



January 13, 2023

VIA EMAIL AND FIRST CLASS MAIL

National Guard Bureau
Attn: Ms. Kristi Kucharek
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Joint Base Andrews, MD
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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)

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.alpenactrc.ang.af.mil/Portals/12/documents/Draft%20EA%20for%20the%20Grayling%20Temporary%20MOA.pdf?ver=2018-11-14-110733-903×tamp=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).

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). 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). In Evart, Michigan, elevated perchlorate concentrations in groundwater were associated with an area used for the annual 4th 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 CO₂ kg⁻¹ fuel and 32 g kg⁻¹ of NO_x (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_x per hour of flight. If this aircraft conducts 1100 sorties per year we estimate the total NO_x emission would be 297,000 lbs/year. In comparison, it would take 10 semi-trucks driving 835 miles to produce 270 lbs of NO_x. 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 CO₂, CO, C, NO_x, SO_x, 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 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/8493849_FMS%20PTC%20Draft%20EIS_Vol%201_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.

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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,

A handwritten signature in blue ink, appearing to read 'Joseph Hemming', with a stylized flourish at the end.

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