSL	30											

## C130-RB-P - C-130 R-4201B Proposed

### Notes

Annual Day Ops	50												
Annual Night Ops	0												
Aircraft	C-130H&N&P												
Engine	T56-A-15												
Power Setting	900 C TIT Variable												
Airspeed	250 kts												
Profile Type	MOA												
Area or Route	R-4201B-Proposed - Camp Grayling												
Altitude Bands	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>100 AGL</td><td>499 AGL</td><td>35</td></tr><tr><td>500 AGL</td><td>1,999 MSL</td><td>35</td></tr><tr><td>2,000 MSL</td><td>4,999 MSL</td><td>30</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	100 AGL	499 AGL	35	500 AGL	1,999 MSL	35	2,000 MSL	4,999 MSL	30
Floor ft	Ceiling ft	Relative Utilization											
100 AGL	499 AGL	35											
500 AGL	1,999 MSL	35											
2,000 MSL	4,999 MSL	30											

## C130-VR - C-130 VR Proposed

### Notes

Annual Day Ops	30
Annual Night Ops	0
Aircraft	C-130H&N&P
Engine	T56-A-15
Power Setting	900 C TIT Variable
Airspeed	250 kts

<b>Profile Type</b>	MTR		
<b>Area or Route</b>	VR-16		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	60
	500 AGL	999 AGL	30
	1,000 AGL	1,500 AGL	10

## CH47-GW-P - CH-47 Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	25		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	CH47D		
<b>Engine</b>	T55-L-712		
<b>Power Setting</b>	Lfo Lite 70 kts		
<b>Airspeed</b>	80 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	75
	1,000 AGL	2,999 MSL	25

## CH47-PE-E - CV-22 Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	13		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	CHINOOK (CH-47D)		
<b>Engine</b>	T55 Turboshfts		
<b>Power Setting</b>	Flyover 120 kts		
<b>Airspeed</b>	150 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	80
	500 AGL	999 AGL	10

## CH47-PE-P - CV-22 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	10		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	CHINOOK (CH-47D)		
<b>Engine</b>	T55 Turboshfts		
<b>Power Setting</b>	Flyover 120 kts		
<b>Airspeed</b>	150 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	80
	500 AGL	999 AGL	10

## CH47-RA-E - CH-47 R-4201A Existing

### Notes

Annual Day Ops	19												
Annual Night Ops	0												
Aircraft	CH47D												
Engine	T55-L-712												
Power Setting	Lfo Lite 70 kts												
Airspeed	80 kts												
Profile Type	MOA												
Area or Route	R-4201A - Camp Grayling Existing and Proposed												
Altitude Bands	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>5 AGL</td><td>99 AGL</td><td>25</td></tr><tr><td>100 AGL</td><td>499 AGL</td><td>50</td></tr><tr><td>500 AGL</td><td>1,999 MSL</td><td>25</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	5 AGL	99 AGL	25	100 AGL	499 AGL	50	500 AGL	1,999 MSL	25
Floor ft	Ceiling ft	Relative Utilization											
5 AGL	99 AGL	25											
100 AGL	499 AGL	50											
500 AGL	1,999 MSL	25											

## CH47-RA-P - CH-47 R-4201A Proposed

### Notes

Annual Day Ops	25												
Annual Night Ops	0												
Aircraft	CH47D												
Engine	T55-L-712												
Power Setting	Lfo Lite 70 kts												
Airspeed	80 kts												
Profile Type	MOA												
Area or Route	R-4201A - Camp Grayling Existing and Proposed												
Altitude Bands	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>5 AGL</td><td>99 AGL</td><td>25</td></tr><tr><td>100 AGL</td><td>499 AGL</td><td>50</td></tr><tr><td>500 AGL</td><td>1,999 MSL</td><td>25</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	5 AGL	99 AGL	25	100 AGL	499 AGL	50	500 AGL	1,999 MSL	25
Floor ft	Ceiling ft	Relative Utilization											
5 AGL	99 AGL	25											
100 AGL	499 AGL	50											
500 AGL	1,999 MSL	25											

## CH47-RB-E - CH-47 R-4201B Existing

### Notes

Annual Day Ops	19												
Annual Night Ops	0												
Aircraft	CH47D												
Engine	T55-L-712												
Power Setting	Lfo Lite 70 kts												
Airspeed	80 kts												
Profile Type	MOA												
Area or Route	R-4201B-Existing - Camp Grayling												
Altitude Bands	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>5 AGL</td><td>99 AGL</td><td>25</td></tr><tr><td>100 AGL</td><td>499 AGL</td><td>50</td></tr><tr><td>500 AGL</td><td>1,999 MSL</td><td>25</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	5 AGL	99 AGL	25	100 AGL	499 AGL	50	500 AGL	1,999 MSL	25
Floor ft	Ceiling ft	Relative Utilization											
5 AGL	99 AGL	25											
100 AGL	499 AGL	50											
500 AGL	1,999 MSL	25											

## CH47-RB-P - CH-47 R-4201B Proposed

### Notes

Annual Day Ops	25
Annual Night Ops	0
Aircraft	CH47D
Engine	T55-L-712
Power Setting	Lfo Lite 70 kts
Airspeed	80 kts

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	5 AGL	99 AGL	25
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	25

## F15-VR - F-15E VR Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	4		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-15E		
<b>Engine</b>	F100-PW-220		
<b>Power Setting</b>	82 % NC Variable		
<b>Airspeed</b>	500 kts		
<b>Profile Type</b>	MTR		
<b>Area or Route</b>	VR-16		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	40
	500 AGL	999 AGL	50
	1,000 AGL	1,500 AGL	10

## F16-GE-P\_A - F-16 Grayling East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	450 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	14,999 MSL	50
	15,000 MSL	17,999 MSL	50

## F16-GE-P\_B - F-16 Grayling East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	13		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	14,999 MSL	50
	15,000 MSL	17,999 MSL	50

## F16-GT-E - F-16 Grayling Temporary Existing

Notes

Annual Day Ops	112		
Annual Night Ops	0		
Aircraft	F-16C		
Engine	F100-PW-229		
Power Setting	90 % NC Variable		
Airspeed	450 kts		
Profile Type	MOA		
Area or Route	Grayling Temporary MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F16-GW-P\_A - F-16 Grayling West Proposed

Notes

Annual Day Ops	50		
Annual Night Ops	30		
Aircraft	F-16C		
Engine	F100-PW-229		
Power Setting	90 % NC Variable		
Airspeed	450 kts		
Profile Type	MOA		
Area or Route	Grayling West MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	2
	1,000 AGL	2,999 MSL	15
	3,000 MSL	7,999 MSL	40
	8,000 MSL	17,999 MSL	43

## F16-GW-P\_B - F-16 Grayling West Proposed

Notes

Annual Day Ops	13		
Annual Night Ops	5		
Aircraft	F-16C		
Engine	F100-PW-229		
Power Setting	90 % NC Variable		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Grayling West MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	5
	3,000 MSL	7,999 MSL	40
	8,000 MSL	17,999 MSL	50

## F16-PE-E\_A - F-16 Pike East Existing

Notes

Annual Day Ops	66		
Annual Night Ops	0		
Aircraft	F-16C		
Engine	F100-PW-229		
Power Setting	90 % NC Variable		

<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	5
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	15
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	45

## F16-PE-E\_B - F-16 Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	2		
<b>Annual Night Ops</b>	1		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	5
	3,000 MSL	4,999 MSL	10
	5,000 MSL	17,999 MSL	80

## F16-PE-P\_A - F-16 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	70		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	5
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	15
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	45

## F16-PE-P\_B - F-16 Pike East Proposed

<b>Notes</b>	
<b>Annual Day Ops</b>	2
<b>Annual Night Ops</b>	1
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	5
	3,000 MSL	4,999 MSL	10
	5,000 MSL	17,999 MSL	80

## F16-PW-E\_A - F-16 Pike West Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	66		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F16-PW-E\_B - F-16 Pike West Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	311		
<b>Annual Night Ops</b>	104		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F16-PW-P\_A - F-16 Pike West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	80		
<b>Annual Night Ops</b>	20		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

# F16-PW-P\_B - F-16 Pike West Proposed

**Notes**

<b>Annual Day Ops</b>	318		
<b>Annual Night Ops</b>	106		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

# F16-RA-E-A - F-16 R-4201A Existing

**Notes**

<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	450 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	2
	500 AGL	1,999 MSL	15
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	43

# F16-RA-E-B - F-16 R-4201A Existing

**Notes**

<b>Annual Day Ops</b>	174		
<b>Annual Night Ops</b>	57		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5 AGL	99 AGL	5
	100 AGL	499 AGL	5
	500 AGL	1,999 MSL	5
	2,000 MSL	4,999 MSL	5
	5,000 MSL	23,000 MSL	80

# F16-RA-P-A - F-16 R-4201A Proposed

**Notes**

<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	F-16C	L-74	
<b>Engine</b>	F100-PW-229		



<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	450 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	100 AGL	499 AGL	2
	500 AGL	1,999 MSL	15
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	43

## F16-RA-P-B - F-16 R-4201A Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	124		
<b>Annual Night Ops</b>	41		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	5 AGL	99 AGL	5
	100 AGL	499 AGL	5
	500 AGL	1,999 MSL	5
	2,000 MSL	4,999 MSL	5
	5,000 MSL	23,000 MSL	80

## F16-RB-E-A - F-16 R-4201B Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	450 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Existing - Camp Grayling		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	100 AGL	499 AGL	2
	500 AGL	1,999 MSL	15
	2,000 MSL	4,999 MSL	40
	5,000 MSL	9,000 MSL	43

## F16-RB-E-B - F-16 R-4201B Existing

<b>Notes</b>	
<b>Annual Day Ops</b>	58
<b>Annual Night Ops</b>	19
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Existing - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5 AGL	99 AGL	5
	100 AGL	499 AGL	5
	500 AGL	1,999 MSL	5
	2,000 MSL	4,999 MSL	5
	5,000 MSL	9,000 MSL	80

## F16-RB-P-A - F-16 R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	450 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	100 AGL	499 AGL	2
	500 AGL	1,999 MSL	15
	2,000 MSL	4,999 MSL	40
	5,000 MSL	23,000 MSL	43

## F16-RB-P-B - F-16 R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	41		
<b>Annual Night Ops</b>	14		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5 AGL	99 AGL	5
	100 AGL	499 AGL	5
	500 AGL	1,999 MSL	5
	2,000 MSL	4,999 MSL	5
	5,000 MSL	23,000 MSL	80

## F16-S-E\_A - F-16 Steelhead Existing

<b>Notes</b>	
<b>Annual Day Ops</b>	44
<b>Annual Night Ops</b>	0
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## F16-S-E\_B - F-16 Steelhead Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	395		
<b>Annual Night Ops</b>	132		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F16-S-P\_A - F-16 Steelhead Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	45		
<b>Annual Night Ops</b>	15		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## F16-S-P\_B - F-16 Steelhead Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	383		
<b>Annual Night Ops</b>	127		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F16-SE-P\_A - F-16 Steelhead Low East Proposed

### Notes

<b>Annual Day Ops</b>	45
<b>Annual Night Ops</b>	15
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts
<b>Profile Type</b>	MOA
<b>Area or Route</b>	Steelhead Low East-Proposed
<b>Altitude Bands</b>	Floor Ceiling Relative Utilization
	ft ft
	500 AGL 999 AGL 60
	1,000 AGL 2,999 MSL 20
	3,000 MSL 5,999 MSL 20

## F16-SE-P\_B - F-16 Steelhead Low East Proposed

### Notes

<b>Annual Day Ops</b>	22
<b>Annual Night Ops</b>	8
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts
<b>Profile Type</b>	MOA
<b>Area or Route</b>	Steelhead Low East-Proposed
<b>Altitude Bands</b>	Floor Ceiling Relative Utilization
	ft ft
	500 AGL 999 AGL 5
	1,000 AGL 2,999 MSL 20
	3,000 MSL 5,999 MSL 75

## F16-SN-P\_A - F-16 Steelhead Low North Proposed

### Notes

<b>Annual Day Ops</b>	45
<b>Annual Night Ops</b>	15
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts
<b>Profile Type</b>	MOA
<b>Area or Route</b>	Steelhead Low North-Proposed
<b>Altitude Bands</b>	Floor Ceiling Relative Utilization
	ft ft
	500 AGL 999 AGL 60
	1,000 AGL 2,999 MSL 20
	3,000 MSL 5,999 MSL 20

## F16-SN-P\_B - F-16 Steelhead Low North Proposed

### Notes

<b>Annual Day Ops</b>	22
<b>Annual Night Ops</b>	8
<b>Aircraft</b>	F-16C
<b>Engine</b>	F100-PW-229
<b>Power Setting</b>	90 % NC Variable
<b>Airspeed</b>	400 kts

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low North-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	20
	3,000 MSL	5,999 MSL	75

## F16-SS-P\_A - F-16 Steelhead Low South Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	45		
<b>Annual Night Ops</b>	15		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low South-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	4,000 MSL	4,999 MSL	80
	5,000 MSL	5,999 MSL	20

## F16-SS-P\_B - F-16 Steelhead Low South Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	22		
<b>Annual Night Ops</b>	8		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low South-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	4,000 MSL	4,999 MSL	10
	5,000 MSL	5,999 MSL	90

## F16-VR\_A - F-16 VR Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	30		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-16C		
<b>Engine</b>	F100-PW-229		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	500 kts		
<b>Profile Type</b>	MTR		
<b>Area or Route</b>	VR-16		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	40
	500 AGL	999 AGL	50
	1,000 AGL	1,500 AGL	10

## F16-VR\_B - F-16 VR Proposed

### Notes

Annual Day Ops	64		
Annual Night Ops	0		
Aircraft	F-16C		
Engine	F100-PW-229		
Power Setting	90 % NC Variable		
Airspeed	450 kts		
Profile Type	MTR		
Area or Route	VR-16		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	1
	500 AGL	999 AGL	49
	1,000 AGL	1,500 AGL	50

## F18A-PE-E - F-18A Pike East Existing

### Notes

Annual Day Ops	7		
Annual Night Ops	0		
Aircraft	F-18A/C		
Engine	F404-GE-400&402		
Power Setting	92 % NC Training Route		
Airspeed	350 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Existing		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	5
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	15
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	45

## F18A-PE-P - F-18A Pike East Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	5		
Aircraft	F-18A/C		
Engine	F404-GE-400&402		
Power Setting	92 % NC Training Route		
Airspeed	350 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Proposed		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	5
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	15
	3,000 MSL	4,999 MSL	25
	5,000 MSL	17,999 MSL	45

## F18A-PW-E - F-18A Pike West Existing

### Notes

Annual Day Ops	7	L-80
Annual Night Ops	0	

<b>Aircraft</b>	F-18A/C		
<b>Engine</b>	F404-GE-400&402		
<b>Power Setting</b>	92 % NC Training Route		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F18A-PW-P - F-18A Pike West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	15		
<b>Annual Night Ops</b>	5		
<b>Aircraft</b>	F-18A/C		
<b>Engine</b>	F404-GE-400&402		
<b>Power Setting</b>	92 % NC Training Route		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F18A-S-E - F-18A Steelhead Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	8		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-18A/C		
<b>Engine</b>	F404-GE-400&402		
<b>Power Setting</b>	92 % NC Training Route		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## F18A-S-P - F-18A Steelhead Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	10		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-18A/C		
<b>Engine</b>	F404-GE-400&402		
<b>Power Setting</b>	92 % NC Training Route		
<b>Airspeed</b>	400 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	50
	10,000 MSL	17,999 MSL	50

## F18A-SE-P - F-18A Steelhead Low East Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	F-18A/C		
Engine	F404-GE-400&402		
Power Setting	92 % NC Training Route		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Steelhead Low East-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	60
	1,000 AGL	2,999 MSL	20
	3,000 MSL	5,999 MSL	20

## F18A-SN-P - F-18A Steelhead Low North Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	F-18A/C		
Engine	F404-GE-400&402		
Power Setting	92 % NC Training Route		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Steelhead Low North-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	60
	1,000 AGL	2,999 MSL	20
	3,000 MSL	5,999 MSL	20

## F18A-SS-P - F-18A Steelhead Low South Proposed

### Notes

Annual Day Ops	10		
Annual Night Ops	0		
Aircraft	F-18A/C		
Engine	F404-GE-400&402		
Power Setting	92 % NC Training Route		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Steelhead Low South-Proposed		
Altitude Bands	Floor	Ceiling	Relative
	ft	ft	Utilization
	4,000 MSL	4,999 MSL	80
	5,000 MSL	5,999 MSL	20

## F18G-GE-P - EA-18G Grayling East Proposed

### Notes

Annual Day Ops	5		
Annual Night Ops	0		
Aircraft	F-18E/F		
Engine	F414-GE-400		
Power Setting	92 % NC Variable		
Airspeed	300 kts		



<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling East MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	14,999 MSL	40
	15,000 MSL	17,999 MSL	60

## F18G-GT-E - EA-18G Grayling Temporary Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	13		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-18E/F		
<b>Engine</b>	F414-GE-400		
<b>Power Setting</b>	92 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling Temporary MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	17,999 MSL	100

## F18G-GW-P - EA-18G Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-18E/F		
<b>Engine</b>	F414-GE-400		
<b>Power Setting</b>	92 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	8,000 MSL	17,999 MSL	100

## F18G-PE-E - EA-18G Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	13		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-18E/F		
<b>Engine</b>	F414-GE-400		
<b>Power Setting</b>	92 % NC Variable		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	10
	3,000 MSL	4,999 MSL	15
	5,000 MSL	17,999 MSL	70

## F18G-PE-P - EA-18G Pike East Proposed

**Notes**

**Annual Day Ops** 15  
**Annual Night Ops** 5  
**Aircraft** F-18E/F  
**Engine** F414-GE-400  
**Power Setting** 92 % NC Variable  
**Airspeed** 350 kts  
**Profile Type** MOA  
**Area or Route** Pike East MOA-Proposed

Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	500 AGL	999 AGL	5
	1,000 AGL	2,999 MSL	10
	3,000 MSL	4,999 MSL	15
	5,000 MSL	17,999 MSL	70

## F18G-PW-E - EA-18G Pike West Existing

**Notes**

**Annual Day Ops** 13  
**Annual Night Ops** 0  
**Aircraft** F-18E/F  
**Engine** F414-GE-400  
**Power Setting** 92 % NC Variable  
**Airspeed** 300 kts  
**Profile Type** MOA  
**Area or Route** Pike West MOA-Existing

Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	17,999 MSL	100

## F18G-PW-P - EA-18G Pike West Proposed

**Notes**

**Annual Day Ops** 15  
**Annual Night Ops** 5  
**Aircraft** F-18E/F  
**Engine** F414-GE-400  
**Power Setting** 92 % NC Variable  
**Airspeed** 300 kts  
**Profile Type** MOA  
**Area or Route** Pike West MOA-Proposed

Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	10,000 MSL	17,999 MSL	100

## F18G-RA-P - EA-18G R-4201A Proposed

**Notes**

**Annual Day Ops** 5  
**Annual Night Ops** 0  
**Aircraft** F-18E/F  
**Engine** F414-GE-400  
**Power Setting** 90 % NC Variable  
**Airspeed** 300 kts

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201A - Camp Grayling Existing and Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## F18G-RB-P - EA-18G R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	5		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-18E/F		
<b>Engine</b>	F414-GE-400		
<b>Power Setting</b>	90 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	23,000 MSL	100

## F35-PE-E - F-35 Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	2		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	F-35A		
<b>Engine</b>	F-135-PW-100		
<b>Power Setting</b>	75 % ETR Variable		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	15
	3,000 MSL	4,999 MSL	15
	5,000 MSL	17,999 MSL	60

## F35-PE-P - F-35 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	F-35A		
<b>Engine</b>	F-135-PW-100		
<b>Power Setting</b>	75 % ETR Variable		
<b>Airspeed</b>	350 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	15
	3,000 MSL	4,999 MSL	15
	5,000 MSL	17,999 MSL	60

## F35-PW-E - F-35 Pike West Existing

### Notes

Annual Day Ops	2		
Annual Night Ops	0		
Aircraft	F-35A		
Engine	F-135-PW-100		
Power Setting	75 % ETR Variable		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Pike West MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F35-PW-P - F-35 Pike West Proposed

### Notes

Annual Day Ops	50		
Annual Night Ops	30		
Aircraft	F-35A		
Engine	F-135-PW-100		
Power Setting	75 % ETR Variable		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Pike West MOA-Proposed		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	6,000 MSL	9,999 MSL	25
	10,000 MSL	17,999 MSL	75

## F35-S-E - F-35 Steelhead Existing

### Notes

Annual Day Ops	2		
Annual Night Ops	0		
Aircraft	F-35A		
Engine	F-135-PW-100		
Power Setting	75 % ETR Variable		
Airspeed	400 kts		
Profile Type	MOA		
Area or Route	Steelhead MOA-Existing		
Altitude Bands	Floor	Ceiling	Relative Utilization
	ft	ft	
	6,000 MSL	9,999 MSL	40
	10,000 MSL	17,999 MSL	60

## F35-S-P - F-35 Steelhead Existing

### Notes

Annual Day Ops	40		
Annual Night Ops	10		
Aircraft	F-35A		
Engine	F-135-PW-100		
Power Setting	75 % ETR Variable		
Airspeed	400 kts		

<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	6,000 MSL	9,999 MSL	40
	10,000 MSL	17,999 MSL	60

## KC135-GT-E - KC-135 Grayling Temporary Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	12		
<b>Annual Night Ops</b>	3		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		
<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling Temporary MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	10,000 MSL	17,999 MSL	100

## KC135-PE-E - KC-135 Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	20		
<b>Annual Night Ops</b>	7		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		
<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	17,999 MSL	100

## KC135-PE-P - KC-135 Pike East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	30		
<b>Annual Night Ops</b>	10		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		
<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	17,999 MSL	100

## KC135-PW-E - KC-135 Pike West Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	40		
<b>Annual Night Ops</b>	12		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		

<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative Utilization
	ft	ft	
	10,000 MSL	17,999 MSL	100

## KC135-PW-P - KC-135 Pike West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	60		
<b>Annual Night Ops</b>	20		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		
<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative Utilization
	ft	ft	
	10,000 MSL	17,999 MSL	100

## KC135-S-E - KC-135 Steelhead Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	60		
<b>Annual Night Ops</b>	23		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		
<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative Utilization
	ft	ft	
	10,000 MSL	17,999 MSL	100

## KC135-S-P - KC-135 Steelhead Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	70		
<b>Annual Night Ops</b>	30		
<b>Aircraft</b>	KC-135R		
<b>Engine</b>	F108-CF-100		
<b>Power Setting</b>	84 % NC Variable		
<b>Airspeed</b>	300 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative Utilization
	ft	ft	
	10,000 MSL	17,999 MSL	100

## T1-VR - T-1 VR Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	30		
<b>Annual Night Ops</b>	0		L-88
<b>Aircraft</b>	T-1		

<b>Engine</b>	JT15D-5		
<b>Power Setting</b>	85 % NC Variable		
<b>Airspeed</b>	200 kts		
<b>Profile Type</b>	MTR		
<b>Area or Route</b>	VR-16		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	300 AGL	499 AGL	10
	500 AGL	999 AGL	80
	1,000 AGL	1,500 AGL	10

## UH60-GT-E - MH-60 Grayling Temporary Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	70		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	UH60A		
<b>Engine</b>	T700-CE-700		
<b>Power Setting</b>	Lfo Lite 100 kts		
<b>Airspeed</b>	85 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling Temporary MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5,000 MSL	9,999 MSL	100

## UH60-GW-P - MH-60 Grayling West Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	UH60A		
<b>Engine</b>	T700-CE-700		
<b>Power Setting</b>	Lfo Lite 70 kts		
<b>Airspeed</b>	80 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Grayling West MOA-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	75
	1,000 AGL	2,999 MSL	25

## UH60-PE-E - MH-60 Pike East Existing

<b>Notes</b>			
<b>Annual Day Ops</b>	70		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	UH60A		
<b>Engine</b>	T700-CE-700		
<b>Power Setting</b>	Lfo Lite 100 kts		
<b>Airspeed</b>	85 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Pike East MOA-Existing		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	300 AGL	499 AGL	80
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	10

## UH60-PE-P - MH-60 Pike East Proposed

### Notes

Annual Day Ops	70		
Annual Night Ops	0		
Aircraft	UH60A		
Engine	T700-CE-700		
Power Setting	Lfo Lite 100 kts		
Airspeed	85 kts		
Profile Type	MOA		
Area or Route	Pike East MOA-Proposed		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	300 AGL	499 AGL	80
	500 AGL	999 AGL	10
	1,000 AGL	2,999 MSL	10

## UH60-RA-E - MH-60 R-4201A Existing

### Notes

Annual Day Ops	35		
Annual Night Ops	0		
Aircraft	UH60A		
Engine	T700-CE-700		
Power Setting	Lfo Lite 70 kts		
Airspeed	80 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	5 AGL	99 AGL	25
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	25

## UH60-RA-P - MH-60 R-4201A Proposed

### Notes

Annual Day Ops	50		
Annual Night Ops	0		
Aircraft	UH60A		
Engine	T700-CE-700		
Power Setting	Lfo Lite 70 kts		
Airspeed	80 kts		
Profile Type	MOA		
Area or Route	R-4201A - Camp Grayling Existing and Proposed		
Altitude Bands	Floor ft	Ceiling ft	Relative Utilization
	5 AGL	99 AGL	25
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	25

## UH60-RB-E - MH-60 R-4201B Existing

### Notes

Annual Day Ops	35		
Annual Night Ops	0		
Aircraft	UH60A		
Engine	T700-CE-700		
Power Setting	Lfo Lite 70 kts		L-90
Airspeed	80 kts		



<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Existing - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5 AGL	99 AGL	25
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	25

## UH60-RB-P - MH-60 R-4201B Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	50		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	UH60A		
<b>Engine</b>	T700-CE-700		
<b>Power Setting</b>	Lfo Lite 70 kts		
<b>Airspeed</b>	80 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	R-4201B-Proposed - Camp Grayling		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	5 AGL	99 AGL	25
	100 AGL	499 AGL	50
	500 AGL	1,999 MSL	25

## UH60-SE-P - MH-60 Steelhead Low East Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	40		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	UH60A		
<b>Engine</b>	T700-CE-700		
<b>Power Setting</b>	Lfo Lite 100 kts		
<b>Airspeed</b>	85 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low East-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	80
	1,000 AGL	2,999 MSL	10
	3,000 MSL	5,999 MSL	10

## UH60-SN-P - MH-60 Steelhead Low North Proposed

<b>Notes</b>			
<b>Annual Day Ops</b>	40		
<b>Annual Night Ops</b>	0		
<b>Aircraft</b>	UH60A		
<b>Engine</b>	T700-CE-700		
<b>Power Setting</b>	Lfo Lite 100 kts		
<b>Airspeed</b>	85 kts		
<b>Profile Type</b>	MOA		
<b>Area or Route</b>	Steelhead Low North-Proposed		
<b>Altitude Bands</b>	Floor	Ceiling	Relative
	ft	ft	Utilization
	500 AGL	999 AGL	80
	1,000 AGL	2,999 MSL	10
	3,000 MSL	5,999 MSL	10

# UH60-SS-P - MH-60 Steelhead Low South Proposed

## Notes

<b>Annual Day Ops</b>	40									
<b>Annual Night Ops</b>	0									
<b>Aircraft</b>	UH60A									
<b>Engine</b>	T700-CE-700									
<b>Power Setting</b>	Lfo Lite 100 kts									
<b>Airspeed</b>	85 kts									
<b>Profile Type</b>	MOA									
<b>Area or Route</b>	Steelhead Low South-Proposed									
<b>Altitude Bands</b>	<table><thead><tr><th>Floor ft</th><th>Ceiling ft</th><th>Relative Utilization</th></tr></thead><tbody><tr><td>4,000 MSL</td><td>4,999 MSL</td><td>90</td></tr><tr><td>5,000 MSL</td><td>5,999 MSL</td><td>10</td></tr></tbody></table>	Floor ft	Ceiling ft	Relative Utilization	4,000 MSL	4,999 MSL	90	5,000 MSL	5,999 MSL	10
Floor ft	Ceiling ft	Relative Utilization								
4,000 MSL	4,999 MSL	90								
5,000 MSL	5,999 MSL	10								

## **Appendix B**

### **Detailed Model Output**

\*\*\*\*\* MOA RANGE NOISEMAP \*\*\*\*\*  
Version 3.0  
Release Date 2/7/2013

CASE INFORMATION

Case Name:Alpena Combat Readiness Training Center SUA - Baseline Scenario  
Scenario

Site Name:Alpena, Michigan

SETUP PARAMETERS

Number of MOAs and Ranges = 16      Number of tracks = 1  
Lower Left Corner of Grid in feet (X Y pair) = -568119., -640722.  
Upper Right Corner of Grid in feet (X Y pair) = 628881., 397678.  
Grid spacing = 1600. feet      Number of events above an SEL of 65.0 dB  
Temperature = 30 F      Humidity = 79      Flying days per month = 30

MOA SPECIFICATIONS

MOA name GRAYLING EAST MOA-PROPOSED

Lat (deg)	Long (deg)
44.93333	-84.65001
45.13333	-84.65001
45.25000	-84.13556
44.68333	-84.10001
44.56666	-83.98639
44.48943	-84.33890
44.93472	-84.36751
44.93333	-84.65001

Floor = 9328 feet AGL      Ceiling = 17327 feet AGL

MOA name GRAYLING TEMPORARY MOA-EXISTING

Lat (deg)	Long (deg)
45.13333	-84.65001
45.25000	-84.13556
44.68333	-84.10001
44.56666	-83.98639
44.56666	-84.58334
44.68333	-84.66668
44.71666	-84.66668
44.71666	-84.63334
44.78333	-84.63335
44.78333	-84.65001
45.13333	-84.65001

Floor = 4328 feet AGL      Ceiling = 17327 feet AGL

MOA name GRAYLING WEST MOA-PROPOSED

\*\*\*\*\* MOA RANGE NOISEMAP \*\*\*\*\*  
Version 3.0  
Release Date 2/7/2013

CASE INFORMATION

Case Name:Alpena Combat Readiness Training Center SUA - Proposed Action Scenario

Site Name:Alpena, Michigan

SETUP PARAMETERS

Number of MOAs and Ranges = 16      Number of tracks = 1  
Lower Left Corner of Grid in feet (X Y pair) = -568119., -640722.  
Upper Right Corner of Grid in feet (X Y pair) = 628881., 397678.  
Grid spacing = 1600. feet      Number of events above an SEL of 65.0 dB  
Temperature = 30 F      Humidity = 79      Flying days per month = 30

MOA SPECIFICATIONS

MOA name GRAYLING EAST MOA-PROPOSED

Lat (deg)	Long (deg)
44.93333	-84.65001
45.13333	-84.65001
45.25000	-84.13556
44.68333	-84.10001
44.56666	-83.98639
44.48943	-84.33890
44.93472	-84.36751
44.93333	-84.65001

Floor = 9328 feet AGL      Ceiling = 17327 feet AGL

MOA name GRAYLING TEMPORARY MOA-EXISTING

Lat (deg)	Long (deg)
45.13333	-84.65001
45.25000	-84.13556
44.68333	-84.10001
44.56666	-83.98639
44.56666	-84.58334
44.68333	-84.66668
44.71666	-84.66668
44.71666	-84.63334
44.78333	-84.63335
44.78333	-84.65001
45.13333	-84.65001

Floor = 4328 feet AGL      Ceiling = 17327 feet AGL

MOA name GRAYLING WEST MOA-PROPOSED

Lat (deg)	Long (deg)	
44.93333	-84.65001	
44.93472	-84.36751	
44.48943	-84.33890	
44.56666	-84.58334	
44.71666	-84.63334	
44.78333	-84.63335	
44.78333	-84.65001	
44.93333	-84.65001	
Floor =	500 feet AGL	Ceiling = 17327 feet AGL

MOA name HERSEY MOA

Lat (deg)	Long (deg)	
43.99998	-85.55002	
43.99998	-85.16668	
43.49998	-85.00002	
43.49998	-85.50002	
43.99998	-85.55002	
Floor =	4328 feet AGL	Ceiling = 17328 feet AGL

MOA name PIKE EAST MOA-EXISTING

Lat (deg)	Long (deg)	
44.22193	-83.24999	
44.69999	-83.14999	
44.98750	-83.24999	
45.26667	-83.38333	
45.36667	-83.48333	
45.36667	-83.58333	
45.75000	-83.80833	
45.75001	-83.43527	
45.33861	-82.51859	
43.88749	-82.18831	
44.22193	-83.24999	
Floor =	300 feet AGL	Ceiling = 17327 feet AGL

MOA name PIKE EAST MOA-PROPOSED

Lat (deg)	Long (deg)
44.30666	-83.23332
44.69999	-83.14999
44.98750	-83.24999
45.26667	-83.38333
45.36667	-83.48333
45.36667	-83.58333
45.75000	-83.80833
45.75001	-83.43527
45.33861	-82.51859

44.33527 -82.29026  
44.30666 -83.23332  
Floor = 300 feet AGL Ceiling = 17327 feet AGL

MOA name PIKE WEST MOA-EXISTING

Lat (deg)	Long (deg)
45.75001	-84.16667
45.75000	-83.80833
45.36667	-83.58333
45.36667	-83.48333
45.26667	-83.38333
44.98750	-83.24999
44.69999	-83.14999
44.22193	-83.24999
44.28332	-83.45000
44.28888	-83.71667
44.68333	-84.10001
45.75001	-84.16667

Floor = 5328 feet AGL Ceiling = 17327 feet AGL

MOA name PIKE WEST MOA-PROPOSED

Lat (deg)	Long (deg)
45.75000	-83.80833
45.36667	-83.58333
45.36667	-83.48333
45.26667	-83.38333
44.98750	-83.24999
44.69999	-83.14999
44.30666	-83.23332
44.28888	-83.71667
44.68333	-84.10001
45.75001	-84.16667
45.75000	-83.80833

Floor = 5328 feet AGL Ceiling = 17327 feet AGL

MOA name R-4201A

Lat (deg)	Long (deg)
44.93333	-84.48335
44.78333	-84.48335
44.78333	-84.65001
44.93333	-84.65001
44.93333	-84.48335

Floor = 5 feet AGL Ceiling = 22328 feet AGL

MOA name R-4201B-EXISTING

Lat (deg)	Long (deg)
--------------	---------------

44.78333	-84.48335		
44.68333	-84.48335		
44.68333	-84.66668		
44.71666	-84.66668		
44.71666	-84.63334		
44.78333	-84.63335		
44.78333	-84.48335		
Floor =	5 feet AGL	Ceiling =	8328 feet AGL

MOA name R-4201B-PROPOSED

Lat	Long		
(deg)	(deg)		
44.78333	-84.48335		
44.68333	-84.48335		
44.68333	-84.66668		
44.71666	-84.66668		
44.71666	-84.63334		
44.78333	-84.63335		
44.78333	-84.48335		
Floor =	5 feet AGL	Ceiling =	22328 feet AGL

MOA name STEELHEAD LOW EAST-PROPOSED

Lat	Long		
(deg)	(deg)		
44.31471	-83.00333		
44.33527	-82.29026		
43.59109	-82.12276		
43.56498	-82.13609		
43.49998	-82.43415		
43.49998	-82.93777		
43.66915	-82.93777		
43.69114	-82.87900		
43.72047	-82.84624		
43.75581	-82.82739		
43.79343	-82.82443		
43.81945	-82.83376		
43.85474	-82.86044		
43.88229	-82.90539		
43.89730	-82.96531		
43.89610	-83.00333		
44.31471	-83.00333		
Floor =	500 feet AGL	Ceiling =	5327 feet AGL

MOA name STEELHEAD LOW NORTH-PROPOSED

Lat	Long
(deg)	(deg)
44.28888	-83.71667
44.31471	-83.00333
43.89610	-83.00333
43.89161	-83.03465



43.88245	-83.06362		
43.86975	-83.08952		
43.85994	-83.10167		
43.85013	-83.11382		
43.84188	-83.12261		
43.81943	-83.13721		
43.81943	-83.58333		
44.28888	-83.71667		
Floor =	500 feet AGL	Ceiling =	5327 feet AGL

MOA name STEELHEAD LOW SOUTH-PROPOSED

Lat	Long		
(deg)	(deg)		
43.49998	-82.93777		
43.66915	-82.93777		
43.68914	-82.88342		
43.72097	-82.84619		
43.75492	-82.82825		
43.79340	-82.82436		
43.81887	-82.83337		
43.85529	-82.86101		
43.88202	-82.90653		
43.89707	-82.96491		
43.89385	-83.02100		
43.88337	-83.06252		
43.87114	-83.08801		
43.84748	-83.11897		
43.81943	-83.13721		
43.81943	-83.58333		
43.64165	-83.53333		
43.49998	-82.98637		
43.49998	-82.93777		
Floor =	3328 feet AGL	Ceiling =	5327 feet AGL

MOA name STEELHEAD MOA-EXISTING

Lat	Long		
(deg)	(deg)		
43.43331	-82.73332		
43.64165	-83.53333		
44.28888	-83.71667		
44.28332	-83.45000		
43.88749	-82.18831		
43.59109	-82.12276		
43.56498	-82.13609		
43.43331	-82.73332		
Floor =	5328 feet AGL	Ceiling =	17327 feet AGL

MOA name STEELHEAD MOA-PROPOSED

Lat	Long
(deg)	(deg)

43.49998 -82.98637  
 43.64165 -83.53333  
 44.28888 -83.71667  
 44.33527 -82.29026  
 43.59109 -82.12276  
 43.56498 -82.13609  
 43.49998 -82.43415  
 43.49998 -82.98637

Floor = 5328 feet AGL Ceiling = 17327 feet AGL

TRACK SPECIFICATIONS

Track name VR-16							
Flag	Latitude	Longitude	Left	Right	Floor 1	Floor	
2	Radius	Angle					
Notation			(feet)	(feet)	(feet AGL)	(feet	
AGL)	(feet)	(degrees)					
LW	45.16666	-83.86667	18228.	18228.	300		
LW	45.08333	-84.18334	18228.	18228.	300		
LW	45.00000	-84.25001	18228.	18228.	300		
LW	44.93333	-84.48335	18228.	18228.	300		
LW	44.88333	-84.56667	18228.	18228.	300		

SPECIFIC POINT SPECIFICATION

Number of Specific points = 21

Latitude	Longitude	Name
45.06170	-83.43280	ALPENA CITY
45.09337	-84.14740	ATLANTA STATE FOREST AREA
43.85387	-83.37360	BAY PORT HISTORIC COMMERCIAL FISHING DIS
44.67923	-84.56547	GATES AU SABLE LODGE
44.62668	-84.21320	GRAYLING STATE FOREST AREA
44.86666	-84.61668	GUTHRIE LAKES
43.85564	-82.65550	HARBOR BEACH
44.03110	-82.83249	HURON CITY HISTORIC DISTRICT
44.43789	-83.63550	HURON NATIONAL FOREST
44.78333	-84.55001	KP LAKES
45.16980	-84.43941	PIGEON
44.71187	-84.65730	RESIDENCE EAST BRANCH AU SABLE RIVER
44.77752	-84.48095	RESIDENCE EAST OF R-4201B
44.70055	-84.66863	RESIDENCE WEST OF R-4201B
44.72122	-84.64132	RIVER PARK CAMPGROUND
43.65929	-83.01864	SANILAC PETROGLYPHS HISTORIC STATE PARK
44.82382	-84.47892	SHUPAC LAKE STATE FOREST CAMPGROUND
43.97323	-83.20968	SLEEPER STATE PARK
44.60613	-84.46312	SOUTH BRANCH CAMPGROUND
44.25376	-83.44950	TAWAS POINT LIGHTHOUS
44.89514	-84.54681	TURTLE LAKE ROAD

AVOIDANCE SPECIFICATION

Number of Avoidance Areas = 2

Latitude	Longitude	Radius (feet)	Floor (feet AGL)	Name
44.86666	-84.61668	1500.	1500	GUTHRIE LAKES
44.78333	-84.55001	1500.	1500	KP LAKES

MISSION DATA

Mission name = A10-GE-P\_A

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	60.0
14328	17327	40.0

Mission name = A10-GE-P\_B

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	60.0
14328	17327	40.0

Mission name = A10-GW-P-A

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	10.0
1000	2327	25.0
2328	7327	40.0
7328	17327	25.0

Mission name = A10-GW-P\_B

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	8.0
1000	2327	22.0
2328	7327	30.0
7328	17327	40.0

Mission name = A10-PE-P  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	10.0
500	999	25.0
1000	2327	25.0
2328	4327	25.0
4328	17327	15.0

Mission name = A10-PW-P  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	70.0
9328	17327	30.0

Mission name = A10-RA-E-A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = A10-RA-E-B  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	18.0
1328	4327	20.0
4328	22328	60.0

Mission name = A10-RA-P-A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0

500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = A10-RA-P-B

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	18.0
1328	4327	20.0
4328	22328	60.0

Mission name = A10-RB-P-A

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = A10-RB-P-B

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	18.0
1328	4327	20.0
4328	22328	60.0

Mission name = A10-S-P\_A

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	60.0
9328	17327	40.0

Mission name = A10-S-P\_B

Aircraft code =FM0090100 Speed = 240 kias Power = 50.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = A10-SE-P\_A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	60.0
1000	2327	20.0
2328	5327	20.0

Mission name = A10-SE-P\_B  
Aircraft code =FM0090100 Speed = 300 kias Power = 50.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	35.0
2328	5327	60.0

Mission name = A10-SN-P\_A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	60.0
1000	2327	20.0
2328	5327	20.0

Mission name = A10-SN-P\_B  
Aircraft code =FM0090100 Speed = 300 kias Power = 50.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	35.0
2328	5327	60.0

Mission name = A10-SS-P\_A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
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(feet AGL)	(feet AGL)	Utilization
3328	4327	80.0
4328	5327	20.0

Mission name = A10-SS-P\_B

Aircraft code =FM0090100 Speed = 300 kias Power = 50.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
3328	4327	50.0
4328	5327	50.0

Mission name = A10-VR

Aircraft code =FM0090101 Speed = 350 kias Power = 87.1

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	60.0
500	999	30.0
1000	1500	10.0

Mission name = AC130-GE-P

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	60.0
14328	17327	40.0

Mission name = AC130-GW-P

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
1000	2327	10.0
2328	7327	60.0
7328	17327	30.0

Mission name = AC130-RA-E

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	1327	10.0
1328	4327	60.0

4328 22328 30.0

Mission name = AC130-RA-P

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	1327	10.0
1328	4327	60.0
4328	22328	30.0

Mission name = AC130-RB-P

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	1327	10.0
1328	4327	60.0
4328	22328	30.0

Mission name = AH-PE-P

Aircraft code =FM6110100 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	80.0
500	999	10.0
1000	2327	10.0

Mission name = AH-SE-P

Aircraft code =FM6110100 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	80.0
1000	2327	10.0
2328	5327	10.0

Mission name = AH-SN-P

Aircraft code =FM6110100 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	80.0
1000	2327	10.0



2328            5327            10.0

Mission name = AH-SS-P

Aircraft code =FM6110100 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
3328	4327	90.0
4328	5327	10.0

Mission name = AV8-GE-P

Aircraft code =FM0070200 Speed = 300 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	60.0
14328	17327	40.0

Mission name = AV8-GW-P

Aircraft code =FM0070200 Speed = 300 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	10.0
1000	2327	25.0
2328	7327	40.0
7328	17327	25.0

Mission name = AV8-RA-E

Aircraft code =FM0070200 Speed = 300 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = AV8-RA-P

Aircraft code =FM0070200 Speed = 300 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0

1328	4327	40.0
4328	22328	25.0

Mission name = AV8-RB-P

Aircraft code =FM0070200 Speed = 300 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = AV8-VR

Aircraft code =FM0070200 Speed = 400 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	60.0
500	999	30.0
1000	1500	10.0

Mission name = B2-GE-P

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	10.0
14328	17327	90.0

Mission name = B2-GW-P

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7328	17327	100.0

Mission name = B2-PW-P

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = B2-RA-E  
 Aircraft code =FM0130100 Speed = 300 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B2-RA-P  
 Aircraft code =FM0130100 Speed = 300 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B2-RB-P  
 Aircraft code =FM0130100 Speed = 300 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B2-S-P  
 Aircraft code =FM0130100 Speed = 300 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = B52-GE-P  
 Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	10.0
14328	17327	90.0

Mission name = B52-GW-P  
 Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7328	17327	100.0

Mission name = B52-PE-P

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
1000	2327	5.0
2328	4327	10.0
4328	17327	85.0

Mission name = B52-PW-P

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	5.0
9328	17327	95.0

Mission name = B52-RA-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B52-RA-P

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B52-RB-P

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B52-S-P

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = C12-GE-P  
 Aircraft code =FM0190100 Speed = 200 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	60.0
14328	17327	40.0

Mission name = C12-GW-P  
 Aircraft code =FM0190100 Speed = 200 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7328	17327	100.0

Mission name = C12-PE-P  
 Aircraft code =FM0190100 Speed = 200 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	17327	100.0

Mission name = C12-RA-E  
 Aircraft code =FM0190100 Speed = 200 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = C12-RA-P  
 Aircraft code =FM0190100 Speed = 200 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = C12-RB-P  
 Aircraft code =FM0190100 Speed = 200 kias Power = 70.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = C17-GE-P

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	50.0
14328	17327	50.0

Mission name = C17-GW-P

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	25.0
1000	2327	25.0
2328	7327	30.0
7328	17327	20.0

Mission name = C17-RA-E

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	50.0
500	1327	50.0

Mission name = C17-RA-P

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	50.0
500	1327	50.0

Mission name = C17-RB-P

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	50.0
500	1327	50.0

Mission name = C17-VR

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt	Upper Alt	Percent
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(feet AGL)	(feet AGL)	Utilization
300	499	40.0
500	999	50.0
1000	1500	10.0

Mission name = C130-GE-P

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	50.0
14328	17327	50.0

Mission name = C130-GW-P

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	25.0
1000	2327	25.0
2328	7327	30.0
7328	17327	20.0

Mission name = C130-PE-P

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	10.0
500	999	10.0
1000	2327	10.0
2328	4327	25.0
4328	17327	45.0

Mission name = C130-PW-P

Aircraft code =FM0290301 Speed = 200 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = C130-RA-E

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	35.0
500	1327	35.0
1328	4327	30.0

Mission name = C130-RA-P  
Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	35.0
500	1327	35.0
1328	4327	30.0

Mission name = C130-RB-P  
Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	35.0
500	1327	35.0
1328	4327	30.0

Mission name = C130-VR  
Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	60.0
500	999	30.0
1000	1500	10.0

Mission name = CH47-GW-P  
Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	75.0
1000	2327	25.0

Mission name = CH47-PE-P  
Aircraft code =FM6590100 Speed = 150 kias Power = 0.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
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(feet AGL)	(feet AGL)	Utilization
300	499	88.9
500	999	11.1

Mission name = CH47-RA-E

Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = CH47-RA-P

Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = CH47-RB-P

Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = F15-VR

Aircraft code =FM0430300 Speed = 500 kias Power = 82.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	40.0
500	999	50.0
1000	1500	10.0

Mission name = F16-GE-P\_A

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
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9328	14327	50.0
14328	17327	50.0

Mission name = F16-GE-P\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	50.0
14328	17327	50.0

Mission name = F16-GW-P\_A  
Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	2.0
1000	2327	15.0
2328	7327	40.0
7328	17327	43.0

Mission name = F16-GW-P\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	5.0
2328	7327	40.0
7328	17327	50.0

Mission name = F16-PE-P\_A  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	5.0
500	999	10.0
1000	2327	15.0
2328	4327	25.0
4328	17327	45.0

Mission name = F16-PE-P\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	5.0
2328	4327	10.0
4328	17327	80.0

Mission name = F16-PW-P\_A

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F16-PW-P\_B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F16-RA-E-A

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	15.0
1328	4327	40.0
4328	22328	43.0

Mission name = F16-RA-E-B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	5.0
100	499	5.0
500	1327	5.0
1328	4327	5.0
4328	22328	80.0

Mission name = F16-RA-P-A

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	15.0
1328	4327	40.0
4328	22328	43.0

Mission name = F16-RA-P-B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	5.0
100	499	5.0
500	1327	5.0
1328	4327	5.0
4328	22328	80.0

Mission name = F16-RB-P-A

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	15.0
1328	4327	40.0
4328	22328	43.0

Mission name = F16-RB-P-B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	5.0
100	499	5.0
500	1327	5.0
1328	4327	5.0
4328	22328	80.0

Mission name = F16-S-P\_A

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
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5328	9327	50.0
9328	17327	50.0

Mission name = F16-S-P\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F16-SE-P\_A  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	60.0
1000	2327	20.0
2328	5327	20.0

Mission name = F16-SE-P\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	20.0
2328	5327	75.0

Mission name = F16-SN-P\_A  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	60.0
1000	2327	20.0
2328	5327	20.0

Mission name = F16-SN-P\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	20.0

2328                    5327                    75.0

Mission name = F16-SS-P\_A

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
3328	4327	80.0
4328	5327	20.0

Mission name = F16-SS-P\_B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
3328	4327	10.0
4328	5327	90.0

Mission name = F16-VR\_A

Aircraft code =FM0440300 Speed = 500 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	40.0
500	999	50.0
1000	1500	10.0

Mission name = F16-VR\_B

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	1.0
500	999	49.0
1000	1500	50.0

Mission name = F18A-PE-P

Aircraft code =FM0450100 Speed = 350 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	5.0
500	999	10.0
1000	2327	15.0
2328	4327	25.0

4328 17327 45.0

Mission name = F18A-PW-P

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F18A-S-P

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = F18A-SE-P

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	60.0
1000	2327	20.0
2328	5327	20.0

Mission name = F18A-SN-P

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	60.0
1000	2327	20.0
2328	5327	20.0

Mission name = F18A-SS-P

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
3328	4327	80.0
4328	5327	20.0

Mission name = F18G-GE-P  
 Aircraft code =FM0450200 Speed = 300 kias Power = 92.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	14327	40.0
14328	17327	60.0

Mission name = F18G-GW-P  
 Aircraft code =FM0450200 Speed = 300 kias Power = 92.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7328	17327	100.0

Mission name = F18G-PE-P  
 Aircraft code =FM0450200 Speed = 350 kias Power = 92.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	10.0
2328	4327	15.0
4328	17327	70.0

Mission name = F18G-PW-P  
 Aircraft code =FM0450200 Speed = 300 kias Power = 92.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = F18G-RA-P  
 Aircraft code =FM0450201 Speed = 300 kias Power = 90.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = F18G-RB-P  
 Aircraft code =FM0450201 Speed = 300 kias Power = 90.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0



Mission name = F35-PE-P  
Aircraft code =FM0890200 Speed = 350 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	10.0
1000	2327	15.0
2328	4327	15.0
4328	17327	60.0

Mission name = F35-PW-P  
Aircraft code =FM0890200 Speed = 400 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F35-S-P  
Aircraft code =FM0890200 Speed = 400 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	40.0
9328	17327	60.0

Mission name = KC135-PE-P  
Aircraft code =FM0310400 Speed = 300 kias Power = 84.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	17327	100.0

Mission name = KC135-PW-P  
Aircraft code =FM0310400 Speed = 300 kias Power = 84.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = KC135-S-P  
Aircraft code =FM0310400 Speed = 300 kias Power = 84.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = T1-VR

Aircraft code =FM0600100 Speed = 200 kias Power = 85.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	10.0
500	999	80.0
1000	1500	10.0

Mission name = UH60-GW-P

Aircraft code =FM6210100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	75.0
1000	2327	25.0

Mission name = UH60-PE-P

Aircraft code =FM6210101 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	80.0
500	999	10.0
1000	2327	10.0

Mission name = UH60-RA-E

Aircraft code =FM6210100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = UH60-RA-P

Aircraft code =FM6210100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0

100	499	50.0
500	1327	25.0

Mission name = UH60-RB-P  
Aircraft code =FM6210100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = UH60-SE-P  
Aircraft code =FM6210101 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	80.0
1000	2327	10.0
2328	5327	10.0

Mission name = UH60-SN-P  
Aircraft code =FM6210101 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	80.0
1000	2327	10.0
2328	5327	10.0

Mission name = UH60-SS-P  
Aircraft code =FM6210101 Speed = 85 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
3328	4327	90.0
4328	5327	10.0

MOA OPERATION DATA

MOA name = GRAYLING EAST MOA-PROPOSED

			Daily		
Monthly	Yearly		Day	Night	Day
Mission					

Night	Day	Night	Time On Range	OPS	OPS	OPS
OPS	Name	OPS	(minutes)			
1.67	A10-GE-P_A 55.	20.	30.	0.153	0.056	4.58
0.00	A10-GE-P_B 1190.	0.	5.	3.306	0.000	99.17
0.42	AC130-GE-P 5.	5.	30.	0.014	0.014	0.42
0.83	AV8-GE-P 35.	10.	25.	0.097	0.028	2.92
0.00	B2-GE-P 5.	0.	30.	0.014	0.000	0.42
0.83	B52-GE-P 30.	10.	60.	0.083	0.028	2.50
0.42	C12-GE-P 0.	5.	60.	0.000	0.014	0.00
0.00	C17-GE-P 5.	0.	15.	0.014	0.000	0.42
0.00	C130-GE-P 50.	0.	15.	0.139	0.000	4.17
2.50	F16-GE-P_A 50.	30.	30.	0.139	0.083	4.17
0.42	F16-GE-P_B 13.	5.	5.	0.036	0.014	1.08
0.00	F18G-GE-P 5.	0.	25.	0.014	0.000	0.42

MOA name = GRAYLING WEST MOA-PROPOSED

Monthly	Mission	Yearly	Time On Range	Daily		
				Day	Night	Day
Night	Day	Night	(minutes)	OPS	OPS	OPS
OPS	Name	OPS				
1.67	A10-GW-P-A 55.	20.	30.	0.153	0.056	4.58
0.00	A10-GW-P_B 1190.	0.	10.	3.306	0.000	99.17
0.42	AC130-GW-P 5.	5.	60.	0.014	0.014	0.42
0.83	AV8-GW-P 35.	10.	25.	0.097	0.028	2.92
0.00	B2-GW-P 5.	0.	30.	0.014	0.000	0.42
0.83	B52-GW-P 30.	10.	60.	0.083	0.028	2.50
0.42	C12-GW-P 0.	5.	60.	0.000	0.014	0.00

C17-GW-P				0.014	0.000	0.42
0.00	5.	0.	15.			
C130-GW-P				0.139	0.000	4.17
0.00	50.	0.	15.			
CH47-GW-P				0.069	0.000	2.08
0.00	25.	0.	60.			
F16-GW-P_A				0.139	0.083	4.17
2.50	50.	30.	30.			
F16-GW-P_B				0.036	0.014	1.08
0.42	13.	5.	5.			
F18G-GW-P				0.014	0.000	0.42
0.00	5.	0.	25.			
UH60-GW-P				0.139	0.000	4.17
0.00	50.	0.	45.			

MOA name = PIKE EAST MOA-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	OPS	OPS	OPS	OPS	OPS	OPS	
A10-PE-P							
0.00	40.	0.	90.	0.111	0.000	3.33	
AH-PE-P							
0.00	10.	0.	240.	0.028	0.000	0.83	
B52-PE-P							
1.67	50.	20.	120.	0.139	0.056	4.17	
C12-PE-P							
0.42	0.	5.	120.	0.000	0.014	0.00	
C130-PE-P							
0.00	10.	0.	180.	0.028	0.000	0.83	
CH47-PE-P							
0.42	10.	5.	180.	0.028	0.014	0.83	
F16-PE-P_A							
2.50	70.	30.	40.	0.194	0.083	5.83	
F16-PE-P_B							
0.08	2.	1.	5.	0.006	0.003	0.17	
F18A-PE-P							
0.42	10.	5.	35.	0.028	0.014	0.83	
F18G-PE-P							
0.42	15.	5.	120.	0.042	0.014	1.25	
F35-PE-P							
2.50	50.	30.	30.	0.139	0.083	4.17	
KC135-PE-P							
0.83	30.	10.	270.	0.083	0.028	2.50	
UH60-PE-P							
0.00	70.	0.	190.	0.194	0.000	5.83	

MOA name = PIKE WEST MOA-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	Name		OPS	(minutes)	OPS	OPS	OPS
2.50	A10-PW-P		30.	90.	0.222	0.083	6.67
0.00	B2-PW-P		0.	100.	0.014	0.000	0.42
1.67	B52-PW-P		20.	100.	0.111	0.056	3.33
0.42	C130-PW-P		5.	180.	0.028	0.014	0.83
1.67	F16-PW-P_A		20.	60.	0.222	0.056	6.67
8.83	F16-PW-P_B		106.	15.	0.883	0.294	26.50
0.42	F18A-PW-P		5.	45.	0.042	0.014	1.25
0.42	F18G-PW-P		5.	120.	0.042	0.014	1.25
2.50	F35-PW-P		30.	30.	0.139	0.083	4.17
1.67	KC135-PW-P		20.	180.	0.167	0.056	5.00

MOA name = R-4201A

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	Name		OPS	(minutes)	OPS	OPS	OPS
1.33	A10-RA-E-A		16.	23.	0.139	0.044	4.17
0.00	A10-RA-E-B		0.	27.	3.667	0.000	110.00
1.67	A10-RA-P-A		20.	20.	0.153	0.056	4.58
0.00	A10-RA-P-B		0.	20.	3.306	0.000	99.17
0.33	AC130-RA-E		4.	162.	0.011	0.011	0.33
0.42	AC130-RA-P		5.	121.	0.014	0.014	0.42
	AV8-RA-E				0.078	0.000	2.33

0.00	28.	0.	14.			
	AV8-RA-P			0.097	0.028	2.92
0.83	35.	10.	17.			
	B2-RA-E			0.003	0.000	0.08
0.00	1.	0.	18.			
	B2-RA-P			0.014	0.000	0.42
0.00	5.	0.	20.			
	B52-RA-E			0.039	0.017	1.17
0.50	14.	6.	95.			
	B52-RA-P			0.083	0.028	2.50
0.83	30.	10.	80.			
	C12-RA-E			0.000	0.008	0.00
0.25	0.	3.	104.			
	C12-RA-P			0.000	0.014	0.00
0.42	0.	5.	80.			
	C17-RA-E			0.006	0.000	0.17
0.00	2.	0.	9.			
	C17-RA-P			0.014	0.000	0.42
0.00	5.	0.	10.			
	C130-RA-E			0.019	0.000	0.58
0.00	7.	0.	14.			
	C130-RA-P			0.139	0.000	4.17
0.00	50.	0.	10.			
	CH47-RA-E			0.053	0.000	1.58
0.00	19.	0.	59.			
	CH47-RA-P			0.069	0.000	2.08
0.00	25.	0.	40.			
	F16-RA-E-A			0.139	0.000	4.17
0.00	50.	0.	23.			
	F16-RA-E-B			0.483	0.158	14.50
4.75	174.	57.	27.			
	F16-RA-P-A			0.139	0.083	4.17
2.50	50.	30.	20.			
	F16-RA-P-B			0.344	0.114	10.33
3.42	124.	41.	20.			
	F18G-RA-P			0.014	0.000	0.42
0.00	5.	0.	17.			
	UH60-RA-E			0.097	0.000	2.92
0.00	35.	0.	36.			
	UH60-RA-P			0.139	0.000	4.17
0.00	50.	0.	30.			

MOA name = R-4201B-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	OPS	OPS	OPS	(minutes)	OPS	OPS	OPS

A10-RB-P-A				0.153	0.056	4.58
1.67	55.	20.	10.			
A10-RB-P-B				3.306	0.000	99.17
0.00	1190.	0.	2.			
AC130-RB-P				0.014	0.014	0.42
0.42	5.	5.	59.			
AV8-RB-P				0.097	0.028	2.92
0.83	35.	10.	8.			
B2-RB-P				0.014	0.000	0.42
0.00	5.	0.	10.			
B52-RB-P				0.083	0.028	2.50
0.83	30.	10.	40.			
C12-RB-P				0.000	0.014	0.00
0.42	0.	5.	40.			
C17-RB-P				0.014	0.000	0.42
0.00	5.	0.	5.			
C130-RB-P				0.139	0.000	4.17
0.00	50.	0.	5.			
CH47-RB-P				0.069	0.000	2.08
0.00	25.	0.	20.			
F16-RB-P-A				0.139	0.083	4.17
2.50	50.	30.	10.			
F16-RB-P-B				0.114	0.039	3.42
1.17	41.	14.	3.			
F18G-RB-P				0.014	0.000	0.42
0.00	5.	0.	8.			
UH60-RB-P				0.139	0.000	4.17
0.00	50.	0.	15.			

MOA name = STEELHEAD LOW EAST-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	OPS	OPS	OPS	OPS	OPS	OPS	
	A10-SE-P_A			(minutes)	0.389	0.111	11.67
3.33	140.	40.	45.				
	A10-SE-P_B				1.917	0.000	57.50
0.00	690.	0.	15.				
	AH-SE-P				0.028	0.000	0.83
0.00	10.	0.	60.				
	F16-SE-P_A				0.125	0.042	3.75
1.25	45.	15.	30.				
	F16-SE-P_B				0.061	0.022	1.83
0.67	22.	8.	10.				
	F18A-SE-P				0.028	0.000	0.83
0.00	10.	0.	30.				
	UH60-SE-P				0.111	0.000	3.33



0.00            40.            0.            45.

MOA name = STEELHEAD LOW NORTH-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
	Name				OPS	OPS	OPS
	OPS	OPS	OPS	(minutes)			
	A10-SN-P_A				0.389	0.111	11.67
3.33	140.		40.	15.			
	A10-SN-P_B				1.917	0.000	57.50
0.00	690.		0.	5.			
	AH-SN-P				0.028	0.000	0.83
0.00	10.		0.	15.			
	F16-SN-P_A				0.125	0.042	3.75
1.25	45.		15.	15.			
	F16-SN-P_B				0.061	0.022	1.83
0.67	22.		8.	10.			
	F18A-SN-P				0.028	0.000	0.83
0.00	10.		0.	15.			
	UH60-SN-P				0.111	0.000	3.33
0.00	40.		0.	15.			

MOA name = STEELHEAD LOW SOUTH-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
	Name				OPS	OPS	OPS
	OPS	OPS	OPS	(minutes)			
	A10-SS-P_A				0.389	0.111	11.67
3.33	140.		40.	15.			
	A10-SS-P_B				1.917	0.000	57.50
0.00	690.		0.	10.			
	AH-SS-P				0.028	0.000	0.83
0.00	10.		0.	5.			
	F16-SS-P_A				0.125	0.042	3.75
1.25	45.		15.	15.			
	F16-SS-P_B				0.061	0.022	1.83
0.67	22.		8.	10.			
	F18A-SS-P				0.028	0.000	0.83
0.00	10.		0.	15.			
	UH60-SS-P				0.111	0.000	3.33
0.00	40.		0.	5.			

MOA name = STEELHEAD MOA-PROPOSED

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	Name		OPS	(minutes)	OPS	OPS	OPS
3.33	A10-S-P_A	140.	40.	30.	0.389	0.111	11.67
0.00	A10-S-P_B	690.	0.	30.	1.917	0.000	57.50
0.83	B2-S-P	10.	10.	15.	0.028	0.028	0.83
0.42	B52-S-P	15.	5.	15.	0.042	0.014	1.25
1.25	F16-S-P_A	45.	15.	30.	0.125	0.042	3.75
10.58	F16-S-P_B	383.	127.	10.	1.064	0.353	31.92
0.00	F18A-S-P	10.	0.	30.	0.028	0.000	0.83
0.83	F35-S-P	40.	10.	30.	0.111	0.028	3.33
2.50	KC135-S-P	70.	30.	180.	0.194	0.083	5.83

TRACK OPERATION DATA

Track name = VR-16

Monthly	Mission		Yearly	Daily		
	Night	Day		Day	Night	Day
OPS	Name		OPS	OPS	OPS	OPS
0.00	T1-VR	30.	0.	0.083	0.000	2.50

\*\*\*\*\*  
Warning: Grid points spaced greater than 1000 feet  
apart may not provide the necessary grid resolution,  
in some cases, to compute noise contours with  
high accuracy. For low-altitude track operations,  
the recommended grid spacing is less than 1000 feet.  
\*\*\*\*\*

\*\*\*\*\* MOA RANGE NOISEMAP \*\*\*\*\*  
RESULTS

The noise metric is Ldn.

of Events Above 65.0 dB	MOA Name	MOA RESULTS	
		MOA Area (sq statute miles)	Uniform Distributed Sound Level (dB)
	GRAYLING EAST MOA-PROPOSED	840.9	35.0
0.0	GRAYLING TEMPORARY MOA-EXISTING	1149.1	No operations on this
MOA!	GRAYLING WEST MOA-PROPOSED	374.0	47.1
0.0	HERSEY MOA	763.7	No operations on this
MOA!	PIKE EAST MOA-EXISTING	4773.0	No operations on this
MOA!	PIKE EAST MOA-PROPOSED	3877.6	45.8
0.0	PIKE WEST MOA-EXISTING	3521.2	No operations on this
MOA!	PIKE WEST MOA-PROPOSED	3476.7	37.6
0.0	R-4201A	84.8	70.0
0.0	R-4201B-EXISTING	54.8	No operations on this
MOA!	R-4201B-PROPOSED	54.8	56.8
0.0	STEELHEAD LOW EAST-PROPOSED	2107.3	43.7
0.0	STEELHEAD LOW NORTH-PROPOSED	1051.2	44.0
0.0	STEELHEAD LOW SOUTH-PROPOSED	644.0	39.7
0.0	STEELHEAD MOA-EXISTING	2931.7	No operations on this
MOA!	STEELHEAD MOA-PROPOSED	3801.9	35.0
0.0			

AVOIDANCE AREA RESULTS

Avoidance Area Name	Uniform Distributed Sound Level (dB)	Number of Daily Events Above SEL of 65.0 dB
GUTHRIE LAKES	68.0	26.3
KP LAKES	55.6	20.7

TRACK RESULTS

Track Name = VR-16

Track Segment	Maximum Centerline Level (dB)	Number of Events Above SEL of 65.0 dB
01 - 02	13.3	0.0
02 - 03	13.3	0.0
03 - 04	13.3	0.0
04 - 05	13.3	0.0

\*\*\*\*\* MOA RANGE NOISEMAP \*\*\*\*\*  
RESULTS

SPECIFIC POINT RESULTS

Specific Point: ALPENA CITY  
Top 20 contributors to this level:

< Aircraft	Sound Level (dB)	Airspace	> Mission
PIKE WEST MOA-PROPOSED			F35-PW-P
F-35A	< 35.0		
PIKE WEST MOA-PROPOSED			F16-PW-P_B
F-16C	< 35.0		
PIKE WEST MOA-PROPOSED			F16-PW-P_A
F-16C	< 35.0		
PIKE WEST MOA-PROPOSED			F18G-PW-P
F-18E/F	< 35.0		
PIKE WEST MOA-PROPOSED			F18A-PW-P
F-18A/C	< 35.0		
PIKE WEST MOA-PROPOSED			B52-PW-P
B-52H	< 35.0		

PIKE WEST MOA-PROPOSED		C130-PW-P
C-130H&N&P	< 35.0	
PIKE WEST MOA-PROPOSED		B2-PW-P
B-2A	< 35.0	
PIKE WEST MOA-PROPOSED		KC135-PW-P
KC-135R	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
PIKE WEST MOA-PROPOSED		A10-PW-P
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		F16-SN-P_A
F-16C	< 35.0	
STEELHEAD LOW EAST-PROPOSED		F16-SE-P_A
F-16C	< 35.0	

Total Level ..... 37.6

Specific Point: ATLANTA STATE FOREST AREA  
Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace	> Mission
	(dB)	
GRAYLING EAST MOA-PROPOSED		F16-GE-P_A
F-16C	< 35.0	
GRAYLING EAST MOA-PROPOSED		F16-GE-P_B
F-16C	< 35.0	
GRAYLING EAST MOA-PROPOSED		AV8-GE-P
AV-8B	< 35.0	
GRAYLING EAST MOA-PROPOSED		F18G-GE-P
F-18E/F	< 35.0	
VR-16		T1-VR

T-1	< 35.0	
GRAYLING EAST MOA-PROPOSED		B52-GE-P
B-52H	< 35.0	
GRAYLING EAST MOA-PROPOSED		B2-GE-P
B-2A	< 35.0	
GRAYLING EAST MOA-PROPOSED		AC130-GE-P
C-130H&N&P	< 35.0	
GRAYLING EAST MOA-PROPOSED		C130-GE-P
C-130H&N&P	< 35.0	
GRAYLING EAST MOA-PROPOSED		C12-GE-P
C-12	< 35.0	
GRAYLING EAST MOA-PROPOSED		C17-GE-P
C-17	< 35.0	
GRAYLING EAST MOA-PROPOSED		A10-GE-P_A
A-10A	< 35.0	
GRAYLING EAST MOA-PROPOSED		A10-GE-P_B
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	

Total Level ..... < 35.0

Specific Point: BAY PORT HISTORIC COMMERCIAL FISHING DIS  
Top 20 contributors to this level:

Sound Level		
<	Aircraft	> Mission
	Airspace (dB)	
	STEELHEAD LOW NORTH-PROPOSED	F16-SN-P_A
	F-16C 43.2	
	STEELHEAD LOW NORTH-PROPOSED	F16-SN-P_B
	F-16C < 35.0	
	STEELHEAD MOA-PROPOSED	F16-S-P_B
	F-16C < 35.0	

STEELHEAD LOW NORTH-PROPOSED		F18A-SN-P
F-18A/C	< 35.0	
STEELHEAD MOA-PROPOSED		F35-S-P
F-35A	< 35.0	
STEELHEAD MOA-PROPOSED		F16-S-P_A
F-16C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		A10-SN-P_A
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		B2-S-P
B-2A	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		AH-SN-P
AH-1G	< 35.0	
STEELHEAD MOA-PROPOSED		KC135-S-P
KC-135R	< 35.0	
STEELHEAD MOA-PROPOSED		F18A-S-P
F-18A/C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		A10-SN-P_B
A-10A	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		UH60-SN-P
UH60A	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
STEELHEAD MOA-PROPOSED		B52-S-P
B-52H	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_B
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	

Total Level ..... 44.4

Specific Point: GATES AU SABLE LODGE  
Top 20 contributors to this level:

	Sound Level	
<	Airspace	> Mission
	Aircraft (dB)	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	46.5	
GRAYLING WEST MOA-PROPOSED		AV8-GW-P

AV-8B	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_B
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F18G-GW-P
F-18E/F	< 35.0	
GRAYLING WEST MOA-PROPOSED		AC130-GW-P
C-130H&N&P	< 35.0	
GRAYLING WEST MOA-PROPOSED		B52-GW-P
B-52H	< 35.0	
GRAYLING WEST MOA-PROPOSED		CH47-GW-P
CH47D	< 35.0	
GRAYLING WEST MOA-PROPOSED		C130-GW-P
C-130H&N&P	< 35.0	
GRAYLING WEST MOA-PROPOSED		A10-GW-P_B
A-10A	< 35.0	
GRAYLING WEST MOA-PROPOSED		A10-GW-P-A
A-10A	< 35.0	
GRAYLING WEST MOA-PROPOSED		B2-GW-P
B-2A	< 35.0	
GRAYLING WEST MOA-PROPOSED		UH60-GW-P
UH60A	< 35.0	
GRAYLING WEST MOA-PROPOSED		C17-GW-P
C-17	< 35.0	
GRAYLING WEST MOA-PROPOSED		C12-GW-P
C-12	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	< 35.0	

Total Level ..... 46.9

Specific Point: GRAYLING STATE FOREST AREA  
Top 20 contributors to this level:

<	Sound Level	>	Mission
	Airspace		
	(dB)		
Aircraft			



GRAYLING EAST MOA-PROPOSED		F16-GE-P_A
F-16C	< 35.0	
GRAYLING EAST MOA-PROPOSED		F16-GE-P_B
F-16C	< 35.0	
GRAYLING EAST MOA-PROPOSED		AV8-GE-P
AV-8B	< 35.0	
GRAYLING EAST MOA-PROPOSED		F18G-GE-P
F-18E/F	< 35.0	
GRAYLING EAST MOA-PROPOSED		B52-GE-P
B-52H	< 35.0	
GRAYLING EAST MOA-PROPOSED		B2-GE-P
B-2A	< 35.0	
GRAYLING EAST MOA-PROPOSED		AC130-GE-P
C-130H&N&P	< 35.0	
GRAYLING EAST MOA-PROPOSED		C130-GE-P
C-130H&N&P	< 35.0	
GRAYLING EAST MOA-PROPOSED		C12-GE-P
C-12	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
GRAYLING EAST MOA-PROPOSED		C17-GE-P
C-17	< 35.0	
GRAYLING EAST MOA-PROPOSED		A10-GE-P_A
A-10A	< 35.0	
GRAYLING EAST MOA-PROPOSED		A10-GE-P_B
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	

Total Level ..... < 35.0

Specific Point: GUTHRIE LAKES  
Top 20 contributors to this level:

< Aircraft	Sound Level Airspace (dB)	> Mission
R-4201A		F16-RA-E-B
F-16C	67.5	
R-4201A		F16-RA-P-B
F-16C	64.7	
R-4201A		F16-RA-P-A
F-16C	53.3	
R-4201A		F16-RA-E-A
F-16C	45.5	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	45.3	
R-4201A		AV8-RA-P
AV-8B	41.5	
R-4201A		AV8-RA-E
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	
R-4201A		CH47-RA-P
CH47D	< 35.0	
GRAYLING WEST MOA-PROPOSED		AV8-GW-P
AV-8B	< 35.0	
R-4201A		AC130-RA-E
C-130H&N&P	< 35.0	
R-4201A		AC130-RA-P
C-130H&N&P	< 35.0	
R-4201A		A10-RA-P-B
A-10A	< 35.0	
R-4201A		UH60-RA-P
UH60A	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_B
F-16C	< 35.0	
R-4201A		UH60-RA-E
UH60A	< 35.0	
R-4201A		A10-RA-P-A
A-10A	< 35.0	
R-4201A		A10-RA-E-A
A-10A	< 35.0	
R-4201A		C130-RA-P
C-130H&N&P	< 35.0	

Total Level ..... 69.5

Specific Point: HARBOR BEACH

Top 20 contributors to this level:

< Aircraft	Sound Level Airspace (dB)	> Mission
STEELHEAD LOW EAST-PROPOSED	F-16C 43.1	F16-SE-P_A
STEELHEAD LOW EAST-PROPOSED	F-16C < 35.0	F16-SE-P_B
STEELHEAD MOA-PROPOSED	F-16C < 35.0	F16-S-P_B
STEELHEAD LOW EAST-PROPOSED	F-18A/C < 35.0	F18A-SE-P
STEELHEAD MOA-PROPOSED	F-35A < 35.0	F35-S-P
STEELHEAD MOA-PROPOSED	F-16C < 35.0	F16-S-P_A
STEELHEAD LOW EAST-PROPOSED	A-10A < 35.0	A10-SE-P_A
STEELHEAD MOA-PROPOSED	B-2A < 35.0	B2-S-P
STEELHEAD LOW EAST-PROPOSED	AH-1G < 35.0	AH-SE-P
STEELHEAD LOW EAST-PROPOSED	A-10A < 35.0	A10-SE-P_B
STEELHEAD LOW EAST-PROPOSED	UH60A < 35.0	UH60-SE-P
STEELHEAD MOA-PROPOSED	KC-135R < 35.0	KC135-S-P
STEELHEAD MOA-PROPOSED	F-18A/C < 35.0	F18A-S-P
VR-16	T-1 < 35.0	T1-VR
STEELHEAD MOA-PROPOSED	B-52H < 35.0	B52-S-P
STEELHEAD MOA-PROPOSED	A-10A < 35.0	A10-S-P_B
STEELHEAD MOA-PROPOSED	A-10A < 35.0	A10-S-P_A
R-4201A	F-16C < 35.0	F16-RA-E-B
R-4201A	F-16C < 35.0	F16-RA-P-B
R-4201B-PROPOSED	F-16C < 35.0	F16-RB-P-B

Total Level ..... 44.2

Specific Point: HURON CITY HISTORIC DISTRICT  
 Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	> Mission
	STEELHEAD LOW EAST-PROPOSED		F16-SE-P_A
	F-16C	43.1	
	STEELHEAD LOW EAST-PROPOSED		F16-SE-P_B
	F-16C	< 35.0	
	STEELHEAD MOA-PROPOSED		F16-S-P_B
	F-16C	< 35.0	
	STEELHEAD LOW EAST-PROPOSED		F18A-SE-P
	F-18A/C	< 35.0	
	STEELHEAD MOA-PROPOSED		F35-S-P
	F-35A	< 35.0	
	STEELHEAD MOA-PROPOSED		F16-S-P_A
	F-16C	< 35.0	
	STEELHEAD LOW EAST-PROPOSED		A10-SE-P_A
	A-10A	< 35.0	
	STEELHEAD MOA-PROPOSED		B2-S-P
	B-2A	< 35.0	
	STEELHEAD LOW EAST-PROPOSED		AH-SE-P
	AH-1G	< 35.0	
	STEELHEAD LOW EAST-PROPOSED		A10-SE-P_B
	A-10A	< 35.0	
	STEELHEAD LOW EAST-PROPOSED		UH60-SE-P
	UH60A	< 35.0	
	STEELHEAD MOA-PROPOSED		KC135-S-P
	KC-135R	< 35.0	
	STEELHEAD MOA-PROPOSED		F18A-S-P
	F-18A/C	< 35.0	
	VR-16		T1-VR
	T-1	< 35.0	
	STEELHEAD MOA-PROPOSED		B52-S-P
	B-52H	< 35.0	
	STEELHEAD MOA-PROPOSED		A10-S-P_B
	A-10A	< 35.0	
	STEELHEAD MOA-PROPOSED		A10-S-P_A
	A-10A	< 35.0	
	R-4201A		F16-RA-E-B
	F-16C	< 35.0	
	R-4201A		F16-RA-P-B
	F-16C	< 35.0	
	R-4201B-PROPOSED		F16-RB-P-B
	F-16C	< 35.0	

Total Level ..... 44.2

Specific Point: HURON NATIONAL FOREST  
Top 20 contributors to this level:

<	Sound Level Aircraft      Airspace (dB)	> Mission
	PIKE WEST MOA-PROPOSED F-35A            < 35.0	F35-PW-P
	PIKE WEST MOA-PROPOSED F-16C            < 35.0	F16-PW-P_B
	PIKE WEST MOA-PROPOSED F-16C            < 35.0	F16-PW-P_A
	PIKE WEST MOA-PROPOSED F-18E/F          < 35.0	F18G-PW-P
	PIKE WEST MOA-PROPOSED F-18A/C          < 35.0	F18A-PW-P
	PIKE WEST MOA-PROPOSED B-52H            < 35.0	B52-PW-P
	PIKE WEST MOA-PROPOSED C-130H&N&P      < 35.0	C130-PW-P
	PIKE WEST MOA-PROPOSED B-2A             < 35.0	B2-PW-P
	PIKE WEST MOA-PROPOSED KC-135R          < 35.0	KC135-PW-P
	VR-16 T-1              < 35.0	T1-VR
	PIKE WEST MOA-PROPOSED A-10A            < 35.0	A10-PW-P
	R-4201A F-16C            < 35.0	F16-RA-E-B
	R-4201A F-16C            < 35.0	F16-RA-P-B
	R-4201B-PROPOSED F-16C            < 35.0	F16-RB-P-B
	R-4201A F-16C            < 35.0	F16-RA-P-A
	R-4201B-PROPOSED F-16C            < 35.0	F16-RB-P-A
	GRAYLING WEST MOA-PROPOSED F-16C            < 35.0	F16-GW-P_A
	R-4201A F-16C            < 35.0	F16-RA-E-A
	STEELHEAD LOW NORTH-PROPOSED F-16C            < 35.0	F16-SN-P_A

STEELHEAD LOW EAST-PROPOSED  
 F-16C < 35.0

F16-SE-P\_A

Total Level ..... 37.6

Specific Point: KP LAKES  
 Top 20 contributors to this level:

< Aircraft	Sound Level Airspace (dB)	> Mission
R-4201B-PROPOSED F-16C	52.4	F16-RB-P-B
R-4201B-PROPOSED F-16C	50.9	F16-RB-P-A
GRAYLING WEST MOA-PROPOSED F-16C	46.0	F16-GW-P_A
R-4201A F-16C	42.3	F16-RA-P-A
R-4201A F-16C	42.1	F16-RA-E-B
R-4201A F-16C	39.4	F16-RA-P-B
R-4201B-PROPOSED AV-8B	38.8	AV8-RB-P
R-4201A F-16C < 35.0	< 35.0	F16-RA-E-A
GRAYLING WEST MOA-PROPOSED AV-8B < 35.0	< 35.0	AV8-GW-P
GRAYLING WEST MOA-PROPOSED F-16C < 35.0	< 35.0	F16-GW-P_B
R-4201B-PROPOSED CH47D < 35.0	< 35.0	CH47-RB-P
R-4201B-PROPOSED C-130H&N&P < 35.0	< 35.0	AC130-RB-P
R-4201B-PROPOSED UH60A < 35.0	< 35.0	UH60-RB-P
R-4201B-PROPOSED A-10A < 35.0	< 35.0	A10-RB-P-A
R-4201B-PROPOSED B-52H < 35.0	< 35.0	B52-RB-P
R-4201B-PROPOSED C-130H&N&P < 35.0	< 35.0	C130-RB-P
R-4201A AV-8B < 35.0	< 35.0	AV8-RA-P
R-4201B-PROPOSED		C17-RB-P

C-17	< 35.0	
R-4201A		AC130-RA-E
C-130H&N&P	< 35.0	
R-4201A		AC130-RA-P
C-130H&N&P	< 35.0	

Total Level ..... 56.0

Specific Point: PIGEON  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	GRAYLING EAST MOA-PROPOSED	F-16C < 35.0		F16-GE-P_A
	GRAYLING EAST MOA-PROPOSED	F-16C < 35.0		F16-GE-P_B
	GRAYLING EAST MOA-PROPOSED	AV-8B < 35.0		AV8-GE-P
	GRAYLING EAST MOA-PROPOSED	F-18E/F < 35.0		F18G-GE-P
	GRAYLING EAST MOA-PROPOSED	B-52H < 35.0		B52-GE-P
	GRAYLING EAST MOA-PROPOSED	B-2A < 35.0		B2-GE-P
	GRAYLING EAST MOA-PROPOSED	C-130H&N&P < 35.0		AC130-GE-P
	GRAYLING EAST MOA-PROPOSED	C-130H&N&P < 35.0		C130-GE-P
	VR-16			T1-VR
	GRAYLING EAST MOA-PROPOSED	T-1 < 35.0		C12-GE-P
	GRAYLING EAST MOA-PROPOSED	C-12 < 35.0		C17-GE-P
	GRAYLING EAST MOA-PROPOSED	C-17 < 35.0		A10-GE-P_A
	GRAYLING EAST MOA-PROPOSED	A-10A < 35.0		A10-GE-P_B
	GRAYLING EAST MOA-PROPOSED	A-10A < 35.0		F16-RA-E-B
	R-4201A	F-16C < 35.0		F16-RA-P-B
	R-4201A	F-16C < 35.0		F16-RB-P-B
	R-4201B-PROPOSED	F-16C < 35.0		
	R-4201B-PROPOSED	F-16C < 35.0		

R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	

Total Level ..... < 35.0

Specific Point: RESIDENCE EAST BRANCH AU SABLE RIVER  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
R-4201B-PROPOSED	F-16C	54.3	F16-RB-P-B	
R-4201B-PROPOSED	F-16C	52.1	F16-RB-P-A	
R-4201B-PROPOSED	AV-8B	40.5	AV8-RB-P	
R-4201B-PROPOSED	CH47D	< 35.0	CH47-RB-P	
R-4201B-PROPOSED	C-130H&N&P	< 35.0	AC130-RB-P	
R-4201B-PROPOSED	UH60A	< 35.0	UH60-RB-P	
R-4201B-PROPOSED	A-10A	< 35.0	A10-RB-P-A	
R-4201B-PROPOSED	C-130H&N&P	< 35.0	C130-RB-P	
R-4201B-PROPOSED	C-17	< 35.0	C17-RB-P	
R-4201B-PROPOSED	B-52H	< 35.0	B52-RB-P	
R-4201B-PROPOSED	A-10A	< 35.0	A10-RB-P-B	
R-4201B-PROPOSED	F-18E/F	< 35.0	F18G-RB-P	
R-4201B-PROPOSED	B-2A	< 35.0	B2-RB-P	
R-4201B-PROPOSED	C-12	< 35.0	C12-RB-P	
VR-16			T1-VR	



T-1	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	

Total Level ..... 56.5

Specific Point: RESIDENCE EAST OF R-4201B  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	> Mission
	R-4201B-PROPOSED		F16-RB-P-B
	F-16C	54.3	
	R-4201B-PROPOSED		F16-RB-P-A
	F-16C	52.3	
	GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
	F-16C	46.7	
	R-4201B-PROPOSED		AV8-RB-P
	AV-8B	40.6	
	GRAYLING WEST MOA-PROPOSED		AV8-GW-P
	AV-8B	< 35.0	
	R-4201B-PROPOSED		CH47-RB-P
	CH47D	< 35.0	
	GRAYLING WEST MOA-PROPOSED		F16-GW-P_B
	F-16C	< 35.0	
	R-4201B-PROPOSED		AC130-RB-P
	C-130H&N&P	< 35.0	
	R-4201B-PROPOSED		UH60-RB-P
	UH60A	< 35.0	
	R-4201B-PROPOSED		A10-RB-P-A
	A-10A	< 35.0	
	R-4201B-PROPOSED		C130-RB-P
	C-130H&N&P	< 35.0	
	R-4201B-PROPOSED		C17-RB-P
	C-17	< 35.0	
	R-4201B-PROPOSED		B52-RB-P
	B-52H	< 35.0	

R-4201B-PROPOSED		A10-RB-P-B
A-10A	< 35.0	
GRAYLING WEST MOA-PROPOSED		F18G-GW-P
F-18E/F	< 35.0	
R-4201B-PROPOSED		F18G-RB-P
F-18E/F	< 35.0	
GRAYLING WEST MOA-PROPOSED		B52-GW-P
B-52H	< 35.0	
GRAYLING WEST MOA-PROPOSED		AC130-GW-P
C-130H&N&P	< 35.0	
GRAYLING WEST MOA-PROPOSED		CH47-GW-P
CH47D	< 35.0	
GRAYLING WEST MOA-PROPOSED		C130-GW-P
C-130H&N&P	< 35.0	

Total Level ..... 57.1

Specific Point: RESIDENCE WEST OF R-4201B  
Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace	> Mission
	(dB)	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	50.9	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	48.9	
R-4201B-PROPOSED		AV8-RB-P
AV-8B	37.2	
R-4201B-PROPOSED		CH47-RB-P
CH47D	< 35.0	
R-4201B-PROPOSED		AC130-RB-P
C-130H&N&P	< 35.0	
R-4201B-PROPOSED		UH60-RB-P
UH60A	< 35.0	
R-4201B-PROPOSED		A10-RB-P-A
A-10A	< 35.0	
R-4201B-PROPOSED		C130-RB-P
C-130H&N&P	< 35.0	
R-4201B-PROPOSED		C17-RB-P
C-17	< 35.0	
R-4201B-PROPOSED		B52-RB-P
B-52H	< 35.0	
R-4201B-PROPOSED		A10-RB-P-B
A-10A	< 35.0	
R-4201B-PROPOSED		F18G-RB-P

F-18E/F	< 35.0	
R-4201B-PROPOSED		B2-RB-P
B-2A	< 35.0	
R-4201B-PROPOSED		C12-RB-P
C-12	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	

Total Level ..... 53.2

Specific Point: RIVER PARK CAMPGROUND  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	R-4201B-PROPOSED			F16-RB-P-B
	F-16C	51.7		
	R-4201B-PROPOSED			F16-RB-P-A
	F-16C	49.1		
	R-4201B-PROPOSED			AV8-RB-P
	AV-8B	37.6		
	R-4201B-PROPOSED			CH47-RB-P
	CH47D	< 35.0		
	R-4201B-PROPOSED			UH60-RB-P
	UH60A	< 35.0		
	R-4201B-PROPOSED			AC130-RB-P
	C-130H&N&P	< 35.0		
	R-4201B-PROPOSED			A10-RB-P-A
	A-10A	< 35.0		
	R-4201B-PROPOSED			C130-RB-P
	C-130H&N&P	< 35.0		
	R-4201B-PROPOSED			C17-RB-P
	C-17	< 35.0		
	R-4201B-PROPOSED			B52-RB-P
	B-52H	< 35.0		

R-4201B-PROPOSED		A10-RB-P-B
A-10A	< 35.0	
R-4201B-PROPOSED		F18G-RB-P
F-18E/F	< 35.0	
R-4201B-PROPOSED		B2-RB-P
B-2A	< 35.0	
R-4201B-PROPOSED		C12-RB-P
C-12	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	

Total Level ..... 53.7

Specific Point: SANILAC PETROGLYPHS HISTORIC STATE PARK  
Top 20 contributors to this level:

Sound Level		
<	Aircraft Airspace (dB)	> Mission
	STEELHEAD LOW SOUTH-PROPOSED	F16-SS-P_A
	F-16C 38.5	
	STEELHEAD LOW SOUTH-PROPOSED	F16-SS-P_B
	F-16C < 35.0	
	STEELHEAD MOA-PROPOSED	F16-S-P_B
	F-16C < 35.0	
	STEELHEAD MOA-PROPOSED	F35-S-P
	F-35A < 35.0	
	STEELHEAD MOA-PROPOSED	F16-S-P_A
	F-16C < 35.0	
	STEELHEAD LOW SOUTH-PROPOSED	F18A-SS-P
	F-18A/C < 35.0	
	STEELHEAD MOA-PROPOSED	B2-S-P
	B-2A < 35.0	
	STEELHEAD MOA-PROPOSED	KC135-S-P
	KC-135R < 35.0	
	STEELHEAD MOA-PROPOSED	F18A-S-P

F-18A/C	< 35.0	
STEELHEAD LOW SOUTH-PROPOSED		A10-SS-P_A
A-10A	< 35.0	
STEELHEAD LOW SOUTH-PROPOSED		AH-SS-P
AH-1G	< 35.0	
STEELHEAD LOW SOUTH-PROPOSED		A10-SS-P_B
A-10A	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
STEELHEAD MOA-PROPOSED		B52-S-P
B-52H	< 35.0	
STEELHEAD LOW SOUTH-PROPOSED		UH60-SS-P
UH60A	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_B
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	

Total Level ..... 40.8

Specific Point: SHUPAC LAKE STATE FOREST CAMPGROUND  
 Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	> Mission
	R-4201A		F16-RA-E-B
	F-16C	67.7	
	R-4201A		F16-RA-P-B
	F-16C	65.0	
	R-4201A		F16-RA-P-A
	F-16C	53.0	
	GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
	F-16C	46.7	
	R-4201A		F16-RA-E-A
	F-16C	45.2	
	R-4201A		AV8-RA-P
	AV-8B	41.6	
	R-4201A		AV8-RA-E
	AV-8B	< 35.0	

GRAYLING WEST MOA-PROPOSED		AV8-GW-P
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	
R-4201A		CH47-RA-P
CH47D	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_B
F-16C	< 35.0	
R-4201A		AC130-RA-E
C-130H&N&P	< 35.0	
R-4201A		A10-RA-P-B
A-10A	< 35.0	
R-4201A		AC130-RA-P
C-130H&N&P	< 35.0	
R-4201A		UH60-RA-P
UH60A	< 35.0	
R-4201A		UH60-RA-E
UH60A	< 35.0	
R-4201A		A10-RA-P-A
A-10A	< 35.0	
R-4201A		A10-RA-E-A
A-10A	< 35.0	
R-4201A		C130-RA-P
C-130H&N&P	< 35.0	

Total Level ..... 69.7

Specific Point: SLEEPER STATE PARK  
Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace	> Mission
	(dB)	
STEELHEAD LOW NORTH-PROPOSED		F16-SN-P_A
F-16C	43.2	
STEELHEAD LOW NORTH-PROPOSED		F16-SN-P_B
F-16C	< 35.0	
STEELHEAD MOA-PROPOSED		F16-S-P_B
F-16C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		F18A-SN-P
F-18A/C	< 35.0	
STEELHEAD MOA-PROPOSED		F35-S-P
F-35A	< 35.0	
STEELHEAD MOA-PROPOSED		F16-S-P_A

F-16C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		A10-SN-P_A
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		B2-S-P
B-2A	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		AH-SN-P
AH-1G	< 35.0	
STEELHEAD MOA-PROPOSED		KC135-S-P
KC-135R	< 35.0	
STEELHEAD MOA-PROPOSED		F18A-S-P
F-18A/C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		A10-SN-P_B
A-10A	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		UH60-SN-P
UH60A	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
STEELHEAD MOA-PROPOSED		B52-S-P
B-52H	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_B
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	

Total Level ..... 44.4

Specific Point: SOUTH BRANCH CAMPGROUND  
Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace	> Mission
	(dB)	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_A
F-16C	46.7	
GRAYLING WEST MOA-PROPOSED		AV8-GW-P
AV-8B	< 35.0	
GRAYLING WEST MOA-PROPOSED		F16-GW-P_B
F-16C	< 35.0	
GRAYLING WEST MOA-PROPOSED		F18G-GW-P
F-18E/F	< 35.0	

GRAYLING WEST MOA-PROPOSED		B52-GW-P
B-52H	< 35.0	
GRAYLING WEST MOA-PROPOSED		AC130-GW-P
C-130H&N&P	< 35.0	
GRAYLING WEST MOA-PROPOSED		CH47-GW-P
CH47D	< 35.0	
GRAYLING WEST MOA-PROPOSED		C130-GW-P
C-130H&N&P	< 35.0	
GRAYLING WEST MOA-PROPOSED		A10-GW-P_B
A-10A	< 35.0	
GRAYLING WEST MOA-PROPOSED		A10-GW-P-A
A-10A	< 35.0	
GRAYLING WEST MOA-PROPOSED		B2-GW-P
B-2A	< 35.0	
GRAYLING WEST MOA-PROPOSED		UH60-GW-P
UH60A	< 35.0	
GRAYLING WEST MOA-PROPOSED		C17-GW-P
C-17	< 35.0	
GRAYLING WEST MOA-PROPOSED		C12-GW-P
C-12	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-A
F-16C	< 35.0	

Total Level ..... 47.1

Specific Point: TAWAS POINT LIGHTHOUS  
Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace	> Mission
	(dB)	
STEELHEAD LOW NORTH-PROPOSED	F-16C      43.2	F16-SN-P_A
STEELHEAD LOW NORTH-PROPOSED	F-16C      < 35.0	F16-SN-P_B
STEELHEAD LOW NORTH-PROPOSED		F18A-SN-P



F-18A/C	< 35.0	
STEELHEAD MOA-PROPOSED		F16-S-P_B
F-16C	< 35.0	
STEELHEAD MOA-PROPOSED		F35-S-P
F-35A	< 35.0	
STEELHEAD MOA-PROPOSED		F16-S-P_A
F-16C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		A10-SN-P_A
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		B2-S-P
B-2A	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		AH-SN-P
AH-1G	< 35.0	
STEELHEAD MOA-PROPOSED		KC135-S-P
KC-135R	< 35.0	
STEELHEAD MOA-PROPOSED		F18A-S-P
F-18A/C	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		A10-SN-P_B
A-10A	< 35.0	
STEELHEAD LOW NORTH-PROPOSED		UH60-SN-P
UH60A	< 35.0	
VR-16		T1-VR
T-1	< 35.0	
STEELHEAD MOA-PROPOSED		B52-S-P
B-52H	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_B
A-10A	< 35.0	
STEELHEAD MOA-PROPOSED		A10-S-P_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201B-PROPOSED		F16-RB-P-B
F-16C	< 35.0	

Total Level ..... 44.4

Specific Point: TURTLE LAKE ROAD  
Top 20 contributors to this level:

		Sound Level		
<	Aircraft	Airspace (dB)	>	Mission
	R-4201A			F16-RA-E-B
	F-16C	68.0		

R-4201A			F16-RA-P-B
F-16C	65.3		
R-4201A			F16-RA-P-A
F-16C	53.8		
GRAYLING WEST	MOA-PROPOSED		F16-GW-P_A
F-16C	46.6		
R-4201A			F16-RA-E-A
F-16C	46.0		
R-4201A			AV8-RA-P
AV-8B	42.1		
R-4201A			AV8-RA-E
AV-8B	< 35.0		
R-4201A			A10-RA-E-B
A-10A	< 35.0		
GRAYLING WEST	MOA-PROPOSED		AV8-GW-P
AV-8B	< 35.0		
R-4201A			CH47-RA-E
CH47D	< 35.0		
R-4201A			CH47-RA-P
CH47D	< 35.0		
R-4201A			AC130-RA-E
C-130H&N&P	< 35.0		
R-4201A			AC130-RA-P
C-130H&N&P	< 35.0		
R-4201A			A10-RA-P-B
A-10A	< 35.0		
GRAYLING WEST	MOA-PROPOSED		F16-GW-P_B
F-16C	< 35.0		
R-4201A			UH60-RA-P
UH60A	< 35.0		
R-4201A			UH60-RA-E
UH60A	< 35.0		
R-4201A			A10-RA-P-A
A-10A	< 35.0		
R-4201A			A10-RA-E-A
A-10A	< 35.0		
R-4201A			C130-RA-P
C-130H&N&P	< 35.0		

Total Level ..... 70.1

<Run Log>

Date: 4/27/2021  
Start Time: 14:14:26  
Stop Time: 15: 6:26  
Total Running Time: 52 minutes and 1 seconds.



Lat (deg)	Long (deg)	
44.93333	-84.65001	
44.93472	-84.36751	
44.48943	-84.33890	
44.56666	-84.58334	
44.71666	-84.63334	
44.78333	-84.63335	
44.78333	-84.65001	
44.93333	-84.65001	
Floor =	500 feet AGL	Ceiling = 17327 feet AGL

MOA name HERSEY MOA

Lat (deg)	Long (deg)	
43.99998	-85.55002	
43.99998	-85.16668	
43.49998	-85.00002	
43.49998	-85.50002	
43.99998	-85.55002	
Floor =	4328 feet AGL	Ceiling = 17328 feet AGL

MOA name PIKE EAST MOA-EXISTING

Lat (deg)	Long (deg)	
44.22193	-83.24999	
44.69999	-83.14999	
44.98750	-83.24999	
45.26667	-83.38333	
45.36667	-83.48333	
45.36667	-83.58333	
45.75000	-83.80833	
45.75001	-83.43527	
45.33861	-82.51859	
43.88749	-82.18831	
44.22193	-83.24999	
Floor =	300 feet AGL	Ceiling = 17327 feet AGL

MOA name PIKE EAST MOA-PROPOSED

Lat (deg)	Long (deg)
44.30666	-83.23332
44.69999	-83.14999
44.98750	-83.24999
45.26667	-83.38333
45.36667	-83.48333
45.36667	-83.58333
45.75000	-83.80833
45.75001	-83.43527
45.33861	-82.51859

44.33527 -82.29026  
44.30666 -83.23332  
Floor = 300 feet AGL Ceiling = 17327 feet AGL

MOA name PIKE WEST MOA-EXISTING

Lat (deg)	Long (deg)
45.75001	-84.16667
45.75000	-83.80833
45.36667	-83.58333
45.36667	-83.48333
45.26667	-83.38333
44.98750	-83.24999
44.69999	-83.14999
44.22193	-83.24999
44.28332	-83.45000
44.28888	-83.71667
44.68333	-84.10001
45.75001	-84.16667

Floor = 5328 feet AGL Ceiling = 17327 feet AGL

MOA name PIKE WEST MOA-PROPOSED

Lat (deg)	Long (deg)
45.75000	-83.80833
45.36667	-83.58333
45.36667	-83.48333
45.26667	-83.38333
44.98750	-83.24999
44.69999	-83.14999
44.30666	-83.23332
44.28888	-83.71667
44.68333	-84.10001
45.75001	-84.16667
45.75000	-83.80833

Floor = 5328 feet AGL Ceiling = 17327 feet AGL

MOA name R-4201A

Lat (deg)	Long (deg)
44.93333	-84.48335
44.78333	-84.48335
44.78333	-84.65001
44.93333	-84.65001
44.93333	-84.48335

Floor = 5 feet AGL Ceiling = 22328 feet AGL

MOA name R-4201B-EXISTING

Lat (deg)	Long (deg)
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44.78333	-84.48335		
44.68333	-84.48335		
44.68333	-84.66668		
44.71666	-84.66668		
44.71666	-84.63334		
44.78333	-84.63335		
44.78333	-84.48335		
Floor =	5 feet AGL	Ceiling =	8328 feet AGL

MOA name R-4201B-PROPOSED

Lat	Long		
(deg)	(deg)		
44.78333	-84.48335		
44.68333	-84.48335		
44.68333	-84.66668		
44.71666	-84.66668		
44.71666	-84.63334		
44.78333	-84.63335		
44.78333	-84.48335		
Floor =	5 feet AGL	Ceiling =	22328 feet AGL

MOA name STEELHEAD LOW EAST-PROPOSED

Lat	Long		
(deg)	(deg)		
44.31471	-83.00333		
44.33527	-82.29026		
43.59109	-82.12276		
43.56498	-82.13609		
43.49998	-82.43415		
43.49998	-82.93777		
43.66915	-82.93777		
43.69114	-82.87900		
43.72047	-82.84624		
43.75581	-82.82739		
43.79343	-82.82443		
43.81945	-82.83376		
43.85474	-82.86044		
43.88229	-82.90539		
43.89730	-82.96531		
43.89610	-83.00333		
44.31471	-83.00333		
Floor =	500 feet AGL	Ceiling =	5327 feet AGL

MOA name STEELHEAD LOW NORTH-PROPOSED

Lat	Long
(deg)	(deg)
44.28888	-83.71667
44.31471	-83.00333
43.89610	-83.00333
43.89161	-83.03465

43.88245	-83.06362		
43.86975	-83.08952		
43.85994	-83.10167		
43.85013	-83.11382		
43.84188	-83.12261		
43.81943	-83.13721		
43.81943	-83.58333		
44.28888	-83.71667		
Floor =	500 feet AGL	Ceiling =	5327 feet AGL

MOA name STEELHEAD LOW SOUTH-PROPOSED

Lat (deg)	Long (deg)		
43.49998	-82.93777		
43.66915	-82.93777		
43.68914	-82.88342		
43.72097	-82.84619		
43.75492	-82.82825		
43.79340	-82.82436		
43.81887	-82.83337		
43.85529	-82.86101		
43.88202	-82.90653		
43.89707	-82.96491		
43.89385	-83.02100		
43.88337	-83.06252		
43.87114	-83.08801		
43.84748	-83.11897		
43.81943	-83.13721		
43.81943	-83.58333		
43.64165	-83.53333		
43.49998	-82.98637		
43.49998	-82.93777		
Floor =	3328 feet AGL	Ceiling =	5327 feet AGL

MOA name STEELHEAD MOA-EXISTING

Lat (deg)	Long (deg)		
43.43331	-82.73332		
43.64165	-83.53333		
44.28888	-83.71667		
44.28332	-83.45000		
43.88749	-82.18831		
43.59109	-82.12276		
43.56498	-82.13609		
43.43331	-82.73332		
Floor =	5328 feet AGL	Ceiling =	17327 feet AGL

MOA name STEELHEAD MOA-PROPOSED

Lat (deg)	Long (deg)
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43.49998 -82.98637  
 43.64165 -83.53333  
 44.28888 -83.71667  
 44.33527 -82.29026  
 43.59109 -82.12276  
 43.56498 -82.13609  
 43.49998 -82.43415  
 43.49998 -82.98637

Floor = 5328 feet AGL Ceiling = 17327 feet AGL

TRACK SPECIFICATIONS

Track name VR-16							
Flag	Latitude	Longitude	Left	Right	Floor 1	Floor	
2	Radius	Angle					
Notation			(feet)	(feet)	(feet AGL)	(feet)	
AGL)	(feet)	(degrees)					
LW	45.16666	-83.86667	18228.	18228.	300		
LW	45.08333	-84.18334	18228.	18228.	300		
LW	45.00000	-84.25001	18228.	18228.	300		
LW	44.93333	-84.48335	18228.	18228.	300		
LW	44.88333	-84.56667	18228.	18228.	300		

SPECIFIC POINT SPECIFICATION

Number of Specific points = 21

Latitude	Longitude	Name
45.06170	-83.43280	ALPENA CITY
45.09337	-84.14740	ATLANTA STATE FOREST AREA
43.85387	-83.37360	BAY PORT HISTORIC COMMERCIAL FISHING DIS
44.67923	-84.56547	GATES AU SABLE LODGE
44.62668	-84.21320	GRAYLING STATE FOREST AREA
44.86666	-84.61668	GUTHRIE LAKES
43.85564	-82.65550	HARBOR BEACH
44.03110	-82.83249	HURON CITY HISTORIC DISTRICT
44.43789	-83.63550	HURON NATIONAL FOREST
44.78333	-84.55001	KP LAKES
45.16980	-84.43941	PIGEON
44.71187	-84.65730	RESIDENCE EAST BRANCH AU SABLE RIVER
44.77752	-84.48095	RESIDENCE EAST OF R-4201B
44.70055	-84.66863	RESIDENCE WEST OF R-4201B
44.72122	-84.64132	RIVER PARK CAMPGROUND
43.65929	-83.01864	SANILAC PETROGLYPHS HISTORIC STATE PARK
44.82382	-84.47892	SHUPAC LAKE STATE FOREST CAMPGROUND
43.97323	-83.20968	SLEEPER STATE PARK
44.60613	-84.46312	SOUTH BRANCH CAMPGROUND
44.25376	-83.44950	TAWAS POINT LIGHTHOUS
44.89514	-84.54681	TURTLE LAKE ROAD



AVOIDANCE SPECIFICATION

Number of Avoidance Areas = 2

Latitude	Longitude	Radius (feet)	Floor (feet AGL)	Name
44.86666	-84.61668	1500.	1500	GUTHRIE LAKES
44.78333	-84.55001	1500.	1500	KP LAKES

MISSION DATA

Mission name = A10-GT-E

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	9327	70.0
9328	17327	30.0

Mission name = A10-HE

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	9327	60.0
9328	17327	40.0

Mission name = A10-PE-E

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	10.0
500	999	25.0
1000	2327	25.0
2328	4327	25.0
4328	17327	15.0

Mission name = A10-PW-E

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	70.0
9328	17327	30.0

Mission name = A10-RA-E-A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = A10-RA-E-B  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	18.0
1328	4327	20.0
4328	22328	60.0

Mission name = A10-RA-P-A  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = A10-RA-P-B  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	18.0
1328	4327	20.0
4328	22328	60.0

Mission name = A10-RB-E  
Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0

500	1327	25.0
1328	4327	40.0
4328	8328	25.0

Mission name = A10-S-E\_A

Aircraft code =FM0090100 Speed = 300 kias Power = 60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	60.0
9328	17327	40.0

Mission name = A10-S-E\_B

Aircraft code =FM0090100 Speed = 240 kias Power = 50.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = AC130-RA-E

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	1327	10.0
1328	4327	60.0
4328	22328	30.0

Mission name = AC130-RA-P

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	1327	10.0
1328	4327	60.0
4328	22328	30.0

Mission name = AC130-RB-E

Aircraft code =FM0290300 Speed = 200 kias Power = 800.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	1327	10.0
1328	4327	60.0

4328                    8328                    30.0

Mission name = AH-PE-E

Aircraft code =FM6110100    Speed =    85 kias    Power =       0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	80.0
500	999	10.0
1000	2327	10.0

Mission name = AV8-RA-E

Aircraft code =FM0070200    Speed =    300 kias    Power =       75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = AV8-RA-P

Aircraft code =FM0070200    Speed =    300 kias    Power =       75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	22328	25.0

Mission name = AV8-RB-E

Aircraft code =FM0070200    Speed =    300 kias    Power =       75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	10.0
500	1327	25.0
1328	4327	40.0
4328	8328	25.0

Mission name = B2-PW-E

Aircraft code =FM0130100    Speed =    300 kias    Power =       70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
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(feet AGL)	(feet AGL)	Utilization
9328	17327	100.0

Mission name = B2-RA-E

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	22328	100.0

Mission name = B2-RA-P

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	22328	100.0

Mission name = B2-RB-E

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	8328	100.0

Mission name = B2-S-E

Aircraft code =FM0130100 Speed = 300 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
9328	17327	100.0

Mission name = B52-GT-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	9327	5.0
9328	17327	95.0

Mission name = B52-PE-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization

1000	2327	5.0
2328	4327	10.0
4328	17327	85.0

Mission name = B52-PW-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	5.0
9328	17327	95.0

Mission name = B52-RA-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B52-RA-P

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = B52-RB-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	8328	100.0

Mission name = B52-S-E

Aircraft code =FM0140300 Speed = 300 kias Power = 2110.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = C12-PE-E

Aircraft code =FM0190100 Speed = 200 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
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(feet AGL)	(feet AGL)	Utilization
4328	17327	100.0

Mission name = C12-RA-E

Aircraft code =FM0190100 Speed = 200 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	22328	100.0

Mission name = C12-RA-P

Aircraft code =FM0190100 Speed = 200 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	22328	100.0

Mission name = C12-RB-E

Aircraft code =FM0190100 Speed = 200 kias Power = 70.0

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
4328	8328	100.0

Mission name = C17-RA-E

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
100	499	50.0
500	1327	50.0

Mission name = C17-RA-P

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt	Upper Alt	Percent
(feet AGL)	(feet AGL)	Utilization
100	499	50.0
500	1327	50.0

Mission name = C17-RB-E

Aircraft code =FM0200100 Speed = 350 kias Power = 1.3

Altitude Distribution

Lower Alt	Upper Alt	Percent
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(feet AGL)	(feet AGL)	Utilization
100	499	50.0
500	1327	50.0

Mission name = C130-GT-E

Aircraft code =FM0290301 Speed = 200 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	9327	50.0
9328	17327	50.0

Mission name = C130-PE-E

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	10.0
500	999	10.0
1000	2327	10.0
2328	4327	25.0
4328	17327	45.0

Mission name = C130-PW-E

Aircraft code =FM0290301 Speed = 200 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = C130-RA-E

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	35.0
500	1327	35.0
1328	4327	30.0

Mission name = C130-RA-P

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
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100	499	35.0
500	1327	35.0
1328	4327	30.0

Mission name = C130-RB-E

Aircraft code =FM0290301 Speed = 250 kias Power = 900.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	35.0
500	1327	35.0
1328	4327	30.0

Mission name = CH47-PE-E

Aircraft code =FM6590100 Speed = 150 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	88.9
500	999	11.1

Mission name = CH47-RA-E

Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = CH47-RA-P

Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = CH47-RB-E

Aircraft code =FM6200100 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0

100	499	50.0
500	1327	25.0

Mission name = F16-GT-E  
Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	9327	25.0
9328	17327	75.0

Mission name = F16-PE-E\_A  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	5.0
500	999	10.0
1000	2327	15.0
2328	4327	25.0
4328	17327	45.0

Mission name = F16-PE-E\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	5.0
2328	4327	10.0
4328	17327	80.0

Mission name = F16-PW-E\_A  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F16-PW-E\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
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5328	9327	25.0
9328	17327	75.0

Mission name = F16-RA-E-A

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	15.0
1328	4327	40.0
4328	22328	43.0

Mission name = F16-RA-E-B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	5.0
100	499	5.0
500	1327	5.0
1328	4327	5.0
4328	22328	80.0

Mission name = F16-RA-P-A

Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	15.0
1328	4327	40.0
4328	22328	43.0

Mission name = F16-RA-P-B

Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	5.0
100	499	5.0
500	1327	5.0
1328	4327	5.0
4328	22328	80.0

Mission name = F16-RB-E-A  
Aircraft code =FM0440300 Speed = 450 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
100	499	2.0
500	1327	15.0
1328	4327	40.0
4328	8328	43.0

Mission name = F16-RB-E-B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	5.0
100	499	5.0
500	1327	5.0
1328	4327	5.0
4328	8328	80.0

Mission name = F16-S-E\_A  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = F16-S-E\_B  
Aircraft code =FM0440300 Speed = 400 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F18A-PE-E  
Aircraft code =FM0450100 Speed = 350 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	5.0
500	999	10.0
1000	2327	15.0
2328	4327	25.0

4328 17327 45.0

Mission name = F18A-PW-E

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F18A-S-E

Aircraft code =FM0450100 Speed = 400 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	50.0
9328	17327	50.0

Mission name = F18G-GT-E

Aircraft code =FM0450200 Speed = 300 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = F18G-PE-E

Aircraft code =FM0450200 Speed = 350 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	5.0
1000	2327	10.0
2328	4327	15.0
4328	17327	70.0

Mission name = F18G-PW-E

Aircraft code =FM0450200 Speed = 300 kias Power = 92.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = F18G-RA-P

Aircraft code =FM0450201 Speed = 300 kias Power = 90.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	22328	100.0

Mission name = F35-PE-E  
Aircraft code =FM0890200 Speed = 350 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	999	10.0
1000	2327	15.0
2328	4327	15.0
4328	17327	60.0

Mission name = F35-PW-E  
Aircraft code =FM0890200 Speed = 400 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	25.0
9328	17327	75.0

Mission name = F35-S-E  
Aircraft code =FM0890200 Speed = 400 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	40.0
9328	17327	60.0

Mission name = F35-S-P  
Aircraft code =FM0890200 Speed = 400 kias Power = 75.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5328	9327	40.0
9328	17327	60.0

Mission name = KC135-GT-E  
Aircraft code =FM0310400 Speed = 300 kias Power = 84.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = KC135-PE-E  
 Aircraft code =FM0310400 Speed = 300 kias Power = 84.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	17327	100.0

Mission name = KC135-PW-E  
 Aircraft code =FM0310400 Speed = 300 kias Power = 84.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = KC135-S-E  
 Aircraft code =FM0310400 Speed = 300 kias Power = 84.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
9328	17327	100.0

Mission name = UH60-GT-E  
 Aircraft code =FM6210100 Speed = 85 kias Power = 0.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
4328	9327	100.0

Mission name = UH60-PE-E  
 Aircraft code =FM6210100 Speed = 85 kias Power = 0.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
300	499	80.0
500	999	10.0
1000	2327	10.0

Mission name = UH60-RA-E  
 Aircraft code =FM6210101 Speed = 80 kias Power = 0.0  
 Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0

100	499	50.0
500	1327	25.0

Mission name = UH60-RA-P

Aircraft code =FM6210101 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

Mission name = UH60-RB-E

Aircraft code =FM6210101 Speed = 80 kias Power = 0.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
5	99	25.0
100	499	50.0
500	1327	25.0

MOA OPERATION DATA

MOA name = GRAYLING TEMPORARY MOA-EXISTING

Monthly	Mission Night Day Name	Yearly Night OPS	Time On Range (minutes)	Daily		
				Day OPS	Night OPS	Day OPS
	A10-GT-E			0.192	0.022	5.75
0.67	69.	8.	17.			
	B52-GT-E			0.036	0.014	1.08
0.42	13.	5.	15.			
	C130-GT-E			0.008	0.000	0.25
0.00	3.	0.	4.			
	F16-GT-E			0.311	0.000	9.33
0.00	112.	0.	9.			
	F18G-GT-E			0.036	0.000	1.08
0.00	13.	0.	13.			
	KC135-GT-E			0.033	0.008	1.00
0.25	12.	3.	36.			
	UH60-GT-E			0.194	0.000	5.83
0.00	70.	0.	11.			



MOA name = HERSEY MOA

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
	Name				OPS	OPS	OPS
	OPS	OPS	OPS	(minutes)			
	A10-HE				0.004	0.014	0.12
0.42	2.		5.	45.			

MOA name = PIKE EAST MOA-EXISTING

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
	Name				OPS	OPS	OPS
	OPS	OPS	OPS	(minutes)			
	A10-PE-E				0.111	0.000	3.33
0.00	40.		0.	95.			
	AH-PE-E				0.028	0.000	0.83
0.00	10.		0.	240.			
	B52-PE-E				0.133	0.000	4.00
0.00	48.		0.	165.			
	C12-PE-E				0.000	0.003	0.00
0.08	0.		1.	120.			
	C130-PE-E				0.022	0.000	0.67
0.00	8.		0.	180.			
	CH47-PE-E				0.036	0.000	1.08
0.00	13.		0.	220.			
	F16-PE-E_A				0.183	0.000	5.50
0.00	66.		0.	95.			
	F16-PE-E_B				0.006	0.003	0.17
0.08	2.		1.	5.			
	F18A-PE-E				0.019	0.000	0.58
0.00	7.		0.	35.			
	F18G-PE-E				0.036	0.000	1.08
0.00	13.		0.	120.			
	F35-PE-E				0.006	0.000	0.17
0.00	2.		0.	30.			
	KC135-PE-E				0.056	0.019	1.67
0.58	20.		7.	270.			
	UH60-PE-E				0.194	0.000	5.83
0.00	70.		0.	190.			

MOA name = PIKE WEST MOA-EXISTING

Monthly	Mission		Yearly	Daily		
	Day	Night		Day	Night	Day

Night	Day	Night	Time On Range	OPS	OPS	OPS
OPS	Name	OPS	(minutes)			
0.83	A10-PW-E	10.	85.	0.222	0.028	6.67
0.00	B2-PW-E	0.	105.	0.003	0.000	0.08
0.83	B52-PW-E	10.	100.	0.083	0.028	2.50
0.00	C130-PW-E	0.	180.	0.011	0.000	0.33
0.00	F16-PW-E_A	0.	90.	0.183	0.000	5.50
8.67	F16-PW-E_B	104.	30.	0.864	0.289	25.92
0.00	F18A-PW-E	0.	35.	0.019	0.000	0.58
0.00	F18G-PW-E	0.	120.	0.036	0.000	1.08
0.00	F35-PW-E	0.	30.	0.006	0.000	0.17
1.00	KC135-PW-E	12.	180.	0.111	0.033	3.33

MOA name = R-4201A

Monthly		Yearly	Daily			
Night	Mission	Night	Time On Range	Day	Night	Day
OPS	Name	OPS	(minutes)	OPS	OPS	OPS
1.33	A10-RA-E-A	16.	23.	0.139	0.044	4.17
0.00	A10-RA-E-B	0.	27.	3.667	0.000	110.00
1.67	A10-RA-P-A	20.	20.	0.153	0.056	4.58
0.00	A10-RA-P-B	0.	20.	3.306	0.000	99.17
0.33	AC130-RA-E	4.	162.	0.011	0.011	0.33
0.42	AC130-RA-P	5.	121.	0.014	0.014	0.42
0.00	AV8-RA-E	0.	14.	0.078	0.000	2.33
0.83	AV8-RA-P	10.	17.	0.097	0.028	2.92
0.00	B2-RA-E	0.	18.	0.003	0.000	0.08

B2-RA-P	0.00	5.	0.	20.	0.014	0.000	0.42
B52-RA-E	0.50	14.	6.	95.	0.039	0.017	1.17
B52-RA-P	0.83	30.	10.	80.	0.083	0.028	2.50
C12-RA-E	0.25	0.	3.	104.	0.000	0.008	0.00
C12-RA-P	0.42	0.	5.	80.	0.000	0.014	0.00
C17-RA-E	0.00	2.	0.	9.	0.006	0.000	0.17
C17-RA-P	0.00	5.	0.	10.	0.014	0.000	0.42
C130-RA-E	0.00	7.	0.	14.	0.019	0.000	0.58
C130-RA-P	0.00	50.	0.	10.	0.139	0.000	4.17
CH47-RA-E	0.00	19.	0.	59.	0.053	0.000	1.58
CH47-RA-P	0.00	25.	0.	40.	0.069	0.000	2.08
F16-RA-E-A	0.00	50.	0.	23.	0.139	0.000	4.17
F16-RA-E-B	4.75	174.	57.	27.	0.483	0.158	14.50
F16-RA-P-A	2.50	50.	30.	20.	0.139	0.083	4.17
F16-RA-P-B	3.42	124.	41.	20.	0.344	0.114	10.33
F18G-RA-P	0.00	5.	0.	17.	0.014	0.000	0.42
UH60-RA-E	0.00	35.	0.	36.	0.097	0.000	2.92
UH60-RA-P	0.00	50.	0.	30.	0.139	0.000	4.17

MOA name = R-4201B-EXISTING

Monthly	Mission		Yearly	Time On Range	Daily		
	Night	Day			Day	Night	Day
OPS	OPS	OPS	OPS	(minutes)	OPS	OPS	OPS
1.33	50.	16.	3.	0.139	0.044	4.17	
0.33	4.	4.	18.	0.011	0.011	0.33	
				0.078	0.000	2.33	

0.00	28.	0.	2.	0.003	0.000	0.08
	B2-RB-E					
0.00	1.	0.	2.	0.039	0.017	1.17
	B52-RB-E					
0.50	14.	6.	11.	0.000	0.008	0.00
	C12-RB-E					
0.25	0.	3.	12.	0.006	0.000	0.17
	C17-RB-E					
0.00	2.	0.	1.	0.019	0.000	0.58
	C130-RB-E					
0.00	7.	0.	2.	0.053	0.000	1.58
	CH47-RB-E					
0.00	19.	0.	7.	0.139	0.000	4.17
	F16-RB-E-A					
0.00	50.	0.	3.	0.161	0.053	4.83
	F16-RB-E-B					
1.58	58.	19.	1.	0.097	0.000	2.92
	UH60-RB-E					
0.00	35.	0.	4.			

MOA name = STEELHEAD MOA-EXISTING

Monthly		Yearly		Daily		
Night	Mission Day	Night	Time On Range	Day	Night	Day
OPS	Name	OPS	(minutes)	OPS	OPS	OPS
3.83	A10-S-E_A	46.	44.	0.361	0.128	10.83
0.00	A10-S-E_B	0.	60.	1.556	0.000	46.67
0.00	B2-S-E	0.	30.	0.022	0.000	0.67
0.00	B52-S-E	0.	90.	0.014	0.000	0.42
0.00	F16-S-E_A	0.	90.	0.122	0.000	3.67
11.00	F16-S-E_B	132.	25.	1.097	0.367	32.92
0.00	F18A-S-E	0.	60.	0.022	0.000	0.67
0.00	F35-S-E	0.	30.	0.006	0.000	0.17
1.92	KC135-S-E	23.	169.	0.167	0.064	5.00

MOA name = STEELHEAD MOA-PROPOSED

Daily

Monthly	Mission		Yearly		Day	Night	Day
Night	Day		Night	Time On Range			
OPS	OPS		OPS	(minutes)	OPS	OPS	OPS
0.83	F35-S-P	40.	10.	30.	0.111	0.028	3.33

TRACK OPERATION DATA

Track name = VR-16

Monthly	Mission		Yearly	Daily		
Night	Day		Night	Day	Night	Day
OPS	OPS		OPS	OPS	OPS	OPS

\*\*\*\*\*  
Warning: Grid points spaced greater than 1000 feet apart may not provide the necessary grid resolution, in some cases, to compute noise contours with high accuracy. For low-altitude track operations, the recommended grid spacing is less than 1000 feet.  
\*\*\*\*\*

\*\*\*\*\* MOA RANGE NOISEMAP \*\*\*\*\*  
RESULTS

The noise metric is Ldn.

		MOA RESULTS		
		Uniform	Number	
of	MOA	MOA	Distributed	Daily
Events Above	Name	Area	Sound Level	SEL of
65.0 dB		(sq statute miles)	(dB)	
	GRAYLING EAST MOA-PROPOSED	840.9	No operations on this	
	MOA!			

0.0	GRAYLING TEMPORARY MOA-EXISTING	1149.1	35.0
MOA!	GRAYLING WEST MOA-PROPOSED	374.0	No operations on this
0.0	HERSEY MOA	763.7	35.0
0.0	PIKE EAST MOA-EXISTING	4773.0	37.6
MOA!	PIKE EAST MOA-PROPOSED	3877.6	No operations on this
0.0	PIKE WEST MOA-EXISTING	3521.2	36.0
MOA!	PIKE WEST MOA-PROPOSED	3476.7	No operations on this
0.0	R-4201A	84.8	70.0
0.0	R-4201B-EXISTING	54.8	51.3
MOA!	R-4201B-PROPOSED	54.8	No operations on this
MOA!	STEELHEAD LOW EAST-PROPOSED	2107.3	No operations on this
MOA!	STEELHEAD LOW NORTH-PROPOSED	1051.2	No operations on this
MOA!	STEELHEAD LOW SOUTH-PROPOSED	644.0	No operations on this
0.0	STEELHEAD MOA-EXISTING	2931.7	36.9
0.0	STEELHEAD MOA-PROPOSED	3801.9	35.0

#### AVOIDANCE AREA RESULTS

Avoidance Area Name	Uniform Distributed Sound Level (dB)	Number of Daily Events Above SEL of 65.0 dB
GUTHRIE LAKES	68.0	23.9
KP LAKES	51.3	15.4

#### TRACK RESULTS

Track Name = VR-16

Track Segment	Maximum Centerline Level (dB)	Number of Events Above SEL of 65.0 dB
01 - 02	0.0	0.0
02 - 03	0.0	0.0
03 - 04	0.0	0.0
04 - 05	0.0	0.0

\*\*\*\*\* MOA RANGE NOISEMAP \*\*\*\*\*  
RESULTS

SPECIFIC POINT RESULTS

Specific Point: ALPENA CITY  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	PIKE WEST MOA-EXISTING			F16-PW-E_B
	F-16C	35.3		
	PIKE WEST MOA-EXISTING			F16-PW-E_A
	F-16C	< 35.0		
	PIKE WEST MOA-EXISTING			F18G-PW-E
	F-18E/F	< 35.0		
	PIKE WEST MOA-EXISTING			B52-PW-E
	B-52H	< 35.0		
	PIKE WEST MOA-EXISTING			F35-PW-E
	F-35A	< 35.0		
	PIKE WEST MOA-EXISTING			F18A-PW-E
	F-18A/C	< 35.0		
	PIKE WEST MOA-EXISTING			KC135-PW-E
	KC-135R	< 35.0		
	PIKE WEST MOA-EXISTING			B2-PW-E
	B-2A	< 35.0		
	PIKE WEST MOA-EXISTING			C130-PW-E
	C-130H&N&P	< 35.0		
	PIKE WEST MOA-EXISTING			A10-PW-E
	A-10A	< 35.0		
	R-4201A			F16-RA-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-A
	F-16C	< 35.0		
	R-4201B-EXISTING			F16-RB-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-E-A
	F-16C	< 35.0		
	R-4201A			AV8-RA-P

AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 36.0

Specific Point: ATLANTA STATE FOREST AREA  
Top 20 contributors to this level:

<	Sound Level Aircraft      Airspace (dB)	> Mission
	GRAYLING TEMPORARY MOA-EXISTING	F16-GT-E
	F-16C < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	F18G-GT-E
	F-18E/F < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	B52-GT-E
	B-52H < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	UH60-GT-E
	UH60A < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	KC135-GT-E
	KC-135R < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	A10-GT-E
	A-10A < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	C130-GT-E
	C-130H&N&P < 35.0	
	R-4201A	F16-RA-E-B
	F-16C < 35.0	
	R-4201A	F16-RA-P-B
	F-16C < 35.0	
	R-4201A	F16-RA-P-A
	F-16C < 35.0	
	R-4201B-EXISTING	F16-RB-E-B
	F-16C < 35.0	
	R-4201A	F16-RA-E-A
	F-16C < 35.0	
	R-4201A	AV8-RA-P
	AV-8B < 35.0	
	R-4201B-EXISTING	F16-RB-E-A
	F-16C < 35.0	



STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	

Total Level ..... < 35.0

Specific Point: BAY PORT HISTORIC COMMERCIAL FISHING DIS  
Top 20 contributors to this level:

<	Sound Level Aircraft      Airspace (dB)	> Mission
	STEELHEAD MOA-EXISTING	F16-S-E_B
	F-16C      36.3	
	STEELHEAD MOA-PROPOSED	F35-S-P
	F-35A      < 35.0	
	STEELHEAD MOA-EXISTING	F16-S-E_A
	F-16C      < 35.0	
	STEELHEAD MOA-EXISTING	F18A-S-E
	F-18A/C    < 35.0	
	STEELHEAD MOA-EXISTING	F35-S-E
	F-35A      < 35.0	
	STEELHEAD MOA-EXISTING	KC135-S-E
	KC-135R    < 35.0	
	STEELHEAD MOA-EXISTING	B2-S-E
	B-2A        < 35.0	
	STEELHEAD MOA-EXISTING	B52-S-E
	B-52H      < 35.0	
	STEELHEAD MOA-EXISTING	A10-S-E_B
	A-10A      < 35.0	
	STEELHEAD MOA-EXISTING	A10-S-E_A
	A-10A      < 35.0	
	R-4201A	F16-RA-E-B
	F-16C      < 35.0	
	R-4201A	F16-RA-P-B
	F-16C      < 35.0	
	R-4201A	F16-RA-P-A

F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 37.6

Specific Point: GATES AU SABLE LODGE  
Top 20 contributors to this level:

Sound Level		
<	Aircraft (dB)	> Mission
	GRAYLING TEMPORARY MOA-EXISTING	F16-GT-E
	F-16C < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	F18G-GT-E
	F-18E/F < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	B52-GT-E
	B-52H < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	UH60-GT-E
	UH60A < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	KC135-GT-E
	KC-135R < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	A10-GT-E
	A-10A < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	C130-GT-E
	C-130H&N&P < 35.0	
	R-4201A	F16-RA-E-B
	F-16C < 35.0	
	R-4201A	F16-RA-P-B
	F-16C < 35.0	
	R-4201A	F16-RA-P-A
	F-16C < 35.0	
	R-4201B-EXISTING	F16-RB-E-B
	F-16C < 35.0	

R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	

Total Level ..... < 35.0

Specific Point: GRAYLING STATE FOREST AREA  
Top 20 contributors to this level:

<	Sound Level Aircraft      Airspace (dB)	> Mission
	GRAYLING TEMPORARY MOA-EXISTING	F16-GT-E
	F-16C      < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	F18G-GT-E
	F-18E/F    < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	B52-GT-E
	B-52H      < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	UH60-GT-E
	UH60A      < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	KC135-GT-E
	KC-135R    < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	A10-GT-E
	A-10A      < 35.0	
	GRAYLING TEMPORARY MOA-EXISTING	C130-GT-E
	C-130H&N&P < 35.0	
	R-4201A	F16-RA-E-B
	F-16C      < 35.0	
	R-4201A	F16-RA-P-B
	F-16C      < 35.0	
	R-4201A	F16-RA-P-A

F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	

Total Level ..... < 35.0

Specific Point: GUTHRIE LAKES  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	> Mission
	R-4201A		F16-RA-E-B
	F-16C	67.5	
	R-4201A		F16-RA-P-B
	F-16C	64.7	
	R-4201A		F16-RA-P-A
	F-16C	53.3	
	R-4201A		F16-RA-E-A
	F-16C	45.5	
	R-4201A		AV8-RA-P
	AV-8B	41.5	
	R-4201A		AV8-RA-E
	AV-8B	< 35.0	
	R-4201A		A10-RA-E-B
	A-10A	< 35.0	
	R-4201A		CH47-RA-E
	CH47D	< 35.0	

R-4201A			CH47-RA-P
CH47D	<	35.0	
R-4201A			AC130-RA-E
C-130H&N&P	<	35.0	
R-4201A			AC130-RA-P
C-130H&N&P	<	35.0	
R-4201A			A10-RA-P-B
A-10A	<	35.0	
R-4201A			UH60-RA-P
UH60A	<	35.0	
R-4201A			UH60-RA-E
UH60A	<	35.0	
R-4201A			A10-RA-P-A
A-10A	<	35.0	
R-4201A			A10-RA-E-A
A-10A	<	35.0	
R-4201A			C130-RA-P
C-130H&N&P	<	35.0	
R-4201A			B52-RA-P
B-52H	<	35.0	
R-4201A			C17-RA-P
C-17	<	35.0	
R-4201A			B52-RA-E
B-52H	<	35.0	

Total Level ..... 69.5

Specific Point: HARBOR BEACH  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	STEELHEAD MOA-EXISTING			F16-S-E_B
	F-16C	36.3		
	STEELHEAD MOA-PROPOSED			F35-S-P
	F-35A	< 35.0		
	STEELHEAD MOA-EXISTING			F16-S-E_A
	F-16C	< 35.0		
	STEELHEAD MOA-EXISTING			F18A-S-E
	F-18A/C	< 35.0		
	STEELHEAD MOA-EXISTING			F35-S-E
	F-35A	< 35.0		
	STEELHEAD MOA-EXISTING			KC135-S-E
	KC-135R	< 35.0		
	STEELHEAD MOA-EXISTING			B2-S-E

B-2A	< 35.0	
STEELHEAD MOA-EXISTING		B52-S-E
B-52H	< 35.0	
STEELHEAD MOA-EXISTING		A10-S-E_B
A-10A	< 35.0	
STEELHEAD MOA-EXISTING		A10-S-E_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 37.6

Specific Point: HURON CITY HISTORIC DISTRICT  
 Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace (dB)	> Mission
	STEELHEAD MOA-EXISTING	F16-S-E_B
	F-16C                    36.2	
	STEELHEAD MOA-PROPOSED	F35-S-P
	F-35A                    < 35.0	
	STEELHEAD MOA-EXISTING	F16-S-E_A
	F-16C                    < 35.0	
	STEELHEAD MOA-EXISTING	F18A-S-E
	F-18A/C                 < 35.0	
	STEELHEAD MOA-EXISTING	F35-S-E
	F-35A                    < 35.0	

STEELHEAD MOA-EXISTING		KC135-S-E
KC-135R	< 35.0	
STEELHEAD MOA-EXISTING		B2-S-E
B-2A	< 35.0	
STEELHEAD MOA-EXISTING		B52-S-E
B-52H	< 35.0	
STEELHEAD MOA-EXISTING		A10-S-E_B
A-10A	< 35.0	
STEELHEAD MOA-EXISTING		A10-S-E_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 37.5

Specific Point: HURON NATIONAL FOREST  
Top 20 contributors to this level:

Sound Level		
<	Aircraft	>
	(dB)	
	Airspace	Mission
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	35.3	
PIKE WEST MOA-EXISTING		F16-PW-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F18G-PW-E
F-18E/F	< 35.0	
PIKE WEST MOA-EXISTING		B52-PW-E

B-52H	< 35.0	
PIKE WEST MOA-EXISTING		F35-PW-E
F-35A	< 35.0	
PIKE WEST MOA-EXISTING		F18A-PW-E
F-18A/C	< 35.0	
PIKE WEST MOA-EXISTING		KC135-PW-E
KC-135R	< 35.0	
PIKE WEST MOA-EXISTING		B2-PW-E
B-2A	< 35.0	
PIKE WEST MOA-EXISTING		C130-PW-E
C-130H&N&P	< 35.0	
PIKE WEST MOA-EXISTING		A10-PW-E
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 36.0

Specific Point: KP LAKES  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	R-4201B-EXISTING			F16-RB-E-B
	F-16C	49.1		
	R-4201A			F16-RA-P-A
	F-16C	42.3		



R-4201A			F16-RA-E-B
F-16C	42.1		
R-4201A			F16-RA-P-B
F-16C	39.4		
R-4201B-EXISTING			F16-RB-E-A
F-16C	37.5		
R-4201A			F16-RA-E-A
F-16C	< 35.0		
R-4201B-EXISTING			AV8-RB-E
AV-8B	< 35.0		
R-4201A			AV8-RA-P
AV-8B	< 35.0		
GRAYLING TEMPORARY MOA-EXISTING			F16-GT-E
F-16C	< 35.0		
R-4201B-EXISTING			CH47-RB-E
CH47D	< 35.0		
R-4201A			AC130-RA-E
C-130H&N&P	< 35.0		
R-4201B-EXISTING			AC130-RB-E
C-130H&N&P	< 35.0		
R-4201A			AC130-RA-P
C-130H&N&P	< 35.0		
R-4201B-EXISTING			B52-RB-E
B-52H	< 35.0		
R-4201A			B52-RA-P
B-52H	< 35.0		
R-4201B-EXISTING			A10-RB-E
A-10A	< 35.0		
R-4201B-EXISTING			UH60-RB-E
UH60A	< 35.0		
R-4201A			B52-RA-E
B-52H	< 35.0		
R-4201A			AV8-RA-E
AV-8B	< 35.0		
R-4201A			F18G-RA-P
F-18E/F	< 35.0		

Total Level ..... 51.3

Specific Point: PIGEON  
Top 20 contributors to this level:

	Sound Level	
<	Airspace	> Mission
	Aircraft (dB)	
	GRAYLING TEMPORARY MOA-EXISTING	F16-GT-E

F-16C	< 35.0	
GRAYLING TEMPORARY MOA-EXISTING		F18G-GT-E
F-18E/F	< 35.0	
GRAYLING TEMPORARY MOA-EXISTING		B52-GT-E
B-52H	< 35.0	
GRAYLING TEMPORARY MOA-EXISTING		UH60-GT-E
UH60A	< 35.0	
GRAYLING TEMPORARY MOA-EXISTING		KC135-GT-E
KC-135R	< 35.0	
GRAYLING TEMPORARY MOA-EXISTING		A10-GT-E
A-10A	< 35.0	
GRAYLING TEMPORARY MOA-EXISTING		C130-GT-E
C-130H&N&P	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	
R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	

Total Level ..... < 35.0

Specific Point: RESIDENCE EAST BRANCH AU SABLE RIVER  
 Top 20 contributors to this level:

Sound Level

< Aircraft	Airspace (dB)	> Mission
R-4201B-EXISTING	F-16C 50.9	F16-RB-E-B
R-4201B-EXISTING	F-16C 38.7	F16-RB-E-A
R-4201B-EXISTING	AV-8B < 35.0	AV8-RB-E
R-4201B-EXISTING	CH47D < 35.0	CH47-RB-E
R-4201B-EXISTING	C-130H&N&P < 35.0	AC130-RB-E
R-4201B-EXISTING	UH60A < 35.0	UH60-RB-E
R-4201B-EXISTING	A-10A < 35.0	A10-RB-E
R-4201B-EXISTING	B-52H < 35.0	B52-RB-E
GRAYLING TEMPORARY MOA-EXISTING	F-16C < 35.0	F16-GT-E
R-4201B-EXISTING	C-17 < 35.0	C17-RB-E
R-4201B-EXISTING	C-130H&N&P < 35.0	C130-RB-E
GRAYLING TEMPORARY MOA-EXISTING	F-18E/F < 35.0	F18G-GT-E
R-4201B-EXISTING	B-2A < 35.0	B2-RB-E
R-4201B-EXISTING	C-12 < 35.0	C12-RB-E
GRAYLING TEMPORARY MOA-EXISTING	B-52H < 35.0	B52-GT-E
GRAYLING TEMPORARY MOA-EXISTING	UH60A < 35.0	UH60-GT-E
GRAYLING TEMPORARY MOA-EXISTING	KC-135R < 35.0	KC135-GT-E
GRAYLING TEMPORARY MOA-EXISTING	A-10A < 35.0	A10-GT-E
GRAYLING TEMPORARY MOA-EXISTING	C-130H&N&P < 35.0	C130-GT-E
R-4201A	F-16C < 35.0	F16-RA-E-B

Total Level ..... 51.2

Specific Point: RESIDENCE EAST OF R-4201B  
Top 20 contributors to this level:

< Aircraft	Sound Level Airspace (dB)	> Mission
R-4201B-EXISTING	F-16C 50.9	F16-RB-E-B
R-4201B-EXISTING	F-16C 38.8	F16-RB-E-A
R-4201B-EXISTING	AV-8B < 35.0	AV8-RB-E
R-4201B-EXISTING	CH47D < 35.0	CH47-RB-E
GRAYLING TEMPORARY MOA-EXISTING	F-16C < 35.0	F16-GT-E
R-4201B-EXISTING	C-130H&N&P < 35.0	AC130-RB-E
R-4201B-EXISTING	UH60A < 35.0	UH60-RB-E
R-4201B-EXISTING	A-10A < 35.0	A10-RB-E
R-4201B-EXISTING	B-52H < 35.0	B52-RB-E
GRAYLING TEMPORARY MOA-EXISTING	F-18E/F < 35.0	F18G-GT-E
R-4201B-EXISTING	C-17 < 35.0	C17-RB-E
R-4201B-EXISTING	C-130H&N&P < 35.0	C130-RB-E
R-4201B-EXISTING	B-2A < 35.0	B2-RB-E
GRAYLING TEMPORARY MOA-EXISTING	B-52H < 35.0	B52-GT-E
R-4201B-EXISTING	C-12 < 35.0	C12-RB-E
GRAYLING TEMPORARY MOA-EXISTING	UH60A < 35.0	UH60-GT-E
GRAYLING TEMPORARY MOA-EXISTING	KC-135R < 35.0	KC135-GT-E
GRAYLING TEMPORARY MOA-EXISTING	A-10A < 35.0	A10-GT-E
GRAYLING TEMPORARY MOA-EXISTING	C-130H&N&P < 35.0	C130-GT-E
R-4201A	F-16C < 35.0	F16-RA-E-B

Total Level ..... 51.3

Specific Point: RESIDENCE WEST OF R-4201B  
 Top 20 contributors to this level:

<	Sound Level Airspace (dB)	> Mission
R-4201B-EXISTING	F-16C 47.6	F16-RB-E-B
R-4201B-EXISTING	F-16C 35.4	F16-RB-E-A
R-4201B-EXISTING	AV-8B < 35.0	AV8-RB-E
R-4201B-EXISTING	CH47D < 35.0	CH47-RB-E
R-4201B-EXISTING	C-130H&N&P < 35.0	AC130-RB-E
R-4201B-EXISTING	UH60A < 35.0	UH60-RB-E
R-4201B-EXISTING	A-10A < 35.0	A10-RB-E
R-4201B-EXISTING	B-52H < 35.0	B52-RB-E
GRAYLING TEMPORARY MOA-EXISTING	F-16C < 35.0	F16-GT-E
R-4201B-EXISTING	C-17 < 35.0	C17-RB-E
R-4201B-EXISTING	C-130H&N&P < 35.0	C130-RB-E
GRAYLING TEMPORARY MOA-EXISTING	F-18E/F < 35.0	F18G-GT-E
R-4201B-EXISTING	B-2A < 35.0	B2-RB-E
R-4201B-EXISTING	C-12 < 35.0	C12-RB-E
GRAYLING TEMPORARY MOA-EXISTING	B-52H < 35.0	B52-GT-E
GRAYLING TEMPORARY MOA-EXISTING	UH60A < 35.0	UH60-GT-E
GRAYLING TEMPORARY MOA-EXISTING	KC-135R < 35.0	KC135-GT-E
GRAYLING TEMPORARY MOA-EXISTING	A-10A < 35.0	A10-GT-E
GRAYLING TEMPORARY MOA-EXISTING	C-130H&N&P < 35.0	C130-GT-E
R-4201A	F-16C < 35.0	F16-RA-E-B

Total Level ..... 47.9

Specific Point: RIVER PARK CAMPGROUND  
Top 20 contributors to this level:

<	Sound Level Aircraft (dB)	Airspace	> Mission
	R-4201B-EXISTING	F-16C 48.3	F16-RB-E-B
	R-4201B-EXISTING	F-16C 35.6	F16-RB-E-A
	R-4201B-EXISTING	AV-8B < 35.0	AV8-RB-E
	R-4201B-EXISTING	CH47D < 35.0	CH47-RB-E
	R-4201B-EXISTING	C-130H&N&P < 35.0	AC130-RB-E
	R-4201B-EXISTING	UH60A < 35.0	UH60-RB-E
	R-4201B-EXISTING	A-10A < 35.0	A10-RB-E
	R-4201B-EXISTING	B-52H < 35.0	B52-RB-E
	GRAYLING TEMPORARY MOA-EXISTING	F-16C < 35.0	F16-GT-E
	R-4201B-EXISTING	C-17 < 35.0	C17-RB-E
	R-4201B-EXISTING	C-130H&N&P < 35.0	C130-RB-E
	GRAYLING TEMPORARY MOA-EXISTING	F-18E/F < 35.0	F18G-GT-E
	R-4201B-EXISTING	B-2A < 35.0	B2-RB-E
	R-4201B-EXISTING	C-12 < 35.0	C12-RB-E
	GRAYLING TEMPORARY MOA-EXISTING	B-52H < 35.0	B52-GT-E
	GRAYLING TEMPORARY MOA-EXISTING	UH60A < 35.0	UH60-GT-E
	GRAYLING TEMPORARY MOA-EXISTING	KC-135R < 35.0	KC135-GT-E
	GRAYLING TEMPORARY MOA-EXISTING	A-10A < 35.0	A10-GT-E
	GRAYLING TEMPORARY MOA-EXISTING	C-130H&N&P < 35.0	C130-GT-E
	R-4201A		F16-RA-E-B

F-16C < 35.0

Total Level ..... 48.6

Specific Point: SANILAC PETROGLYPHS HISTORIC STATE PARK  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	STEELHEAD MOA-EXISTING			F16-S-E_B
	F-16C	36.3		
	STEELHEAD MOA-PROPOSED			F35-S-P
	F-35A	< 35.0		
	STEELHEAD MOA-EXISTING			F16-S-E_A
	F-16C	< 35.0		
	STEELHEAD MOA-EXISTING			F18A-S-E
	F-18A/C	< 35.0		
	STEELHEAD MOA-EXISTING			F35-S-E
	F-35A	< 35.0		
	STEELHEAD MOA-EXISTING			KC135-S-E
	KC-135R	< 35.0		
	STEELHEAD MOA-EXISTING			B2-S-E
	B-2A	< 35.0		
	STEELHEAD MOA-EXISTING			B52-S-E
	B-52H	< 35.0		
	STEELHEAD MOA-EXISTING			A10-S-E_B
	A-10A	< 35.0		
	STEELHEAD MOA-EXISTING			A10-S-E_A
	A-10A	< 35.0		
	R-4201A			F16-RA-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-A
	F-16C	< 35.0		
	R-4201B-EXISTING			F16-RB-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-E-A
	F-16C	< 35.0		
	R-4201A			AV8-RA-P
	AV-8B	< 35.0		
	R-4201B-EXISTING			F16-RB-E-A
	F-16C	< 35.0		
	PIKE EAST MOA-EXISTING			F16-PE-E_A
	F-16C	< 35.0		

PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 37.6

Specific Point: SHUPAC LAKE STATE FOREST CAMPGROUND  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	> Mission
R-4201A	F-16C	67.7	F16-RA-E-B
R-4201A	F-16C	65.0	F16-RA-P-B
R-4201A	F-16C	53.0	F16-RA-P-A
R-4201A	F-16C	45.2	F16-RA-E-A
R-4201A	AV-8B	41.6	AV8-RA-P
R-4201A	AV-8B	< 35.0	AV8-RA-E
R-4201A	A-10A	< 35.0	A10-RA-E-B
R-4201A	CH47D	< 35.0	CH47-RA-E
R-4201A	CH47D	< 35.0	CH47-RA-P
R-4201A	C-130H&N&P	< 35.0	AC130-RA-E
R-4201A	A-10A	< 35.0	A10-RA-P-B
R-4201A	C-130H&N&P	< 35.0	AC130-RA-P
R-4201A	UH60A	< 35.0	UH60-RA-P
R-4201A	UH60A	< 35.0	UH60-RA-E
R-4201A	A-10A	< 35.0	A10-RA-P-A
R-4201A	A-10A	< 35.0	A10-RA-E-A
R-4201A			C130-RA-P



C-130H&N&P	< 35.0	
R-4201A		C17-RA-P
C-17	< 35.0	
R-4201A		B52-RA-P
B-52H	< 35.0	
R-4201A		B52-RA-E
B-52H	< 35.0	

Total Level ..... 69.7

Specific Point: SLEEPER STATE PARK  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	STEELHEAD MOA-EXISTING			F16-S-E_B
	F-16C	36.3		
	STEELHEAD MOA-PROPOSED			F35-S-P
	F-35A	< 35.0		
	STEELHEAD MOA-EXISTING			F16-S-E_A
	F-16C	< 35.0		
	STEELHEAD MOA-EXISTING			F18A-S-E
	F-18A/C	< 35.0		
	STEELHEAD MOA-EXISTING			F35-S-E
	F-35A	< 35.0		
	STEELHEAD MOA-EXISTING			KC135-S-E
	KC-135R	< 35.0		
	STEELHEAD MOA-EXISTING			B2-S-E
	B-2A	< 35.0		
	STEELHEAD MOA-EXISTING			B52-S-E
	B-52H	< 35.0		
	STEELHEAD MOA-EXISTING			A10-S-E_B
	A-10A	< 35.0		
	STEELHEAD MOA-EXISTING			A10-S-E_A
	A-10A	< 35.0		
	R-4201A			F16-RA-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-A
	F-16C	< 35.0		
	R-4201B-EXISTING			F16-RB-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-E-A
	F-16C	< 35.0		

R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 37.6

Specific Point: SOUTH BRANCH CAMPGROUND  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	GRAYLING TEMPORARY MOA-EXISTING			F16-GT-E
	F-16C	< 35.0		
	GRAYLING TEMPORARY MOA-EXISTING			F18G-GT-E
	F-18E/F	< 35.0		
	GRAYLING TEMPORARY MOA-EXISTING			B52-GT-E
	B-52H	< 35.0		
	GRAYLING TEMPORARY MOA-EXISTING			UH60-GT-E
	UH60A	< 35.0		
	GRAYLING TEMPORARY MOA-EXISTING			KC135-GT-E
	KC-135R	< 35.0		
	GRAYLING TEMPORARY MOA-EXISTING			A10-GT-E
	A-10A	< 35.0		
	GRAYLING TEMPORARY MOA-EXISTING			C130-GT-E
	C-130H&N&P	< 35.0		
	R-4201A			F16-RA-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-B
	F-16C	< 35.0		
	R-4201A			F16-RA-P-A
	F-16C	< 35.0		
	R-4201B-EXISTING			F16-RB-E-B
	F-16C	< 35.0		
	R-4201A			F16-RA-E-A
	F-16C	< 35.0		
	R-4201A			AV8-RA-P
	AV-8B	< 35.0		
	R-4201B-EXISTING			F16-RB-E-A

F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	
R-4201A		A10-RA-E-B
A-10A	< 35.0	
R-4201A		CH47-RA-E
CH47D	< 35.0	

Total Level ..... < 35.0

Specific Point: TAWAS POINT LIGHTHOUS  
Top 20 contributors to this level:

Sound Level		
<	Aircraft      Airspace	> Mission
	(dB)	
STEELHEAD MOA-EXISTING		F16-S-E_B
F-16C	35.7	
STEELHEAD MOA-PROPOSED		F35-S-P
F-35A	< 35.0	
STEELHEAD MOA-EXISTING		F16-S-E_A
F-16C	< 35.0	
STEELHEAD MOA-EXISTING		F18A-S-E
F-18A/C	< 35.0	
STEELHEAD MOA-EXISTING		F35-S-E
F-35A	< 35.0	
STEELHEAD MOA-EXISTING		KC135-S-E
KC-135R	< 35.0	
STEELHEAD MOA-EXISTING		B2-S-E
B-2A	< 35.0	
STEELHEAD MOA-EXISTING		B52-S-E
B-52H	< 35.0	
STEELHEAD MOA-EXISTING		A10-S-E_B
A-10A	< 35.0	
STEELHEAD MOA-EXISTING		A10-S-E_A
A-10A	< 35.0	
R-4201A		F16-RA-E-B
F-16C	< 35.0	
R-4201A		F16-RA-P-B
F-16C	< 35.0	

R-4201A		F16-RA-P-A
F-16C	< 35.0	
R-4201B-EXISTING		F16-RB-E-B
F-16C	< 35.0	
R-4201A		F16-RA-E-A
F-16C	< 35.0	
R-4201A		AV8-RA-P
AV-8B	< 35.0	
R-4201B-EXISTING		F16-RB-E-A
F-16C	< 35.0	
PIKE EAST MOA-EXISTING		F16-PE-E_A
F-16C	< 35.0	
PIKE WEST MOA-EXISTING		F16-PW-E_B
F-16C	< 35.0	
R-4201A		AV8-RA-E
AV-8B	< 35.0	

Total Level ..... 37.0

Specific Point: TURTLE LAKE ROAD  
Top 20 contributors to this level:

<	Aircraft	Sound Level Airspace (dB)	>	Mission
	R-4201A			F16-RA-E-B
	F-16C	68.0		
	R-4201A			F16-RA-P-B
	F-16C	65.3		
	R-4201A			F16-RA-P-A
	F-16C	53.8		
	R-4201A			F16-RA-E-A
	F-16C	46.0		
	R-4201A			AV8-RA-P
	AV-8B	42.1		
	R-4201A			AV8-RA-E
	AV-8B	< 35.0		
	R-4201A			A10-RA-E-B
	A-10A	< 35.0		
	R-4201A			CH47-RA-E
	CH47D	< 35.0		
	R-4201A			CH47-RA-P
	CH47D	< 35.0		
	R-4201A			AC130-RA-E
	C-130H&N&P	< 35.0		
	R-4201A			AC130-RA-P

C-130H&N&P	< 35.0	
R-4201A		A10-RA-P-B
A-10A	< 35.0	
R-4201A		UH60-RA-P
UH60A	< 35.0	
R-4201A		UH60-RA-E
UH60A	< 35.0	
R-4201A		A10-RA-P-A
A-10A	< 35.0	
R-4201A		A10-RA-E-A
A-10A	< 35.0	
R-4201A		C130-RA-P
C-130H&N&P	< 35.0	
R-4201A		B52-RA-P
B-52H	< 35.0	
R-4201A		C17-RA-P
C-17	< 35.0	
R-4201A		B52-RA-E
B-52H	< 35.0	

Total Level ..... 70.0

<Run Log>

Date: 4/27/2021  
 Start Time: 13:36:41  
 Stop Time: 14:14:20  
 Total Running Time: 37 minutes and 39 seconds.

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## Appendix M

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## Appendix N

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