ADDENDUM: WYOMING GRAY WOLF MANAGEMENT PLAN

CLARIFICATION OF THE WYOMING GAME AND FISH COMMISSION'S COMMITTMENT TO MANAGE FOR A RECOVERED AND SUSTAINABLE WOLF POPULATION IN WYOMING

WYOMING GAME AND FISH COMMISSION

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STATEMENT OF REASON

The Peer Review Summary Report of the September 14, 2011 Final Wyoming Gray Wolf Management Plan and USFWS Proposed Delisting Rule identified several issues in the Wyoming Gray Wolf Management Plan (Plan) that warrant additional detail and clarification (Atkins 2011). We believe the overall conclusion of the peer review panel upholds the scientific merit of the Plan and the conclusion that delisting wolves in Wyoming is warranted and reasonable (Atkins 2011). Four of the five reviewers deemed the plan acceptable. One peer reviewer asserted the Plan lacks detail regarding how the Wyoming Game and Fish Department (Department) intends to implement safeguards ensuring the wolf population will remain above the minimum recovery level (Atkins 2011; Appendix B). While the commitment by the Department in the Plan to maintain a recovered and sustainable wolf population is explicit, we want to provide a more thorough outline of the Department's proposed adaptive management framework for wolves in Wyoming. This addendum provides clarification to the Plan concerning the proposed adaptive management framework for wolves in Wyoming.

INTRODUCTION

The State of Wyoming, the Wyoming Game and Fish Commission (Commission) and Department are committed to manage for a recovered, stable, and sustainable wolf population following delisting (WGFC 2011, pg. 1, par. 1). This commitment is articulated in the Plan, which was revised in 2011 to ensure the delisting process will proceed as agreed upon by the Governor of Wyoming and the U.S. Department of Interior/U.S. Fish and Wildlife Service (Service) (see WGFC; Appendix I). The Service subsequently approved the Plan contingent on conforming revisions to Wyoming State statutes and Commission regulations. The Service also initiated a public comment period to gather public opinion on the proposed delisting rule and a peer review process to determine the scientific validity of the proposed federal delisting rule and the Plan (USFWS 2011).

Four of five members of the peer review panel agreed with the Service's conclusion that delisting wolves under the Plan was warranted and supported by the best available science (Atkins 2011). However, the Peer Review Summary Report identified several areas of the Plan that lacked detail regarding how the Department intends to implement safeguards ensuring the wolf population will remain above the minimum recovery level. The primary issues identified in the Peer Review Summary Report were: 1.) The Department's process to manage for a population buffer; 2.) The Department's adaptive management framework; 3.) The Department's methods for monitoring and managing wolf genetics; 4.) The Department's commitment to manage all wolf mortality to ensure the population would not drop below minimum recovery levels and; 5.) The Department's estimate of the sustainable human-caused mortality rate. Public

comments received during the Service's public comment period identified the lack of clarity in the Plan regarding management authority for wolves in different jurisdictions in Wyoming.

MANAGEMENT AUTHORITY OF WOLVES IN WYOMING

The following section outlines which jurisdictions have management authority for wolves in Wyoming after delisting:

- The State of Wyoming has management authority over all wolves in Wyoming except for wolves in areas of the state where the state of Wyoming does not have jurisdiction for wildlife management. These areas are Yellowstone National Park (YNP), lands administered by the National Parks Service (NPS) within Grand Teton National Park (GTNP), National Wildlife Refuges (NWR), and lands within the Wind River Reservation (WRR) except non-indian owned fee titled lands.
- The Wyoming Game and Fish Commission has management authority for wolves within the areas of the state where wolves are designated by state statute as trophy game animals, excluding wolves on the National Elk Refuge (NER) and on lands administered by the NPS within GTNP. However, wolves present within GTNP and the NER are designated as trophy game animals by state statute for only the purpose of counting toward the state's minimum recovery level of at least 10 breeding pairs and at least 100 individual wolves present within the state outside YNP and the WRR at the end of the calendar year.
    - The NPS has management authority for wolves in YNP. Wyoming statutes do not designate wolves in YNP as either trophy game or predatory animals.
    - The NPS has management authority for wolves on lands administered by the NPS within GTNP. Wolves in GTNP will be counted toward the state's minimum recovery level of at least 10 breeding pairs and at least 100 individual wolves.
    - The Service has management authority for wolves on the NER, but wolves on the NER will be counted toward the state's minimum recovery level of at least 10 breeding pairs and at least 100 individual wolves.
- Wolves present outside areas of the state where they are designated as trophy game animals under state statute, but within areas of the state where the state of Wyoming has jurisdiction for wildlife management, including wolves on non-indian owned fee titled lands on the WRR, will be under the management authority of the Wyoming Department of Agriculture and are statutorily designated as predatory animals. Wolves present in these areas can be counted toward the state's total wolf population, but because of their predatory animal status will not be relied upon to meet to the minimum recovery level.

COMMITMENT TO MANAGE FOR A POPULATION BUFFER

First, it is important to recognize that estimates of wolf populations in the Northern Rocky Mountains (NRM) are conservative and based on numbers of wolves, packs, and breeding pairs known to exist. At this time, the Department does not intend to develop a predictive model to estimate the total wolf population or breeding pairs; rather we intend to make management decisions based on known minimums. Consequently, a positive buffer is inherently built into our management and decision making processes. Moreover, several characteristics of wolf biology and ecology buffer the possible impact of management decisions. Among large carnivores,

wolves are especially resilient to harvest because they can sustain human-caused mortality rates between approximately 22% and >50% without a decline in numbers (Adams et al. 2008, Creel and Rotella 2010, Gude et al. 2011; see also Fuller et al. 2003). In addition, wolf populations reduced by high levels of human-caused mortality usually rebound to pre-reduction levels within 1 to 3 years after reduction efforts are ended (NRC 1997).

Minimum population estimates, high sustainable levels of human-caused mortality and population resiliency to over exploitation coupled with conservative population metrics create a relatively large buffer that lends well to the adaptive management approach. The Department does not intend to rely on these characteristics in its management approach and will not risk managing wolves near minimum recovery levels for the following reasons:

- Wyoming Statutes and the Wyoming Gray Wolf Management Plan direct the Department to manage the wolf population to reasonably ensure at least 10 breeding pairs of wolves and at least 100 individual wolves are located in Wyoming outside of YNP and the WRR at the end of the current calendar year.
- Management of the gray wolf population at the minimum recovery level would remove the buffer needed to ensure the wolf population under the Commission's jurisdiction does not decline below the minimum recovery level due to management actions or any unanticipated and/or undetected sources of mortality such as disease, natural catastrophes, reproductive failure, etc. Managing the population to these minimum levels could lead to a status review and potential relisting.
- Managing the wolf population at the minimum recovery level would constrain the Department's ability to address and resolve situations where wolves cause damage to livestock or domesticated animals.
- Managing the wolf population at the minimum recovery level would preclude the Department's ability to provide a public hunting season for wolves.
- Hunting seasons will be prescribed through an iterative, adaptive and public process whereby season structures, hunt areas, and quotas are evaluated and adjusted based on the response of the wolf population to prior management actions. This process inherently requires a buffer to ensure the population does not decline below the minimum recovery level due to any unanticipated effects of harvest, or other natural or human-caused affects.
- Managing wolves above the minimum recovery level will enhance the likelihood for genetic connectivity through natural dispersal and immigration.

As the gray wolf population approaches the minimum recovery level, monitoring intensity will increase to ensure a more precise population estimate. Managing above the minimum recovery level will allow for a more efficient and cost effective monitoring program. The fundamental approach the Commission will employ to sustainably manage Wyoming's wolf population above the minimum recovery level is to maintain an adequate population buffer above minimum recovery levels. The size of the buffer will be determined through an adaptive management approach and may fluctuate based on natural population dynamics and the effects of specific management actions. An adequate buffer will allow "the flexibility needed to resolve wolf conflicts through control actions" and "compensate for population fluctuations caused by unanticipated and/or undetected sources of mortality" (WGFC 2011, pg. 23, par. 3). The buffer

concept was added to the revised Plan in addition to the requirements outlined in the Terms of Agreement. The Department, with input and concurrence from the Service, determined the buffer approach will provide the greatest assurance that minimum recovery levels can be confidently exceeded on an annual basis and articulated this concept in the Plan.

Some peer reviewers noted the Plan appears ambiguous in regard to whether the "buffer" refers solely to wolves expected to be contributed to the Wyoming wolf population by YNP and the WRR (Atkins 2011). The buffer will be applied only to Wyoming's portion of the population in the WTGMA to ensure that the wolf population in Wyoming outside YNP and the WRR will exceed at least 10 breeding pairs and at least 100 wolves as described in the Plan (WGFC 2011, pg. 24, par. 3, ln. 1).

ADAPTIVE MANAGEMENT FRAMEWORK

The appropriate venue for setting and adjusting buffers and hunting seasons, hunt areas, and mortality quotas is the annual season setting process as outlined in the Plan (WGFC 2011, pg. 23, par. 4 to pg. 25, par. 4). Annual wolf hunting seasons will undergo a number of professional and public review steps. The season setting process begins with development of proposed hunting regulations by the Department's large carnivore experts. The draft regulations are based on our knowledge of the current composition of the wolf population, wolf survival and mortality data collected throughout the year, past harvest data, and published literature on wolf population biology. Data and comments from other expert agencies such as the Service will also be considered as part of the adaptive management process. Once drafted, the proposed regulations are reviewed internally by the Department's regional supervisors, wardens, and population biologists, and by the staff of the Department's Biological Services Section. Final draft regulations are further reviewed and then accepted by Wildlife Division administration, the Department's Director's office, and Wyoming Attorney General's office, after which they are reviewed by the Governor's office and then undergo a formal public review process. Ultimately, the Commission meets to consider, approve, and authorize the final hunting regulations, during which time additional public comments are considered. This comprehensive review process provides multiple checks of the biological relevancy of proposed seasons, quotas, and buffers and assurance that social considerations are appropriately addressed.

The Department will consider end of previous year population estimates, cause-specific mortality from the previous and current year, estimated population trend, and the status of the wolf population in relation to the recovery targets to determine hunting seasons, mortality quotas, and an appropriate buffer during the season setting process. In addition, the Department will consider "wolf breeding seasons, short and long range dispersal opportunity, survival, success in forming new or joining existing packs, conflicts with livestock, and the broader game management responsibilities related to ungulates and other wildlife" while setting wolf mortality quotas, and the buffer required to ensure the population remains above minimum recovery levels (WGFC 2011, pg. 25, par. 2). The Department intends to monitor the wolf population more intensively than the Service has in the past because of additional human-caused mortality in the form of hunter harvest of both collared and uncollared wolves will require a more thorough monitoring effort to ensure adequate population information is gathered.

The Department also intends to set hunting season regulations and mortality quotas late enough in the year to accommodate changes in wolf mortality or reproduction during the current biological year (WGFC 2011, pg. 25, par. 3). The Commission has the ability to implement an emergency regulation altering any aspect of wolf hunting seasons if changes in the wolf population in the interim indicate an adjustment is necessary. For example, if wolf mortality from control actions were higher, or reproduction was lower than expected during any given year, the Department could compensate for this by immediately closing the season as per authority granted in Wyoming Game and Fish Commission regulations in Chapter 2, Section 8. In addition the Commission, with the approval of the Governor, can issue an emergency wolf hunting season regulation to reduce mortality quotas or limit or close hunting seasons.

As mentioned in the Plan, the Department intends to manage wolf numbers to gradually reduce the wolf population over a series of years to "provide the opportunity for the Department to understand how to best manage wolves in Wyoming while not risking relisting of wolves under the [Endangered Species Act]" (WGFC 2011, pg. 24, par. 3). To initiate this goal, the Department will develop conservative wolf hunting seasons and mortality quotas with the intent of reducing the wolf population in 2012. Depending on the wolf population response to the initial hunting season, the Department will revise estimates for sustainable human-caused mortality and may adjust mortality quotas, hunt area boundaries, or harvest techniques to maintain the population above the minimum recovery level.

WOLF GENETICS MONITORING AND MANAGEMENT

The genetic connectivity requirements for delisting wolves requires that the NRM recovery areas are functionally connected through emigration and immigration events, resulting in the exchange of genetic material between subpopulations (WGFC 2011, pg 26). The Commission committed to monitoring and managing the wolf population under its jurisdiction to ensure that genetic connectivity is occurring between wolf recovery areas in the NRM to meet this requirement (WGFC 2011). The Peer Review Summary Report recognized this commitment, but suggested the sequence of adaptive management actions in the event the population does not meet minimum requirements could be more specifically outlined (Atkins 2011).

The Department's management plan includes general adaptive management actions that allow the Department to analyze the ultimate cause of the population not meeting minimum genetics requirements and implement the most appropriate and effective management actions. The alternative would be to invoke a series of predetermined management actions that may or may not be effective in increasing genetic interchange.

Management responses to address the population not meeting the minimum genetics criteria (~1 effective migrant/generation) will be based on the proximity of measured genetic interchange to the minimum criteria. For example, the Department will first address monitoring methodology if measured connectivity is only slightly below the minimum criteria and increased short-term monitoring efforts are likely to document enough interchange to allow the population to meet the minimum criteria. If increased monitoring is unlikely to document enough interchange and/or the Department determines that sufficient interchange is not occurring regardless of monitoring efforts, the Department will alter management of the wolf population to encourage effective

migrants. This option may include reducing mortality quotas in dispersal corridors or reducing total mortality quotas over a series of years to increase the probability that any migrants into the population will survive and reproduce. Finally, if adaptation of monitoring and/or management does not increase effective migration into the population, the Department will then translocate wolves between subpopulations in the NRM as a stop-gap measure to increase genetic interchange. This approach will allow the Department to determine the most effective strategy to encourage effective migrants (an average of at least 1 affective migrant per generation as measured over multiple generations). The Department will enter into a memorandum of understanding with the states of Montana and Idaho to coordinate management actions that facilitate genetic connectivity.

WOLF MORTALITY MANAGEMENT

The Department will manage mortality causes and mortality rates for wolves present within the WTGMA and Seasonal WTGMA and will consider all forms of mortality when making all management decisions to ensure that excessive mortality does not cause the wolf population to fall below minimum recovery levels. The Department will achieve this objective by taking a holistic approach to wolf mortality management and will adjust all controllable mortality factors, such as mortality resulting from harvest and depredation control, in response to measured mortality of all causes. The mortality rate and status of the wolf population in relation to the minimum recovery level will determine the Department's management response.

If the population approaches the minimum recovery level, the Department will sequentially limit control actions for unacceptable impacts to ungulates, harvest levels, control for damage to private property, and Lethal Take Permits. Mortality will be limited in this order because the Department is authorized, but not required, by statute to control wolves for unacceptable impacts to ungulates, offer wolf harvest, or control wolves for damage to private property. Alternatively, the Department is required by statute to issue Lethal Take Permits as long as the removals authorized by such permits could not reduce the numbers of gray wolves below 10 breeding pairs or a total of 100 individual wolves in the state outside YNP and the WRR. In such instances, the Department has the statutory authority to suspend issuance of Lethal Take Permits or cancel existing Lethal Take Permits.

For example, if high wolf mortality results from control actions associated with livestock depredations occur in any given year, the harvestable surplus of wolves for that fall's hunting season could be reduced. Alternatively, if a natural mortality factor is unexpectedly high in a given year due to circumstances such as a disease outbreak it may be necessary for the Department to reduce mortality quotas or limit or close wolf hunting seasons and limit lethal control in livestock depredation situations to ensure the wolf population will not fall below the minimum recovery level.

HUMAN-CAUSED MORTALITY RATE ESTIMATION

There was concern about the 36% human-caused mortality rate estimate in the Plan and proposed federal delisting rule that we determined was needed to stabilize the wolf population in Wyoming outside YNP and the WRR (Atkins 2011, USFWS 2011, WGFC 2011, pg. 12, par. 1, last sentence). The Department recognizes this estimate is not peer reviewed science and, therefore, we do not

intend to use this rate for decision making purposes. Sufficient data do not exist to rigorously estimate an appropriate human-caused mortality level required to stabilize the subpopulation of wolves in Wyoming outside YNP and the WRR. Therefore, the Department intends to utilize peer-reviewed publications to determine an appropriate human-caused mortality rate during the 2012 wolf hunting season setting process and apply what we learn through adaptive management to future season setting processes.

There is a wide range of sustainable human-caused mortality rates presented in peer-reviewed publications largely due to variable biological and ecological conditions among and within wolf populations. In addition, differing methodologies to estimate sustainable human-caused mortality levels contributes to the wide range available in the scientific literature. Two recent publications estimate the human-caused mortality rate that would be required to stabilize the NRM wolf population and provide vastly different rates because of different methodologies. Creel and Rotella (2010) estimated the rate to be 22%, while Gude et al. (2011) estimated the rate to be 48%. Other estimates of sustainable human-caused mortality rates are available for other gray wolf populations in peer-reviewed publications, but these rates largely fall within the range of Creel and Rotella and Gude et al.'s estimates and offer little direction in resolving the discrepancy between the two studies. Therefore, the Department intends to allow human-caused mortality required to stabilize the wolf population in the Wolf Trophy Game Management Area (WTGMA) and Seasonal WTGMA within a range of 22% to 35% in the first year. The Department will use an adaptive management approach to annually reassess the adequacy of the estimated human-caused mortality rate that will result in achieving the desired management goal and will adjust the rate up or down depending on the wolf population response as needed. The Department will collect data on the wolf population's response to human-caused mortality to guide management decisions for the wolf subpopulations under the Commission's jurisdiction.

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