EXHIBIT C TO ATTACHMENT 1

April 10, 2018

Dr. Albert M. Manville, II, Ph.D., Certified Wildlife Biologist, Adjunct Professor, and Sole Proprietor Wildlife and Habitat Conservation Solutions LLC 2124 Greenwich Street Falls Church, VA 22043 <u>albertsandy@verizon.net; amanvil1@jhu.edu</u>

Region 6 Migratory Bird Permit Office U.S. Fish & Wildlife Service P.O. Box 25486 DFC (60154) Denver, CO 80225-0486

Re: Expert Opinions and Conclusions Concerning the U.S. Fish and Wildlife Service's "Take" Permit MB66357C-0 (Project AR1237-39), Garrett Construction Co., Impacting the Stearns Bald Eagle Nest, Broomfield, Colorado

Dear U.S. Fish and Wildlife Service Staff:

In light of my extensive experience evaluating migratory bird and eagle permit decisions such as the one at issue here, I have been asked to analyze the Caliber at Flatirons development project, which will adversely affect the Stearns Bald Eagle nest in Broomfield, Colorado. As a 17-year Federal wildlife biologist with the Division of Migratory Bird Management ("DMBM"), Headquarters Office, U.S. Fish and Wildlife Service (hereafter "FWS" or "Service"), Arlington VA-retiring in mid-2014-I continue to watch with considerable interest migratory bird matters, including those affecting Bald Eagles. The legal concerns and scientific deficiencies raised by the Service's February 6, 2018 permit to Garrett Construction Company ("Garrett")-which the Service appears to be gearing up to repeat at the conclusion of its "reconsideration" process for this permit—are of particular concern from a biological and legal standpoint. As explained in more detail below, based on my extensive experience working on similar permitting issues, it is my professional opinion that the Service's authorization of a "disturbance take permit" for Bald Eagles for the Caliber at Flatirons Apartment Development will almost certainly negatively impact the nesting Stearns Bald Eagle pair and their eggs/chicks for the nearly 3-year duration of this permit and beyond. As a result, at minimum, it is my expert opinion that the Service should undertake a rigorous analysis of this highly impactful project and any alternatives to it under the National Environmental Policy Act ("NEPA") by preparing either an Environmental Impact Statement ("EIS") or an Environmental Assessment ("EA"), as well as ensuring transparency by soliciting public comment so that interested parties (including experts such as myself) can provide input concerning the best methods and best practices for minimizing harm to these eagles if the Service nevertheless decides to issue the permit.

Brief Summary of Expertise

I have decades of relevant experience on migratory bird permitting matters, including 17 years as a wildlife biologist within the Service's migratory bird permitting division at the agency's headquarters working on issues relevant to the current permit application. For example, during my time with the Service, I was one of several senior staff members with DMBM who drafted and reviewed the 2007 National Bald Eagle Management Guidelines, as well as the 2010 Wind Energy Bald and Golden Eagle Conservation Plan Guidance and the Implementation Guidance for Eagle Take Permits. As a result, I am thoroughly familiar with those documents, as well as the underlying science that resulted in those publications.

I also served as the Service's national agency lead on all things human-constructed that negatively impacted migratory birds (including Bald Eagles), working for DMBM from 1997-2014, first as a branch chief and later as a senior wildlife biologist. I chaired Service committees (often with State and other Federal agency/commission, NGO, academic and consultant participation) dealing with impacts to migratory birds from commercial wind energy, communication towers (e.g., the Communication Tower Working Group), buildings/glass/lighting, power lines, bridges, and fishing gear (chairing the Waterbird Bycatch Working Group and cochairing the Interagency Seabird Working Group). I served as the agency's lead representative on the Edison Electric Institute's Avian Power Line Interaction Committee ("APLIC") and was awarded the Morley Nelson Conservation Service Award by APLIC in 2016 for my conservation efforts with the industry as a Federal wildlife biologist. APLIC focused on reducing eagle and other bird collisions and electrocutions, and I co-authored the FWS/APLIC Avian Protection Plan Guidelines (2005), as well as suggested best practice documents dealing with electrocution avoidance (2006) and collision avoidance (2012). I also co-authored voluntary Service communication tower guidance (2000) and updated and authored that guidance with new recommended metrics for Bald Eagles and other raptors in 2013, submitting the new suggested best practices to industry, the Federal Communications Commission ("FCC"), and other stakeholders.

More recently, I was asked to assist Region 6 (Denver Regional Office) and the Bureau of Land Management in addressing Christo Javacheff's controversial "Over the [Arkansas] River" commemorative proposed project in Colorado, which would have installed nearly 7-miles of suspended mylar fabric on steel cables across the River. My focus was on impacts to Golden Eagles, waterbirds, songbirds, and their habitats, which provided a strong foundation as to my knowledge of eagles and their habitat in Colorado. I have also served as Technical Scientific Adviser to the Bird-Safe Glass Initiative and the Audubon National Wildlife Refuge Technical Advisory Committee, coordinated bird-building glass issues for the glass initiative, participated as my Division's lead representative to the Trilateral Bird Table (U.S., Canada and Mexico) on avian-wind turbine and electric wire issues, and conducted training on the Migratory Bird Treaty Act ("MBTA") and the Bald and Golden Eagle Protection Act ("BGEPA") at various venues. Additionally, I headed the U.S. Seabird Delegation to the FAO in Rome, served as Technical Scientific Ad-

visor to the Wind Energy Federal Advisory Committee, and represented DMBM on the White House's Office of Science and Technology Policy Wind-Wildlife Federal Taskforce.

In addition, before my federal government service as the agency's lead on migratory bird impacts from human development, I spent nearly two decades as a wildlife biologist focusing in large part on the impacts of human activities on Bald Eagles, other migratory birds, and other wildlife. I currently serve as an Adjunct Professor for the Krieger School of Arts and Sciences, Advanced Academic Programs, Johns Hopkins University, Washington DC campus (2000 to present) where I teach graduate conservation biology and wildlife management field classes to graduate students (most recently in Acadia National Park and Katahdin Woods and Waters National Monument, ME, summer 2017). Therefore, I am one of the nation's leading experts on the human-caused impacts of development on eagles and other migratory birds—having served as the federal government's lead biologist on that issue for many years—and thus am able to speak with authority about the impacts of human development, structures, clearcutting, disturbance, and other environmental perturbations on Bald Eagles and other migratory birds, as well as conditions for minimizing such impacts in compliance with BGEPA, NEPA, and other federal laws.

Expert Opinions and Comments

The Service went to great expense and considerable effort to help recover the then-Endangered population of Bald Eagles ("BAEA") in the Lower 48 States-including in Colorado. This followed nationwide impacts from DDT and other pesticides in the 1960s and 1970s. While BAEA recovery in states like Florida, Maryland, and Virginia (my home state) has seen very promising returns with exponential growth of BAEA populations over time, the status of the Colorado Front Range BAEA population is much more troubling. In Boulder, western Weld, and Broomfield counties—in the 485 mi² area studied by the Front Range Nesting Bald Eagle studies ("FRNBES")-there are only 14 documented BAEA nests in this entire area; in fact, no new successful BAEA nests have been documented in this study area since 2014 (J. Atherton-Wood, Resource Planner, Boulder County Parks & Open Spaces 2018 pers. comm.; Front Range Nesting Bald Eagles Studies 2018 unpubl. data). Further, the Stearns nest is the only BAEA nest in Broomfield County. Whereas data suggests that the nesting BAEA population is struggling even to maintain a stable population in the Front Range (Eakle et al. 2015), Colorado now has the fifth fastest growing human population in the United States (U.S. Census Bureau 2017). With such large population gains comes the rampant loss of wildlife habitat-a disastrous recipe for a nesting BAEA population on the Front Range in Colorado that is barely maintaining its population numbers, and certainly not growing in the fashion observed in BAEA populations in the eastern United States.

In addition, there are precious few old-growth cottonwood tree stands available for Front Range BAEA nesting (9 of 14 nests in this area of the Front Range are located in stable tree crotches of cottonwoods that line irrigation ditches and these stands are reaching maturity and dying [J. Friedman 2017 pers. comm.; Friedman and Lee 2002 Ecological Monographs (72):409-425]). As a result, the data suggests that the very survival and nesting success of the Stearns

BAEA pair is in question, which could have significant impacts on the very small and unstable regional BAEA population. Based on my review of the Service's administrative record underlying its February 6, 2018 permit to Garrett, the evidence strongly suggests that the previous 2014 Flatiron construction authorized by the Service resulted, in 2014, in nest abandonment, chick mortality, and re-nesting 0.6 mi to the east in the direction away from the 2014 Flatiron construction site—"disturbance take" permitted at that time under FWS Permit No. MB83166Å-1 (effective 2/2013 - 10/2017). Now, despite the substantial adverse impacts caused by the 2014 Flatiron construction, rather than implementing concrete and defensible steps to help protect and enhance the Front Range BAEA population—as mandated by law, as recommended by the Colorado Division of Wildlife ("CDOW") in its published BAEA guidance, and as supported by the public—it appears from the record that FWS has abandoned its environmental mandate to ensure a stable to increasing population of breeding BAEAs under BGEPA and its implementing regulations in the Colorado Front Range, instead acquiescing to the interests of the development industry to the detriment of these eagles and the regional population.

Further, FWS has issued an "incidental take permit" for "disturbance take" under provisions of 50 C.F.R. § 22.26 ("Take" Permit MB66357C-0, Project AR1237-39) with absolutely no effort at **public notice**, no public feedback through **scoping or public comments**, no public hearings or other public meetings, no attempt to conduct an **EIS** or **EA** to analyze project impacts and alternatives under NEPA, no justification for a **Categorical Exclusion** ("CE") under NEPA, and no substantiation for the legal findings the Service must make under BGEPA's regulations before a permit may be issued.

Additionally, and perhaps most troubling from a biological standpoint, there is no attempt by FWS to address meaningful **buffers** from active Bald Eagle nests—including the use of outdated metrics which need to be revised based on recent CDOW and FWS recommendations (discussed below)—with current recommended metrics significantly at odds with the permit requirements and conditions adopted by the Service in the permit issued to Garrett on February 6, 2018. Further, a grossly inadequate eagle **monitoring protocol** to assess eagle disturbance and nest abandonment—such as the one adopted here by the Service—will not provide meaningful information to determine whether, and how much, take occurs. Indeed, highlighting the indefensible nature of FWS's monitoring protocol, FWS's nest monitoring "protocol" is even less restrictive than the proposed monitoring recommended by Garrett (i.e., the project proponent). A permit condition to install a wall of **hay bales** as a noise and visual barrier was not evaluated under NEPA for cumulative impacts, indirect effects, or disturbance from this massive proposed structure itself (i.e., separate and apart from the apartment complex).

It is my professional opinion—based on reviewing a number of FWS permits for similar activities affecting BAEA nests—that FWS's actions here illustrate but one conclusion: the Service is willing to give its approval to an action that will likely kill eagle chicks during construction and permanently flush the eagle pair from their established cottonwood tree to make way for human development. In my experienced view of this record, FWS has blatantly ignored its legal and scientific obligations, duties, and responsibilities prescribed by federal law and reissuing this

permit (even with a few additional, nominal conditions) which would contravene the agency's conservation mission.

Some of the Key Wildlife Issues Not Addressed in this Take Permit

In my review of this project, it became clear that there are several critically important issues affecting this Bald Eagle pair, the regional eagle population, and essential habitat for Bald Eagles in the Front Range of Colorado that the Service has completely omitted as part of its decisionmaking process. Accordingly, the following discussion attempts to identify those conspicuously lacking components to assist the Service in complying with its legal duties under BGEPA and NEPA, and in adopting biologically sound and scientifically defensible minimization measures and other conditions at the end of the process that will minimize—if not eliminate—harm to the Stearns BAEA pair and its chicks in the event that the Service issues this permit.

Buffers

The Service's currently-used 660-ft buffer from an active BAEA nest to a human-constructed structure (e.g., Flatirons) or an activity (e.g., clearcutting) was developed in the Service's Northeast Region 5 office approximately 20 years ago based on impacts of timber clearcutting in northern deciduous and boreal forest habitats around active BAEA nests in that region. Rather than being updated and applied to different specific conditions and situations impacting BAEA breeding territories around the country, this 660-ft metric continues to be mistakenly applied by the Service's Region 6 migratory bird permitting office, as is evident from adopting that buffer in the February 6, 2018 permit to Garrett even though the same buffer was woefully inadequate for a similar project permitted by FWS in 2014. In my professional opinion, the 660-foot buffer being used by the Service is outdated, inadequate, and not tailored to the specific behavioral and habitat attributes associated with Bald Eagles in the Front Range of Colorado.

In 2013, I revised the FWS's voluntary communication tower guidelines I had coauthored in 2000, and updated them for distribution to FWS, the FCC, industry stakeholders, and the public (Manville. 2013 U.S. Fish and Wildlife Service (USFWS) Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommissioning; 9/13/2013, 5 pp.). In Guideline 5, on behalf of the Service I wrote, "Disturbance can result in effects to bird populations which may cumulatively affect their survival. The Service has recommended some disturbance-free buffers, e.g., 0.5 mi around raptor nests during the nesting season, and **1-mi disturbance free buffers** for Ferruginous Hawks and **Bald Eagles** [emphasis added] during nesting season in Wyoming ([based on research from the] FWS Ecological Services Field Office, referenced in Manville 2007:23" [Comments of FWS to FCC on WT Docket No. 03-187, FCC 06-164, Notice of Proposed Rulemaking]. This updated buffer—developed in 2013 based on site-specific data from Wyoming—proved necessary to protect nesting BAEA pairs because evidence suggested that shorter buffers, such as the 660-ft. buffer based on northeastern timber clearcutting, were not sufficient from a biological standpoint to protect eagles in the Rocky Mountain west from serious nest disturbance or similar adverse consequences.

By the same token, avian experts with CDOW-the state agency with jurisdiction over eagles, migratory birds, and other wildlife in Colorado-have strongly recommended through published guidance based on site-specific data obtained in Colorado that there should be "...[n]o surface occupancy within 1/4 mile radius of active nests" with a further "[s]easonal restriction to human development ... within 1/2 mile radius of active nests from October 15 through July 31" each year. CDOW stated that it recommended these setbacks due to the generally open habitat used by nesting BAEAs in Colorado. Despite this site-specific data and the recommended buffers developed based on such data, FWS continues to ignore and dismiss these recommended metrics and guidelines, inexplicably permitting a much reduced disturbance buffer metric of 660 ft. with no seasonal restriction to human development. This has already resulted in a catastrophic outcome in 2014 when a Service-authorized construction project being built approximately 700 feet from the Stearns BAEA nest caused the deaths of two eagle chicks and flushed the adults from the nest for several months. Should the Service adopt the same 660-foot buffer when it issues its permit at the end of its reconsideration process concerning Garrett's permit application, that buffer is impossible to reconcile with site-specific data gathered on Colorado Bald Eagles, the behavioral and habitat traits exhibited and used, respectively, by Colorado BAEAs, and the outcome of the prior project the Service authorized very close to this nest. For all of these reasons, it is my expert view that a 660-foot buffer in this location violates both federal law and the best available scientific evidence on Bald Eagles, and it is my opinion that any permit authorizing construction near this nest should, at a minimum, follow the specific buffer recommendations in CDOW's published guidance (i.e., seasonal restriction to human development 1/2 mile radius October 15 to July 31 from an active nest, no surface occupancy within 1/4 mile radius of an active nest).

Hay Bale Wall

As a permit condition, the Service has required construction of a 12-ft high, 400 ft-long hay bale sound and visual barrier along the eastern edge of the project where it intersects the 660-ft buffer zone around the Stearns nest tree. This was based on Garrett's sole recommended "mitigation" measure which the Service itself failed to acknowledge will disturb the Stearns pair and magnify the impacts of this permit-related take resulting in disturbance. Even though the construction of a hay bale wall will itself negatively impact these eagles and their nest, no cumulative impacts or indirect effects analyses have been performed by FWS under NEPA or BGEPA on the likely effects of this barrier on the Eagle pair, let alone any assessment of whether this will actually minimize impacts or even work without further disturbing them, especially when construction of the hay bale wall is admittedly going to adversely impact their feeding and breeding territory. Not only is the 12-ft height of the hay bale wall likely far too short to make any difference in terms of reducing noise and visual disturbance to a nest that is nearly 60 ft up in a cottonwood tree, but the Service's February 6, 2018 permit does not provide any scientific evidence or other substantiation as to whether a similar barrier has been tried elsewhere, whether it was successful, whether there were any disturbance impacts from constructing the barrier, and whether those results were published in a scientific journal. These are all questions which need

to be answered by FWS to ensure that sound scientific principles are being applied to this permit, rather than arbitrary whims of a developer that will not actually reduce impacts to these eagles. Moreover, FWS has the burden to ensure under the law that including the hay bale wall in this permit actually benefits the eagles more than it harms them in light of the impacts that will result to eagles from building the hay bale wall (and the seemingly low likelihood that the hay bale wall will actually reduce visual or noise effects to this nest).

Monitoring Protocol

The nest monitoring conditions imposed in the FWS's February 6, 2018 permit MB66357C-0 are far less restrictive than even those proposed by the project proponent, Garrett Construction. Garrett's proposal called for 2 hours/week dawn monitoring early in the year to obtain baseline and behavioral data on the nesting pair, 2 hours/week observation in February to March 1 to further determine behavior and attitude, 3 times/week in March 5-9 for additional behavioral and attitude monitoring, follow-up monitoring following inclement weather events, additional monitoring when construction activities are to be particularly noisy, and a termination of monitoring if the nest has been abandoned. While FWS has imposed a 4-nest season monitoring protocol (through 2021), monitoring is only being required to determine occupancy, productivity, and nest success-to be performed only once per month for no specified time period but with some data points to be collected (e.g., date and time of monitoring, number and age of BAEAs observed, nest activity status, productivity and nest success). Other than determining presence/ absence and survivorship/not, the protocol is of extremely limited utility and lacks any sound, robust methodology and scientific validity as to actually determining whether, and to what extent, noisy construction activities, hale bale movement and placement, hay bale barrier impacts, and related activities of disturbance will impair these eagles' essential biological functions, negatively impact their habitat, cause lethal take, or permanently flush them from this nest altogether. Further, the Service's monitoring protocol lacks any methodology for obtaining baseline data that is necessary to determine disturbance thresholds, eagle attitude and behavioral responses to noise, construction, a physical barrier, and related human presence and disturbance. A valid scientific protocol should include at a minimum time-activity budget studies and detailed recorded observations (digitally photographed and in a written log) tied to impacts analysis during key periods of eagle nesting activity, incubation, pipping, chick care, and fledging. None were required in the FWS permit. At best, the monitoring protocol seems perfunctory with little meaningful use and data output; at worst, it seems to be an effort to avoid documenting the severe harm that this construction project will cause to these eagles and to shield the public from the real impacts of constructing a massive apartment complex 660 feet from an active eagle nest in a region with an unstable eagle population.

Recommended Conservation Efforts

Stands of old-growth cottonwood trees of the right height, maturity, branch crotch distribution, canopy composition, integrity and location are a scarce commodity in the Front Range, especially as many old growth stands are reaching their expected life spans and dying (J. Fried-

man 2017 pers. comm.). Nine of the 14 nests in this area of the Front Range are located in oldgrowth cottonwoods that line irrigation ditches. Only 1 of the 14 nests in the 485 mi² of the Front Range has an alternate or second nest (J. Friedman 2017 pers. comm.). Constructed and mounted nest platforms for BAEA may provide an alternate option where cottonwoods are limited and/or in decline (e.g., APLIC 2006. Suggested Practices for Avian Protection on Power Lines: State of the Art in 2006), something which needs further assessment through the NEPA process in an EIS or an EA. In addition to nest platforms, planting tens of thousands or more cottonwood saplings in the Front Range should be considered a part of the required Service longterm mitigation and habitat improvement plan for this permit in order to create suitable substitute habitat if and when human development permanently flushes these eagles (and others in Colorado) from their historic nests.

While the Stearns nest is in a conservation easement, the easement is clearly insufficient in size and inadequate for protection as the Service continues to allow human development to encroach upon this easement and the active eagle nest located there. Open space and land conservation initiatives need further investigation, including in the permit evaluation. For example, requiring at least a 2:1 or more match of new designated permanent conservation easement purchased by Flatirons as replacement habitat for the acres impacted by development of the apartment complex site should be evaluated and potentially required as a permit condition to offset at least some of the harm that will be caused to the local wildlife and their habitat. There needs to be a complete cumulative impacts and indirect effects analysis performed through NEPA and BGEPA of these and the other conditions discussed above. None were performed by FWS, which in my view violates NEPA and also constitutes arbitrary and capricious decisionmaking, especially in light of FWS's extensive efforts to *avoid* public involvement and transparency of the agency's decisionmaking process.

Conclusion

In reviewing the existing FWS administrative record, it is clear there are a number of fatal flaws (both legally and scientifically) in the Service's issuance of a 50 C.F.R. § 22.26 incidental take permit which will cause long-term impacts to the Stearns BAEA pair, their current status, and the future of their offspring—not to mention other breeding pairs of BAEAs in the Front Range regional population.

These "flaws" include but are not limited to a failure by the Service to follow its own rules and regulations under BGEPA and NEPA, a complete failure on the part of the Service to alert the public, let alone solicit public feedback and comment about this project, a dismissal/ avoidance of existing best practice buffer metrics published by CDOW, and a failure to update current 660-ft buffer metrics based on new science published by CDOW and FWS (Manville 2013 U.S. Fish and Wildlife Service Revised Voluntary Guidelines for Communication Tower Design, Siting, Construction, Operation, Retrofitting, and Decommission). In addition, FWS has failed to review hay bale "mitigation" measures under NEPA, has an essentially meaningless nest monitoring protocol, and has taken no relevant steps to perform its "due diligence" under law

and regulation in order to protect this nesting pair by objectively evaluating meaningful minimization and mitigation measures to reduce, if not eliminate, harm to these eagles during the construction of this project.

These issues, taken individually or collectively, are completely at odds with eagle conservation and the Congressional mandate set forth by Congress in BGEPA, and must not be allowed to stand if BAEAs are to recover in Colorado's Front Range. Population trends which also appear to be neutral to declining in Colorado and the Southwest (Eakle et al. 2015) are troubling and need to be evaluated and addressed in the Service's permitting decision. These include growing human population pressures; loss of suitable eagle habitat including cottonwood trees; impacts from disturbance, mortality, and disease; effects of climate change and wildfires; and other perturbations. All of these are relevant factors as part of this permit decisionmaking process and need to be systematically evaluated through the required NEPA review process and in the findings that the Service must make pursuant to BGEPA before issuing this permit. In my experienced view, the Service has not complied with its legal duties here, nor has it even remotely applied the best available scientific evidence in evaluating this permit and adopting conditions necessary and appropriate to protect these eagles. If, at the conclusion of its reconsideration process, the Service reaffirms the February 6, 2018 permit or issues a new permit that mirrors the prior permit in any of the respects identified above, it is my expert opinion that the Service will have once again violated NEPA and BGEPA, and failed to incorporate the best available science in the myriad ways discussed above.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Respectfully submitted,

4/10/2018

Dr. Albert M. Manville, II, Ph.D., C.W.B.