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Ms. Carrie McEnteer
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Re: Comments on the Draft Environmental Impact Statement for Resumption of Year-Round Firing Opportunities on Fort Richardson

Dear Ms. McEnteer:

Thank you for the opportunity to provide comments on the Draft Environmental Impact Statement. Alaska Community Action on Toxics (“ACAT”) is a statewide non-profit public interest environmental health research and advocacy organization dedicated to protecting environmental health and achieving environmental justice. Alaska Community Action on Toxics *mission: to assure justice by advocating for environmental and community health. We believe that everyone has a right to clean air, clean water and toxic-free food.* We work to stop the production, proliferation, and release of toxic chemicals that may harm human health or the environment.

ACE is a non-profit environmental education and advocacy organization, whose mission is to enhance Alaskans’ quality of life by protecting wild places, fostering sustainable communities and promoting recreational opportunities. ACE advocates for sustainable policy on behalf of nearly 7,000 Alaskan members.

Cook Inletkeeper is a community-based nonprofit organization that combines advocacy, education and science toward its mission to protect Alaska’s Cook Inlet watershed and the life it sustains. Inletkeeper’s monitoring and science work builds credibility with scientists and resource managers, its education and advocacy efforts enhance stewardship and citizen participation, and together, these efforts translate into Inletkeeper’s ability to effectively ensure a vibrant and healthy Cook Inlet watershed.

Please ensure that our comments are carefully considered and entered into the official public record. Also, please confirm receipt of these comments sent via email, fax and/or regular mail.

Introduction

The use of Eagle River Flats (ERF) over several decades as a live fire range has caused cumulative damage to an ecologically sensitive estuarine environment. A sustained increase in the use of munitions in ERF is likely to pose further damage that contributes to the overall degradation of this highly productive wetland. This outcome is unacceptable and the Army must take measures to prevent further degradation by reducing and eventually eliminating the use of this estuary as a live firing range. While we understand the Army's interest in ensuring training opportunities for our soldiers, we think that there are reasonable alternatives to the resumption of year-round firing on ERF. White phosphorus was the only compound targeted for cleanup and significant amounts of other compounds exist in ERF. The United States Army of Alaska (USARAK) cannot afford to destroy wetlands by firing hundreds to thousands of rounds of a variety of munitions into the Eagle River Flats. The past 60 years has resulted in the accumulation of significant quantities of organic and inorganic contaminants. Some of these are known to adversely affect a wide range of fauna and flora including beluga whales as well as a vast range of lower trophic, seasonal and migratory animals. Year round firing of munitions increases the potential for contamination of this productive coastal environment, and introduces unknown risks to fish, waterfowl and other wildlife, including the endangered Cook Inlet beluga whale.

The Draft EIS does not meet the requirements of the National Environmental Policy Act.

An EIS is not sufficient unless the agency has taken a "hard look" at the environmental effects of the proposed action. *See Center for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1166 (9th Cir. 2003); *Churchill County v. Norton*, 276 F.3d 1060, 1072 (9th Cir. 2001), *amended* 282 F.3d 1055 (9th Cir. 2002), *cert. denied* 537 U.S. 822 (2002); *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 814 (9th Cir. 1999); *Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1300 (9th Cir. 2003); *National Parks Conserv. Ass'n v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001), *cert. denied* 534 U.S. 1104 (2002); *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1066 (9th Cir. 2002). In order to satisfy the "hard look" standard, the discussion in the EIS must provide a "scientific and analytic basis" for comparing the alternatives, meaning the agency must provide "some quantified or detailed information." 40 C.F.R. § 1502.16; *Kern*, 284 F.3d at 1075 (quoting *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379 (9th Cir. 1998)).

The purpose of the Proposed Action is "to maximize live-fire weapons training opportunities year-round at Fort Richardson." Draft Environmental Impact Statement for Resumption of Year-Round Firing Opportunities at Fort Richardson, AK (DEIS) at 1-6. The need for the Proposed

Action is to “keep pace with a progressive increase in operations tempo (the activity/rate at which a command/unit trains and deploys to conduct military operations) at USARAK installations over the past five years, largely in response to the global war on terrorism.” *Id.*

While an agency has discretion to define the purpose and need for the project, “this discretion is not unlimited.” *Westlands Water Dist. v. U.S. Dep’t of Interior*, 376 F.3d 853, 866 (9th Cir. 2004). “[A]n agency cannot define its objectives in unreasonably narrow terms,” *City of Carmel-by-the-Sea v. U.S. Dep’t of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997), “contriv[ing] a purpose so slender as to define competing ‘reasonable alternatives’ out of consideration (and even out of existence).” *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 666 (7th Cir. 1997). *See also Davis v. Mineta*, 302 F.3d 1104, 1118-20 (10th Cir. 2002). The Army has done this here.

Because the Army’s purpose and need for the project restricts the location to Fort Richardson, the DEIS only considers three alternatives, including the no-action alternative. The two action alternatives only differ in the location of the training exercises, with Alternative 2, the preferred alternative, including year-round training exercise in ERF and Alternative 3 proposing a site for year-round munitions training on the southern portion of Fort Richardson. DEIS at 2-18 – 2-19. While keeping costs to a minimum for a project is laudable, the National Environmental Policy Act (“NEPA”) requires that alternatives be developed no matter their location. Thus, sites not on Fort Richardson should have been considered in order to meet the NEPA requirement to analyze a reasonable range of alternatives. *See* 40 CFR § 1502.14.

NEPA also requires that the EIS adequately disclose the reasonably foreseeable environmental impacts of this project. *See* 40 C.F.R. § 1502.1; *see also, Center for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 508 F.3d 508, 526-27 (9th Cir. 2007); *Pac. Coast Fed’n of Fishermen’s Ass’ns. v. Nat’l Marine Fisheries Serv.*, 482 F.Supp.2d 1248, 1255 (W.D. Wash. 2007).

In the Preferred Alternative (Alternative 2), the “projected annual potential Level B take of Cook Inlet beluga whales associated with the proposed action is estimated at 126 whales, or 39.25% of the 2009 population.” *Id.* at 4-40. Level B take is defined under the Marine Mammal Protection Act as a form of harassment. *See* 16 U.S.C. § 1362(18). Protection from harassment is also protected under the Endangered Species Act. Given that the ERF is likely to be designated critical habitat for the Cook Inlet beluga whale, the preferred alternative is the most environmentally damaging to this endangered species and should not be pursued for that reason alone.

Further, NEPA specifically requires federal agencies to obtain the data necessary to their analysis. As discussed below, there are various instances where impacts are not addressed or are unknown based upon the DEIS provided. The Army is not excused from conducting the requisite analysis to fully understand the impacts of its proposed action and make a reasoned

choice amongst its alternatives. *See* 40 C.F.R. § 1502.22(a) (unless the costs of obtaining the information are exorbitant, NEPA requires that it be obtained). As such, those impacts must be analyzed.

Direct Effects of Munitions

An increase in the number of munitions fired in to ERF, will significantly increase the contaminant burden of the ecosystem and further damage wetlands habitat. Furthermore, firing into the estuary when there is no protective layer of ice increases the likelihood that previously sequestered white phosphorus and unexploded ordnance (UXO) will be reintroduced to the environment. There are approximately 10,000 UXO in ERF according to USARAK estimates. Even without year-round firing these munitions pose a threat to the ERF ecosystem. UXO contribute much higher concentrations of munitions constituents to the environment, because the chemicals fail to ignite and are slowly released into the environment. Year round firing poses direct physical and chemical threats to seasonal and resident wildlife. Specifically, active firing disrupts migrating and resident birds, mammals and most notably, the endangered Cook Inlet beluga whales. The environment in ERF is already subject to a significant physical and chemical burden due to decades of active munitions firing.

Munitions Constituents

The USARAK has analyzed for a subset of munitions constituents and subsequently determined that several toxic munitions constituents are present at ERF.

For example both TNT and 2,4-DNT have been detected in ERF sediments or waters. Toxicity of TNT in marine environments is well documented, and most studies suggest that TNT interferes with reproduction of primary producers. In high concentrations, such as those that could result from unexploded ordnances, TNT profoundly affects the reproduction capabilities of primary producers found in marine sediment.ⁱ

DNT adversely affects reproduction, production of red blood cell, neurodevelopment, and is associated with liver and kidney damage in laboratory studies. In animal studies, both 2,4- and 2,6-DNT caused liver cancer. The International Agency for Research on Cancer (IARC) has determined that 2,4- and 2,6-DNT are possible human carcinogens. The DEIS fails to adequately assess the potential impact of TNT and DNT, as well as numerous other compounds. This is despite both knowledge that they are present in ERF and knowledge of their toxicity.

Instead of relying on the most recent research on the toxicity of these compounds from the peer-reviewed scientific literature, USARAK is relying on toxicological profiles compiled in the mid-1990's (DEIS Chap 3-11). Furthermore there is no toxicological assessment of many other munitions constituents including Clean Water Act priority pollutants such as 1,1,1-trichloroethane, benzene, lindane, phthalates, toluene and others. Without accurate and up to date

toxicological profiles of all chemicals released into ERF, USARAK cannot conclude that there is no environmental degradation.

Untested Toxins

Even though over 100 constituents were listed for munitions used between 2005 and 2009 at Eagle River Flats, only 3 compounds were tested for in fish and 7 compounds were tested for in water and soil samples taken from craters. USARAK failed to analyze multiple relevant munitions constituents and also failed to measure for metabolites and environmental degradation products of munitions constituents.

In the water quality samples taken from the Eagle River in 2007, 41 munitions constituents and 7 PCBs were tested. All of the munitions constituents tested for were heavy metals or explosive compounds, which does not represent all of the potentially harmful ingredients and breakdown products that Cook Inlet belugas, salmon, and migratory birds may be exposed to.

There are several other toxic chemicals that are known ingredients of munitions used at Eagle River Flats. The pollutants highlighted in yellow are Clean Water Act priority pollutants:

- 1,1,1-trichloroethane
- 1-pentanol
- 2-butoxyethanol
- 2-butanone oxime
- Benzene
- Benzine
- Bisphenol-A
- Butanedioldiglycidyl ether
- Butane
- Carbon tetrachloride
- Chromic acid
- Cumene hydroperoxide
- Diacetone alcohol
- Dichloromethane (AKA methylene chloride) (carcinogen, toxic to most body systems)
- Diethylenetriamine
- Diethylene glycol monobutyl ether
- Diphenylamine
- Ethyl Acetate
- Ethylbenzene
- Ethylene glycol monobutyl ether
- Formaldehyde
- Freon

- Isobutyl acetate
- Lindane
- Methanol
- Methyl ethyl ketone
- Methyl isobutyl ketone
- N-Heptane
- **N-hexane**
- **Nitromethane (recognized carcinogen, suspected neurotoxicant)**
- Perchlorate
- PETN
- Petroleum byproducts
- Phthalates
- Propylene glycol monomethyl ether
- Sodium O-phenylphenate
- **Strontium chromate**
- Styrene
- Tetrazine
- Thiourea
- Titanium dioxide
- Tolulene
- Triethylamine
- VM & P Naptha
- Xylene

All of these chemicals are known or suspected to cause health problems in humans and may also harm wildlife. Limits and standards for levels of the highlighted pollutants are developed under 18 AAC 70 and 40 CFR 131.36. With the approximately 300,000 rounds that have been fired at Eagle River Flats over the past 60 years, it is possible that these and other toxic chemicals have harmed fish and wildlife in the area.

Among the numerous munitions constituents that were not analyzed are chemicals with documented adverse effects on both humans and wildlife. For example, perchlorate is present as a constituent in munitions used at ERF. Perchlorate has been shown to accumulate in plants, as well as both aquatic and terrestrial species.ⁱⁱ Due to its relative stability in aquatic ecosystems perchlorate contamination may persist for decades.ⁱⁱⁱ Perchlorate is known to contaminate drinking water sources due to its stability and mobility. The primary route of toxicity is disruption of thyroid hormones, as thyroid hormones play a similar role among most vertebrates, perchlorate can potentially negatively affect numerous species. Perchlorate exposure is known to affect growth, development and reproduction of fish, in some cases even inducing hermaphroditism.^{iv,v,vi} Perchlorate is has also been shown to affect the thyroid hormones of

mammals including humans.^{vii} There has been no characterization of perchlorate contamination at ERF.

In the Executive Summary of the DEIS, the USARAK states, “Testing has shown that there is no net loading of munitions constituents in ERF or migrating of contaminants off ERF.” This statement is based on improperly designed studies that failed to analyze for numerous munitions constituents as well as potentially toxic metabolites and degradation products.

It cannot be conclusively stated that there is neither net loading nor migration of contaminants when numerous chemicals of interest have not been quantified. Lindane (gamma hexachlorocyclohexane), listed as a constituent of CTG 60 MM HE M720 until September of 2009, is a prime example. Lindane is known as a persistent organic pollutant. It was listed under annex A of the Stockholm Convention on Persistent Organic Pollutants due to unacceptable negative impacts to human health and the environment. Lindane is a persistent, toxic and bioaccumulative substance that has previously been found to accumulate in aquatic organisms and marine mammals in Alaska.^{viii,ix,x} In Arctic waters the half-life may be as long as 110 years.^{xi} It is unrealistic to assert that there is neither a net accumulation nor migration of such a persistent compound. Lindane has not been analyzed in any samples from ERF.

Unknown constituents

There are supposedly no data available for 3 types of munitions used at Eagle River Flats between 2005 and 2009. The CTG 120 mm Full range practice M931 f/mortar, explosive water gel, and cap-blasting, non-electric m13 with 1000 foot shock tube may contain other toxic chemicals.

Additionally, data from similar munitions were used to inform the public about the CTG 60 mm Illum M721 and the 120 mm HE M933 because the constituents of these munitions are also unknown. So, in addition to the toxic chemicals listed above that were not tested for, there may be several others from these munitions and from the munitions that have been fired over the past 5 decades that are threatening human health and the environment. The failure to report munitions constituents for munitions used at ERF is contrary to the legally-binding settlement agreement between Plaintiff groups (including Alaska Community Action on Toxics, the Chickaloon Village Traditional Council et al. and the Department of Defense (October 2004).

Munitions constituent documentation posted prior to September 14, 2009 for CTG 60 MM HE M720 showed that it contained lindane, a neurotoxic organochlorine pesticide banned under the Stockholm Convention on Persistent Organic Pollutants. Upon learning this information, Alaska Community Action on Toxics publicized the Army’s use of munitions containing lindane. However, on September 14, 2009, a new munitions constituent list was posted for CTG 60 MM HE M720 which does not include lindane or any related compounds. Lindane was one of the many toxic chemicals that were not tested for in water, soil, fish or wildlife. No justification for the use of lindane has been given and there was no explanation

Munitions with less environmental impact

As part of the settlement agreement, the Army was obligated to conduct a review of information about munitions within six months of the settlement hearing to see if it is feasible to use munitions with reduced environmental impact. To our knowledge, the Army has not conducted this review as required. Based on the munitions constituent data, it is apparent that some of the munitions may release fewer toxic chemicals than others. The Army should conduct a thorough review and feasibility analysis to assess and use opportunities to use the least toxic munitions within this and all firing ranges.

Toxic Targets

We also know very little about the targets used at Eagle River Flats. It is noted in the DEIS that fire trucks, jeeps and other vehicles are used as targets. Were any of these coated with a depleted uranium/paint mixture? Tanks and trucks coated with depleted uranium contributed to Gulf War Illness and would also contribute to declines in water quality and harm to wildlife and human health in the area. Uranium was not one of the analytes in the water quality study. Do these vehicles contain other toxic substances such as flame retardants? Many vehicles contain brominated flame retardants such as polybrominated biphenyl ethers and polybrominated biphenyls which are persistent bioaccumulative toxins. Were these vehicles drained of potentially toxic substances such as fuel, oil, antifreeze, etc? The presence of toxins associated with munitions targets is not discussed in the DEIS. These must be included in an assessment of contaminants within the ERF.

Water and Sediment Analyses

Water Analysis

Previous research by USARAK, as well as basic understanding of the fate and transport of energetic compounds shows that water analysis is not the preferred method of determining the extent of contamination for these chemicals. Explosives compounds have been shown to sorb to sediments.^{xiii} Research conducted by Cold Regions Research and Engineering Laboratory in 1990 has shown sediments in ERF are contaminated with explosives residues, while waters have lower concentrations. The rapid sedimentation rate at ERF further contributes to the likelihood that contaminants of concern are present primarily in the sediment.

Since wildlife are not only exposed to the water, but also to the suspended and bottom sediments in the impacted areas, whole water samples should be collected including suspended sediments as well as sediment core samples. The concentrations of munitions constituents of concern are likely to be elevated in the suspended sediments and thereby exposing wildlife to higher concentrations of contaminants. It is evident from the described sampling protocols that the impacted areas receive considerable suspended sediments requiring removal of sediments at the

boat launch sites prior to launching. The measurement on only dissolved munitions constituents does not produce an accurate assessment of wildlife exposure.

Water analysis conducted in 2007 represents the most complete analysis of munitions constituents. Despite this, USARAK only analyzed for an inadequate subset of potentially toxic constituents.

Water samples were taken in June, July and September of 2007 when no active firing of munitions was taking place. It is therefore likely that the concentrations of munitions constituents in water were uncharacteristically low, and a significant portion of the original concentrations would have been either dispersed, sorbed to sediments, absorbed by plants or aquatic organisms, or degraded.

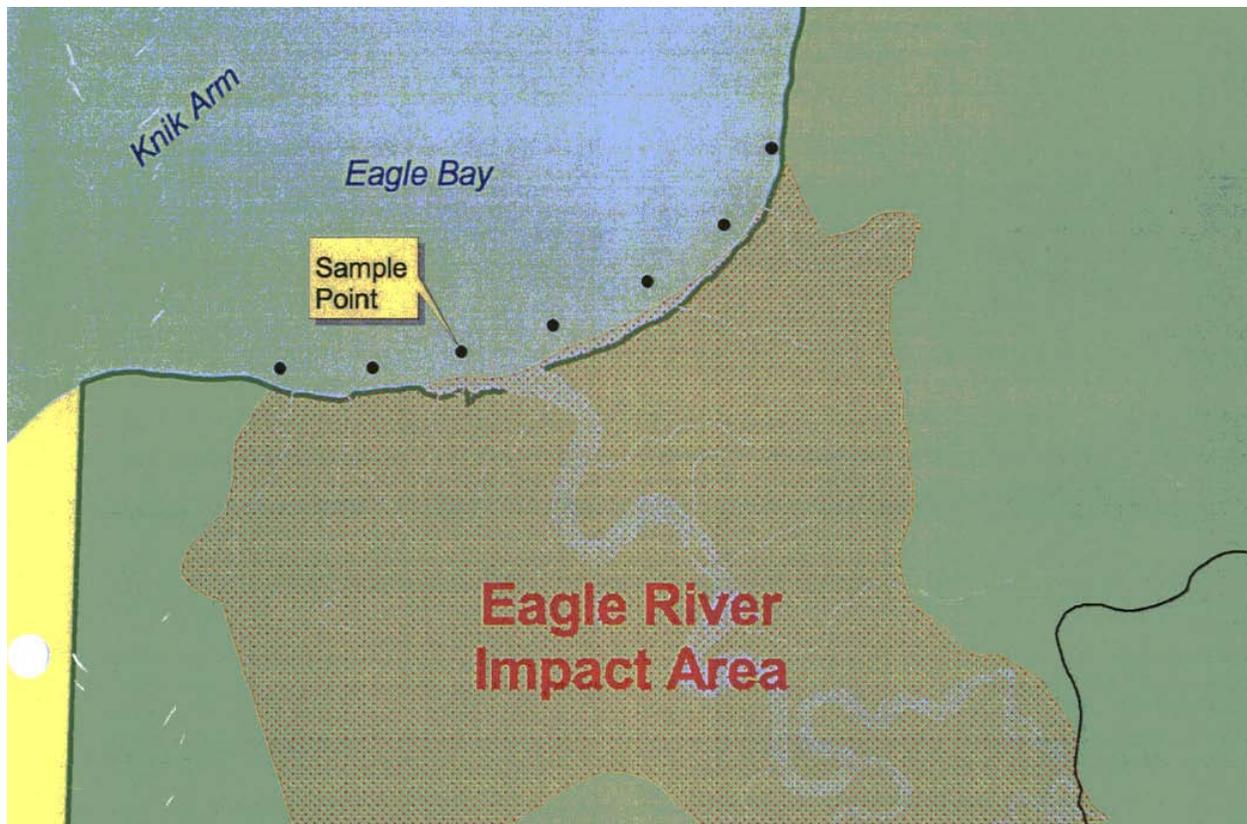
No water samples were gathered from within ERF. The only non-background samples taken were taken in Eagle Bay at the mouth of Eagle River in an area that is heavily tidally influenced. The concentrations of munitions constituents in these samples were likely significantly diluted. Water samples from within the ERF estuary would provide a more accurate representation of current concentrations of munitions constituents in ERF waters. Furthermore basic water characteristics should be measured including, but not limited to: salinity, pH, conductivity, Eh, DO, total suspended sediments, and TOC to characterize water chemistry at the sampling site. Without such data it is not possible to accurately compare water samples between locations or sampling events.

The data produced from the 2007 sampling do not demonstrate that current firing activities do not contribute toxic substances to the ERF environment.

The data produced from the 2007 sampling do not demonstrate that year round firing of munitions in Eagle River would not result in water contamination.

NPDES Permit Water Analysis

Annual water analysis has been conducted in accordance with the Sampling and Analysis Protocol (SAP) in the 2002 NPDES permit application. According to the SAP included in the permit application, water sampling takes place during the “first predicted high, inundating tide cycle.” This is theorized to be the time with the highest munitions constituent concentrations by USARAK. While a high inundating tide may indeed mobilize contaminants, it is also the period during which local ERF waters are most diluted by Cook Inlet waters. To further compound this effect, sampling locations are not within ERF, but in Eagle Bay where a high, inundating tide would likely further dilute waters from ERF. (see map, excised from 2002 NPDES permit application) Therefore, this sampling program does not accurately represent the full possible range of adverse effects of munitions on water quality, habitat and human health.



2002 NPDES permit application water sampling sites

Previous research on unfiltered surface waters from within ERF have shown contamination with Tertyl, 2,4-DNT, 2,6-DNT, 1,3-DNB, and nitrobenzene.^{xiii} Further research into the extent of contamination in local waters and sediments is needed. Measurement of primarily Knik Arm waters during high tide events, and sampling sites outside of ERF do not accurately assess local contamination likely to be present primarily in sediments and surface waters. None of the data produced by USARAK conclusively show that waters within ERF are not being affected by munitions constituents.

Sediment Analysis

Sediment samples from within ERF taken in 1990 and revealed sediment contaminated with 2,4 DNT as well and by product TNB. Approximately one third of the over 170 sediment samples gathered from within ERF contained 2,4 DNT.^{xiv} Previous analysis of surface sediments and soils from within ERF have revealed contamination with numerous energetic compounds and their degradation products including RDX, TNT, PETN, 2,4-DNT, and 2,6-DNT.^{xiii}

Again, analysis only included a select number of munitions constituents, excluding numerous chemicals of concern. Despite the limited number of analytes, it is clear that year round firing of munitions resulted in the accumulation of munitions constituents in ERF sediments. As both terrestrial and aquatic wildlife are routinely exposed to sediments, this is an important route of

exposure for animals at ERF, including the endangered Cook Inlet beluga whales. It is also likely that sediments are the primary method of contaminant migrations from ERF in to Cook Inlet.

Wildlife and Plants

Plants

Energetic compounds are readily accumulated in the tissues of plants. This is true for several of the munitions constituents present at ERF, including 2,4-DNT, TNT, RDX, HMX, and NG as detailed in the DEIS (Chap 4-78). The USARAK makes the faulty assumption that the presence of energetic compounds in plants is of no consequence if these concentrations remain below those at which phytotoxic effects have been documented. This does not take into account that animals which ingest contaminated plants will receive a significantly higher dose than predicted by levels in soil or water. If plants are a reservoir of munitions based contaminants, herbivorous animals are likely to be continually exposed to these compounds.

In Chap 4-79, USARAK describes that following low order detonations, energetic compounds remained above phytotoxic levels for at least three months post detonation. The USARAK states “These levels are above estimated phytotoxic soil concentrations, but munitions constituents residues are degrading rapidly.” In the space of one paragraph USARAK asserts that these energetic compounds persist for months after detonation at phytotoxic levels and are also degrading rapidly; these statements are antithetical.

Avian

There has been significant research into the effects of White phosphorus on avian species in ERF. Furthermore remediation has significantly decreased the mortality rate of avian species in ERF. Despite the large body of work on white phosphorus, no adequate research into the sub-lethal effects of exposure to the full range of munitions constituents--including synergistic and cumulative effects--on multiple avian species has been completed.

Biological effects are not limited to mortality. Subtle but important effects on growth, development, reproduction or fitness may be taking place due to exposure to one or many of the munitions constituents present in ERF. Several of the contaminants present in munitions are endocrine disrupting compounds, capable of impacting reproduction and population health, yet many of these have not been tested for in ERF.

Fish Tissue Analysis

Sample collection time

Samples were collected on the 26th and 31st of July, the 1st-13th of August, and the 14th of November. According to the Settlement agreement Munitions Reports, no munitions were fired during the third quarter of 2007, July 1st-September 30th, or the fourth quarter of 2007, October

1st –December 31st, a period which includes all of the sampling dates.^{xv,xvi} Fish samples were also collected between July 20th and October 20th 2008. According to the Settlement agreement Munitions Reports, no munitions were fired during the second quarter of 2008, April 1st- June 30th, the third quarter of 2008 July 1st-September 30th, or the fourth quarter of 2008, October 1st – December 31st, a period which includes all of the sampling dates.^{xvii,xviii,xix} The collection of samples during a period when no munitions were being used on Eagle River Flats creates an inaccurate assessment of exposure. The chemicals of interest are likely to be present at lower concentrations, and primarily in sediment and organisms as opposed to dissolved in water column. Additionally these samples were taken after several years of restricted firing by USARAK. Year round firing would increase the flux of contaminants into ERF, given the doubling of munitions fired under the preferred alternative.

Sample Species and Tissue

Samples were primarily gathered from several species of Salmon, which are anadromous organisms spending the majority of their lives outside of the ERF estuary. This is not an ideal organism to assess locally sourced contamination. Resident dolly varden, arctic grayling and rainbow trout populations exist in ERF.^{xx} Sticklebacks which are widely used as an indicator species for environmental contamination are also present in ERF. Any of these populations or other residential species are better suited to assess local contamination as compared to salmon.

Three individual tissue samples were collected from fish, lateral and ventral tissue samples comprised of muscle, subcutaneous tissues and skin, as well as liver sample. The lateral tissue sample, comprised primarily of muscle tissue, was the only tissue sample analyzed. Liver samples and ventral tissue samples were not analyzed. It is likely DNT, TNT, RDX, and other compounds would have lower concentrations in muscle tissue compared to adipose tissue or other organs.

Restricted Analyte List

The Army DEIS for Eagle River Flats analyzed for the presence of three explosives constituents DNT, TNT, and RDX. As reviewed in this report there are numerous toxic munitions constituents used at ERF that are likely present in the environment.

Analysis of Metabolites and Breakdown Products

The fish tissue analysis fails to analyze for the major metabolites of the explosives being used. In most species the majority of 2,4,6 trinitrotoluene (TNT) is rapidly metabolized or excreted within 24-72 hours.^{xxi} The remaining TNT is present primarily as the metabolites 2-ADNT and 4-ADNT. It has been suggested that the binding of TNT metabolites to cellular proteins may play a role in the toxicity of the compounds. These have been detected in exposed people,^{xxii} mammals^{xxiii} and fish.^{xxiii} Analysis of the bile of rainbow trout 72 hours after exposure revealed

2-ADNT and 4-ADNT concentrations were approximately 90 times higher than concentrations of the original TNT compound.^{xxiii}

Metabolites and degradation products of TNT may also be more likely to bioaccumulate in aquatic organisms. In a study of TNT bioconcentration in channel catfish, TNT had a relatively low Bioconcentration Factor (BFC) of (0.79 ml/g); however, TNT and the sum of the extractable biotransformation products had a BCF of 10.5 ml/g. Furthermore it was found that these compounds were primarily present in the viscera, and were likely to be present in low concentrations in muscle tissue.^{xxiv} The only sample tissue analyzed was primarily muscle.

Dinitrotoluene compounds have shown similar propensity for rapid metabolism in exposed fish. DNT metabolites 4A2NT and 2,4-DAT were found in carp liver tissues both at 2 and 15 days post exposure with corresponding decreases in concentrations of the 2,4 DNT parent compound. DNT compounds were found to accumulate primarily in the organs of carp as opposed to muscle tissue.^{xxv} There is evidence that some biotransformation products of 2,6 DNT are more toxic than the parent compound to select marine organisms, specifically copepods.^{xxvi} The same may be true for 2,4 DNT.

RDX and its breakdown products are known to be persistent in the environment.^{xxvii,xxviii} Known metabolites include hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX) and hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX) both of which have shown to have negative effects on earthworm reproductive success, and are assumed to have general negative affects soil ecosystems are contaminated sites^{xxix} According to the ATSDR Toxicological Profile, RDX can cause seizures in humans and animals and is associated with liver cancer in laboratory studies.

In summary, the analysis of explosives in fish tissue from Eagle River Flats was incomplete and poorly designed. The lack of detection of TNT, DNT and RDX, or other compounds, cannot be attributed to lack of exposure if 1) USARAK failed to analyze for the presence of the primary metabolites of the chemicals, such as 2-ADNT and 4-ADNT 2) USARAK failed to analyze for a full suite of munitions constituents 3) USARAK failed to sample any tissue except lateral muscle tissue, when the chemicals of interest are likely to be present in other tissues 4) USARAK failed to sample an appropriate fish species at a time when they are most likely to be exposed.

Beluga

The entirety of Knik Arm, including the mouth of the Eagle River has been proposed as critical habitat for the endangered Cook Inlet beluga. According to the NMFS, the upper portion of Cook Inlet is the most valuable habitat (type one habitat) for beluga whales. Beluga whales are known to congregate in the upper portion of Cook Inlet during beginning in late Spring and lasting through early Autumn. Specifically, on page 57 on appendix K it states “beluga whales generally are observed arriving in May and often use the area all summer.” Beluga whales have been observed feeding in the Eagle River. The Army report indicates beluga have been “observed vigorously chasing salmon up drainages along the river bank and even crashing in to

the sides of the bank in frenzied pursuit.” The whales were seen to travel “approximately 2 kilometers up and back down the river.”^{xxx} In addition to salmon, it is likely that beluga opportunistically feed on other fish species in proximity to or within ERF.

Sonic disturbance

Beluga whales have sensitive hearing, and can hear at thresholds of $10^{-14} \text{ W m}^{-2}$ (42 dB re: 1 μPa). Their bandwidth ranges from approximately 40-150 kHz.^{xxxii} The sensitivity of their hearing is not diminished by depth.^{xxxiii} Similar to many other whale species, beluga whales are sensitive to anthropogenic sound disturbances. There is evidence that anthropogenic activities can displace beluga whales from portions of their previously inhabited range. The EPA determined that noisy activity associated with the Red Dog Mine port site contributed to a decrease in beluga harvest.^{xxxiv} In the 2009 biological assessment of beluga whales (appendix K of DEIS) the army states, **“After careful study, the Army has determined that resumption of year –round live-firing at ERF Impact Area may effect, is likely to adversely affect Cook Inlet beluga whales in light of noise impacts associated with certain high explosives munitions training.”** According to the DEIS, approximately 85% of munitions used at ERF are HE munitions. A significant increase in spring and summer firing could deter beluga whales from entering Eagle Bay or Eagle River due to sonic disturbance, thus depriving them of their preferred feeding grounds, and impacting what is likely to be deemed critical habitat for the whales.

Toxic Exposures

Beluga whales are the apex predators in Cook Inlet, meaning that they are disproportionately exposed to persistent bioaccumulative toxins from numerous sources, including local activities and hemispheric transport. Many beluga whale populations show high concentrations of persistent bioaccumulative toxins.^{xxxv} Cook Inlet beluga whales are no different, containing multiple persistent bioaccumulative toxins such as PCBs, DDT, Chlordane and Toxaphene.^{xxxvi} Several of the munitions constituents historically and presently used at ERF have the potential to bioaccumulate in aquatic species. As mentioned elsewhere in these comments, USARAK only analyses for a select few munitions constituents out of dozens. There is evidence that many of these munitions constituents can adversely affect wildlife including beluga whales.

Beluga Monitoring

It has been made clear through previous comments that there are significant problems with beluga monitoring carried out by USARAK. The following summarizes a review of “Beluga Observational Studies on the Eagle River Flats, Fort Richardson, Alaska 2009” submitted by Craig Matkin of North Gulf Oceanic Society. This review was submitted in accordance with the settlement agreement that obligated USARAK to provide meaningful opportunities for Plaintiffs to provide input on the development of the scope and protocol of the monitoring studies.

Exact methods for counting and averaging beluga whales in proximity to ERF are not enumerated. How is the number of belugas per observation period, day, month averaged?

USARAK has not been assisting NMFS in their surveys of beluga whales, as mandated by the settlement agreement.

Exact monitoring locations are not made clear. Does the monitoring area include all locations within the limit of visibility? If there are finite borders, how are these borders observed in real time during monitoring from land based observation points?

At present there is no effective monitoring system in place that operates when USARAK personnel are not present. The video system has not been thoroughly investigated or even compared to simultaneous visually gathered data. The video system does not operate effectively in the dark. No acoustic system exists. An acoustic system cannot determine beluga numbers or locations.

Monitoring of beluga whales before, during and after the use of live-fire munitions has not and cannot take place due to restrictions on firing.

Overall in the assessment of the report Matkin states, “The report is far too brief and without adequate documentation of methods to yield even a good qualitative picture of beluga numbers and activities for this year and in comparison with previous years. “

As a part of the legally-binding Settlement Agreement, USARAK cannot fire munitions into Eagle River Flats when beluga are present in the river. The beluga monitoring program is inadequate to assess short- and long-term impacts on the beluga population from live firing activities on ERF. It is not clear whether effective monitoring takes place during periods of active firing on Eagle River Flats, or whether it is in fact possible to spot beluga whales in Eagle River, especially during times of low light throughout the year, dark winter months or at night. This is further compounded by the presence of immature grey belugas near Eagle River which are difficult to spot in optimum conditions.

Furthermore, effective visual monitoring of beluga for the presence of belugas in Eagle River is not possible due to safety restriction imposed by USARAK regarding the placement of personnel within ERF during active use. Despite the responsibility to “conduct specific surveillance activities immediately before, during and following all ERF artillery firing activities to help ensure that beluga whales are not harmed by the artillery firing activities.” If beluga monitoring cannot take place during active use of the ERF range, how does USARAK propose to halt the use of munitions in the range when beluga whales are present? The method for active is not made clear. The use of video and auditory monitoring devices has not been fully investigated for effectiveness. Furthermore video data is not monitored in real time but only analyzed after it has been gathered.

It is clear from previous monitoring that the highest density of beluga sightings occurs in the mouth of Eagle River. This corresponds well with the hypothesis that Cook Inlet beluga whales rely heavily on Eagle River, making accurate monitoring of this endangered species all the more important. We conclude that firing on ERF, especially if the Army were to resume year-round firing, poses too great a threat to the endangered beluga population and its critical habitat within the area. Furthermore, firing activity on ERF will be a significant detriment to the recovery of the Cook Inlet beluga whale population.

NPDES Permit

USARAK does not have an NPDES permit to discharge pollutants into Eagle River and subsequently Eagle Bay and Cook Inlet. “[T]he [Clean Water] Act categorically prohibits any discharge of a pollutant from a point source without a permit.” *Comm. to Save Mokolumne River v. E. Bay Mun. Util. Dist.*, 13 F.3d 305, 309 (9th Cir. 1993); *see also* 33 U.S.C §§ 1311(a), 1342(a). It is particularly disturbing that the Army plans to proceed with its plans despite the Clean Water Act priority pollutants listed among past and current munitions constituents. Thus, for the Army to proceed with any firing at ERF without an NPDES permit is a knowing violation subject to enforcement by EPA or a citizen suit. It is a violation of the Clean Water Act for the Army to conduct any firing activities on ERF without first obtaining a CWA permit.

Environmental Justice and Government-to-Government Responsibility

The socio-economic impacts analysis does not fully analyze the impacts of year round firing on the traditional fishing and hunting areas, culture, and well-being of the Cook Inlet Tribes, including Native Village of Eklutna, Native Village of Chickaloon, Kenaitze Indian Tribe (IRA), Knik Tribe, Ninilchik Village Traditional Council, Village of Seldovia, Seldovia Village Tribe (IRA), and the Native Village of Tyonek (IRA). There is no discussion of the socioeconomic or cultural importance of fishing and hunting to Alaska Natives, nor the impact of year round bombing on their subsistence resources, including salmon, waterfowl, and beluga whales. The Army has failed to conduct meaningful government-government consultation with Cook Inlet Tribes and therefore violates the President issued Executive Order 13084, "Consultation and Coordination with Indian Tribal Governments." Alaska Natives traditionally relied upon the Cook Inlet beluga whale stock as a subsistence resource. Any action that further disrupts or endangers the stock is not only a violation of the Endangered Species Act, but contrary to the principle of self-determination.

Conclusion

In many cases the evaluation of environmental contamination present at ERF has been incomplete or improper. Many of the studies used to characterize the present state of ERF have made conclusions based on faulty data.

There are numerous contaminants present in ERF, many of which pose threats to wildlife. When sediment samples from within ERF were tested they were found to be contaminated with

munitions constituents. White phosphorus and UXO are still present at ERF, and live-fire munitions activities without a protective ice layer are likely to disturb these buried contaminants.

Previous research has determined that the cause of bird mortality was white phosphorus contamination, but this research has not conclusively shown that other compounds do not cause harm to the environment.

Eagle Bay and ERF are part of the Cook Inlet beluga Whale critical habitat area. As stated in the DEIS the use of explosives in ERF “is likely to adversely affect Cook Inlet beluga whales.” This is unacceptable and violates provisions of the Endangered Species Act.

Furthermore, USARAK does not have a NPDES permit to allow release of multiple pollutants including CWA priority pollutants into Eagle River or Eagle Bay.

It is not in the best interest of the US Army, the people of Alaska, or the environment to proceed with year round live-fire activities in ERF or with developing a new firing range in closer proximity to Anchorage neighborhoods. We oppose Alternative 3 and endorse the comments of Alaska Center for the Environment on this point, as this alternative presents an unacceptable threat to Anchorage neighborhoods and Chugach State Park. After careful review of the available information, Alaska Community Action on Toxics recommends the No Action Alternative, with the recommendation that the Army use active firing ranges in Interior Alaska that are less sensitive than the estuarine environment of ERF, and not including riparian or other wetland habitats. We are aware that military flights to Ft. Wainwright and Eielson AFB are regular and very short and thus, use of these ranges for training purposes would not result, as the Army claims, in separation of military families.

Furthermore, resumption of year-round firing would violate the spirit and intent of the settlement agreement between Alaska Community Action on Toxics, Native Village of Chickaloon, Cook Inletkeeper etc. and the Department of Defense and on-going legal requirements that include the following:

- Monitoring the health and behavior of beluga whales in and around Eagle River Flats;
- Additional protection to ensure that beluga whales are not harmed by military activities;
- Water quality monitoring for toxic chemicals associated with military munitions firing;
- Provisions for enhanced community right-to-know and documentation about military munitions firing activities at Fort Richardson and chemical constituents of munitions;
- **Restrictions on munitions firing activities to protect migratory birds;**
- Prompt cleanup of munitions that fall outside the immediate impact area of Eagle River Flats;
- Feasibility study to determine potential for substitution of safer munitions in order to minimize environmental impacts;
- **The Army will obtain a Clean Water Act permit for its munitions discharges;**
- The Army will initiate Government-to-Government consultations with Upper Cook Inlet Tribes;

- Provisions to allow the Plaintiffs to engage independent experts to study the environmental impacts of the bombing and to recommend measures to avoid those impacts.

We asserts that the only viable alternative at this time is Alternative 1, the No Action Alternative. Resumption of year-round firing at ERF poses too great a threat to populations and habitat of fish, waterfowl, other wildlife, especially the endangered Cook Inlet beluga whale, and human health.

Sincerely,



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