Mr. Kiel Downing
Denver Regulatory Office
U.S. Army Corps of Engineers
9307 S. Wadsworth Boulevard
Littleton, Colorado 80218-6901

Dear Mr. Downing:

This final biological opinion is provided in response to your September 1, 2015, request to initiate formal consultation pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA). Your Biological Assessment (BA) described the potential effects of the Gross Reservoir Environmental Pool Project (Project), Corps File No. NW0-2002-80762-DEN, on federally listed species and designated critical habitat associated with the Platte River in Nebraska. According to your September 1, 2015 letter, a separate BA is being prepared to address potential effects to greenback cutthroat trout (Oncorhynchus clarkii stomias) streams on the Western Slope affected by the proposed Gross Reservoir enlargement; therefore, this opinion will not address greenback cutthroat trout or any other listed species in Colorado.

The Federal Action reviewed in this biological opinion is the operation of the Gross Environment Pool (GEP) in Gross Reservoir, which is located on South Boulder Creek about five miles southwest of Boulder in Boulder County, Colorado. The proposed GEP is a mitigation and enhancement component of Denver Water's Gross Reservoir Enlargement Project. Two Intergovernmental Agreements (IGAs) between the cities of Boulder and Lafayette and the cities of Boulder, Denver, and Lafayette established the GEP as a dedicated 5,000 acre-foot “environmental pool” within an enlarged Gross Reservoir for permanent, year-round storage of Lafayette and Boulder's water supplies. Upon completion of the reservoir’s enlargement and pursuant to the IGAs, Boulder and Lafayette, as co-applicants (or Applicants) for the Project, propose to jointly fill the GEP; up to 2,000 acre-feet (af) of water for Boulder and up to 3,000 af for Lafayette. The water would then be released, as needed, to provide year-round instream flows in South Boulder Creek downstream of Gross Reservoir. Evaporative losses from the GEP and any stream losses associated with instream flow releases would be absorbed by the Applicants’ water rights stored in the GEP. Boulder and Lafayette are also applying jointly for a new junior water right on South Boulder Creek that would allow water diverted from the creek to be stored in the GEP.
BACKGROUND

On June 16, 2006, the U.S. Fish and Wildlife Service (Service) issued a programmatic biological opinion (PBO) for the Platte River Recovery Implementation Program (PRRIP) and water-related activities\(^1\) affecting flow volume and timing in the central and lower reaches of the Platte River in Nebraska. The action area for the PBO included the Platte River basin upstream of the confluence with the Loup River in Nebraska, and the mainstem of the Platte River downstream of the Loup River confluence.

The Federal Action addressed by the PBO included the following:

1) funding and implementation of the PRRIP for 13 years, the anticipated first stage of the PRRIP; and

2) continued operation of existing and certain new water-related activities\(^2\) including, but not limited to, Reclamation and Service projects that are (or may become) dependent on the PRRIP for ESA compliance during the first 13-year stage of the PRRIP for their effects on the target species\(^3\), whooping crane critical habitat, and other federally listed species\(^4\) that rely on central and lower Platte River habitats.

The PBO established a two-tiered consultation process for future federal actions on existing and new water-related activities subject to section 7(a)(2) of the ESA, with issuance of the PBO being Tier 1 and all subsequent site-specific project analyses constituting Tier 2 consultations covered by the PBO. Under this tiered consultation process, the Service will produce tiered biological opinions when it is determined that future federal actions are “likely to adversely affect” federally listed species and/or designated critical habitat in the PRRIP action area and the project is covered by the PBO. If necessary, the biological opinions will also consider potential effects to other listed species and critical habitat affected by the

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\(^1\) The term “water-related activities” means activities and aspects of activities which (1) occur in the Platte River basin upstream of the confluence of the Loup River with the Platte River; and (2) may affect Platte River flow quantity or timing, including, but not limited to, water diversion, storage and use activities, and land use activities. Changes in temperature and sediment transport will be considered impacts of a “water related activity” to the extent that such changes are caused by activities affecting flow quantity or timing. Impacts of “water related activities” do not include those components of land use activities or discharges of pollutants that do not affect flow quantity or timing.

\(^2\) “Existing water related activities” include surface water or hydrologically connected groundwater activities implemented on or before July 1, 1997. “New water-related activities” include new surface water or hydrologically connected groundwater activities including both new projects and expansion of existing projects, both those subject to and not subject to section 7(a)(2) of the ESA, which may affect the quantity or timing of water reaching the associated habitats and which are implemented after July 1, 1997.

\(^3\) The “target species” are the endangered whooping crane (\textit{Grus americana}), the interior-least tern (\textit{Sternula antillarum}), the pallid sturgeon (\textit{Scaphirynchus albus}), and the threatened northern Great Plains population of the piping plover (\textit{Charadrius melodus}).

\(^4\) Other listed species present in the central and lower Platte River include the western prairie fringed orchid (\textit{Platanthera praecox}) and the American burying beetle (\textit{Nicrophorus americanus}).
Federal Action that were not within the scope of the Tier 1 PBO (e.g., direct or indirect effects to listed species occurring outside of the PRRIP action area).

Although the water depletive effects of this Federal Action to central and lower Platte River species have been addressed in the PBO, when “no effect” or “may affect” but “not likely to adversely affect” determinations are made on a site-specific basis for the target species in Nebraska, the Service will review these determinations and provide written concurrence where appropriate. Upon receipt of written concurrence, section 7(a)(2) consultation will be considered completed for those federal actions.

Water-related activities requiring federal approval will be reviewed by the Service to determine if: (1) those activities comply with the definition of existing water-related activities and/or (2) proposed new water-related activities are covered by the applicable state’s or the federal depletions plan. The Service has determined that the Project meets the above criteria and, therefore, this Tier 2 biological opinion regarding the effects of the Project on the target species, whooping crane critical habitat, and the western prairie fringed orchid in the central and lower Platte River can tier from the June 16, 2006 PBO.

CONSULTATION HISTORY

Table II-1 of the PBO (pages 21-23) contains a list of species and critical habitat in the action area, their status, and the Service’s determination of the effects of the Federal Action analyzed in the PBO.

The Service determined in the Tier 1 PBO that the Federal Action, including the continued operation of existing and certain new water-related activities, may adversely affect but would not likely jeopardize the continued existence of the federally endangered whooping crane, interior least tern, and pallid sturgeon, or the federally threatened northern Great Plains population of the piping plover, western prairie fringed orchid, and bald eagle in the central and lower Platte River. Further, the Service determined that the Federal Action, including the continued operation of existing and certain new water-related activities, was not likely to destroy or adversely modify designated critical habitat for the whooping crane. The bald eagle was subsequently removed from the federal endangered species list on August 8, 2007. Bald eagles continue to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. For more information on bald eagles, see the Service's webpage at: http://www.fws.gov/midwest/eagle/recovery/biologue.html

The Service also determined that the PBO Federal Action would have no effect to the endangered Eskimo curlew (Numenius borealis). There has not been a confirmed sighting since 1926 and this species is believed to be extirpated in Nebraska. Lastly, the Service determined that the PBO Federal Action, including the continued operation of existing and certain new water-related activities, was not likely to adversely affect the endangered American burying beetle.
The effects of the continued operation of existing and certain new water-related activities on the remaining species and critical habitats listed in Table II-1 of the PBO were beyond the scope of the PBO and were not considered.

The Service has reviewed the information contained in the BA, which was received in this office on September 2, 2015. Clarifying project information was requested and received in this office via email on January 13 and 15, 2016. Earlier, we reviewed a draft of the BA and Supplemental Worksheet, which were received in this office on August 25, 2015.

The Service issued a biological opinion on December 6, 2013 (BO# ES/LK-6-C0-13-F-006, GJ-6-C0-99-F-033-CP126; TAILS# 06E24000-2012-F-0747), that addressed past, existing, and future diversions for Denver Water’s entire system including Gross Reservoir; however, it did not address water depletions associated with the GEP. As described in the December 6, 2013, BO, Denver Water proposed raising Gross Reservoir’s existing dam an additional 6 feet to create an additional 5,000 af of permanent, year-round storage for Boulder and Lafayette. This opinion will address water depletions associated with the cities’ proposed joint filling of the GEP.

In your September 1, 2015, letter you also stated that a separate BA is being prepared to address potential effects to greenback cutthroat trout streams on the Western Slope affected by the Gross Reservoir enlargement because waters in the South Boulder Creek drainage are not considered recovery waters for the trout. Therefore, this opinion does not address the greenback cutthroat trout.

We concur with your determinations of “likely to adversely affect” for the endangered whooping crane, interior least tern, pallid sturgeon, the threatened northern Great Plains population of the piping plover, and the western prairie fringed orchid in the central and lower Platte River in Nebraska. We also concur with your determination of “likely to adversely affect” for designated whooping crane critical habitat in Nebraska.

The Service concurs with your determination of “not likely to adversely affect” for the endangered American burying beetle in Nebraska.

**SCOPE OF THE TIER 2 BIOLOGICAL OPINION**

The proposed Project is a component of “the continued operation of existing and certain new water-related activities” needing a Federal Action evaluated in the Tier 1 PBO, and flow-related effects of the Federal Action are consistent with the scope and the determination of effects in the June 16, 2006 PBO. Because Boulder and Lafayette have elected to participate in the PRRIP, ESA compliance for flow-related effects to federally listed endangered and threatened species and designated critical habitat from the Project is provided to the extent described in the Tier 1 PBO.
This biological opinion applies to the Project's effects to listed endangered and threatened species and designated critical habitat as described in the PBO for the first thirteen years of the PRRIP (i.e., the anticipated duration of the first PRRIP increment).

DESCRIPTION OF THE FEDERAL ACTION

The Federal Action is the Applicants' need for Section 404 authorization from the Corps to operate the GEP within Gross Reservoir, which is located on South Boulder Creek about five miles southwest of Boulder in Boulder County. The proposed GEP is a mitigation and enhancement component of Denver Water's Gross Reservoir Enlargement Project. Two IGAs between Boulder and Lafayette and Boulder, Denver, and Lafayette established the GEP as a dedicated 5,000 acre-foot “environmental pool” within an enlarged Gross Reservoir for permanent, year-round storage of Lafayette and Boulder's water supplies. Pursuant to the IGAs, Boulder is generally responsible for filling up to 2,000 af to meet instream flow targets, primarily during the summer season; and Lafayette is generally responsible for filling up to 3,000 af of the GEP to meet instream flow targets, primarily during the winter season. Upon completion of the reservoir’s enlargement, the two cities would try to fill the GEP every year (all 5,000 af) and approximately 2,500 af would be left in storage for dry years. However, operation of the GEP would allow for carry-over storage; the average annual storage and release would be about 2,500 af, but in dry years less water would be stored and the GEP carryover storage would be drawn down. This is similar to how Gross Reservoir operates now and in the future; during wet and average years, water is stored for use during dry years.

The purpose of the GEP is to provide year-round instream flows in South Boulder Creek below the reservoir. Boulder and Lafayette's water would be released from the GEP only as needed to meet instream flow targets in two segments on South Boulder Creek: Gross Reservoir to South Boulder Road (Upper Segment) and South Boulder Road to the confluence with Boulder Creek (Lower Segment) (see Table 1 in the September 1, 2015, BA). After this first, non-consumptive instream flow use, the water would be recaptured or re-diverted for other decreed, beneficial purposes by the cities. More specifically, water released from the GEP by Lafayette could be re-diverted at Lafayette’s existing diversion points on South Boulder Creek at South Boulder road and on Boulder Creek at 75th Street. Similarly, water released by Boulder from the GEP could be re-diverted for storage at Wittemyer Ponds, delivered to downstream irrigators and/or exchanged to Boulder’s municipal points of diversion for either direct municipal use or for storage. The IGAs also allow for the release of water from the GEP in the event of an emergency with either Boulder or Lafayette’s municipal water supply systems.

The GEP would be filled exclusively by the cities; no water rights owned by Denver Water would be used to fill the GEP. Current decreed uses under the cities’ existing rights include, but are not limited to, municipal use, augmentation, irrigation, and return flow replacement. The GEP would be assessed evaporation based on its pro-rata share of total Gross Reservoir evaporation losses, amounting to an average of 25 af per year. Evaporative losses from the
GEP and any stream losses associated with instream flow releases would be absorbed by the Applicants’ water rights stored in the GEP.

Both evaporation and the continuing consumptive use of water by the Applicants following instream flow use with the Project constitute existing depletions. Boulder and Lafayette are also applying jointly for a new junior water right on South Boulder Creek that would allow water diverted from the creek to be stored in the GEP. This biological opinion does not in any way authorize the Applicants to fill/store water in the GEP within Gross Reservoir.

STATUS OF THE SPECIES / CRITICAL HABITAT

Species descriptions, life histories, population dynamics, status and distributions are fully described in the PBO on pages 76-156 for the whooping crane, interior least tern, piping plover, pallid sturgeon and western prairie fringed orchid, and whooping crane critical habitat and are hereby incorporated by reference. Climate change is not explicitly identified in the Tier 1 PBO as a potential threat, except for whooping crane and whooping crane critical habitat.

The terms “climate” and “climate change” are defined by the Intergovernmental Panel on Climate Change (IPCC). “Climate” refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term “climate change” thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation)(IPCC 2007, pp. 8-14, 18-19).

Changes in temperature and/or precipitation patterns will influence the status of the Platte River system. These changes may contribute to threats that have already been identified and discussed for interior least tern, piping plover, pallid sturgeon and western prairie fringed orchid in the Tier 1 PBO.

Since issuance of the Service’s PBO, there have been no substantial changes in the status of the target species/critical habitat other than the bald eagle delisting previously mentioned.

ENVIRONMENTAL BASELINE

The Environmental Baseline sections for the Platte River and for the whooping crane, interior least tern, piping plover, pallid sturgeon and western prairie fringed orchid, and whooping crane critical habitat are described on pages 157 to 219 of the Tier 1 PBO, and are hereby incorporated by reference. The status of the Platte River system includes a discussion on the
impact of climate change. The Tier 1 BO concluded that although climate change has been identified as a contributor to the baseline, human activities are the biggest influence on the baseline. For the first 13-year stage of the PRRIP, human activities are expected to continue to be the major influence on the functionality of the action area for listed species and critical habitat.

Since issuance of the Tier 1 PBO, there have been no substantial changes in the status of the target species/critical habitat in the action area other than the bald eagle delisting.

**EFFECTS OF THE ACTION**

The Tier 1 BO did not address climate change in the Effects of the Action section, as human activities (upstream storage, diversion, and distribution of the river’s flow) are the most important drivers of change that adversely affect species habitat in the action area. Since issuance of the Tier 1 PBO, our analyses under the ESA include consideration of ongoing and projected changes in climate. In our analyses, we used our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change. Actions that are undertaken to improve the river ecology and habitats for listed species not only address human activities, but also contribute to listed species and whooping crane critical habitat resiliency to climate change.

Based on our analysis of the information provided in your BA for the Project, the Service concludes that the proposed Federal Action will result in a combination of existing and new depletions to the Platte River system above the Loup River confluence. These depletions are associated with average annual evaporative losses of 25 af from the GEP; up to 5,000 af of water to fill the pool every year; and approximately 2,500 af left in storage in the GEP for dry years. Thus, the typical annual storage and release will be 2,500 af in non-drought years. Boulder is responsible for filling up to 2,000 af and Lafayette is responsible for filling up to 3,000 af. The new joint water right on South Boulder Creek will allow water to be stored in the GEP.

As both an existing and new water-related activity, we have determined that the flow-related adverse effects of the Project are consistent with those evaluated in the Tier 1 PBO for the whooping crane, interior least tern, piping plover, pallid sturgeon, western prairie fringed orchid, and whooping crane critical habitat, and these effects on flows are being addressed in conformance with the Colorado Plan for Future Depletions of the PRRIP.

**CUMULATIVE EFFECTS**

Cumulative effects include the effects of future State, local, or private (non-federal) actions that are reasonably certain to occur in the action area considered in this biological opinion. A non-federal action is “reasonably certain” to occur if the action requires the approval of a State or local resource or land-control agency, such agencies have approved the action, and the project is ready to proceed. Other indicators which may also support such a “reasonably
certain to occur” determination include whether: a) the project sponsors provide assurance that the action will proceed; b) contracting has been initiated; c) State or local planning agencies indicate that grant of authority for the action is imminent; or d) where historic data have demonstrated an established trend, that trend may be forecast into the future as reasonably certain to occur. These indicators must show more than the possibility that the non-federal project will occur; they must demonstrate with reasonable certainty that it will occur. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA and would be consulted on at a later time.

Cumulative effects are described on pages 194 to 300 of the Tier 1 PBO, and are hereby incorporated by reference. Since the Tier 1 PBO was issued, there have been no substantial changes in the status of cumulative effects.

CONCLUSION

The Service concludes that the proposed Gross Reservoir Environmental Pool Project is consistent with the Tier 1 PBO for effects to listed species and critical habitat addressed in the Tier 1 PBO. After reviewing site specific information, including: 1) the scope of the Federal Action, 2) the environmental baseline, 3) the status of the whooping crane, interior least tern, piping plover, pallid sturgeon, and the western prairie fringed orchid in the central and lower Platte River and their potential occurrence within the project area, as well as whooping crane critical habitat, 4) the effects of the Project, and 5) any cumulative effects, it is the Service’s biological opinion that the Project, as described, is not likely to jeopardize the continued existence of the federally endangered whooping crane, interior least tern, and pallid sturgeon, or the federally threatened northern Great Plains population of the piping plover, or western prairie fringed orchid in the central and lower Platte River. The Federal Action is also not likely to destroy or adversely modify designated critical habitat for the whooping crane. However, this opinion does not in any way authorize the Applicants to fill/store water in the GEP within Gross Reservoir.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct, and applies to individual members of a listed species. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of
section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Sections 7(b)(4) and 7(o)(2) of ESA do not apply to the incidental take of federally listed plant species (e.g., Colorado butterfly plant, Ute ladies'-tresses orchid, and western prairie fringed orchid). However, limited protection of listed plants from take is provided to the extent that ESA prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on non-federal areas in violation of state law or regulation or in the course of any violation of a state criminal trespass law. Such laws vary from state to state.

The Department of the Interior, acting through the Service and Bureau of Reclamation, is implementing all pertinent Reasonable and Prudent Measures and implementing Terms and Conditions stipulated in the Tier 1 PBO Incidental Take Statement (pages 309-326 of the PBO) which will minimize the anticipated incidental take of federally listed species. In instances where the amount or extent of incidental take outlined in the Tier 1 PBO is exceeded, or the amount or extent of incidental take for other listed species is exceeded, the specific PRRIP action(s) causing such take shall be subject to reinitiation expeditiously.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of ESA directs federal agencies to utilize their authorities to further the purposes of ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of an action on listed species or critical habitat, to help implement recovery plans, or to develop information. Conservation recommendations are provided in the PBO (pages 328-329) and are hereby incorporated by reference.

REINITIATION AND CLOSING STATEMENT

Any person or entity undertaking a water-related activity that receives federal funding or a federal authorization and which relies on the PRRIP as a component of its ESA compliance in section 7 consultation must agree: (1) to the inclusion in its federal funding or authorization documents of reopening authority, including reopening authority to accommodate reinitiation upon the circumstances described in Section IV.E. of the Program document, which addresses program termination; and (2) to request appropriate amendments from the Federal Action agency as needed to conform its funding or authorization to any PRRIP adjustments negotiated among the three states and the Department of the Interior, including specifically new requirements, if any, at the end of the first PRRIP increment and any subsequent PRRIP increments. The Service believes that the PRRIP should not provide ESA compliance for any water-related activity for which the funding or authorization document does not conform to any PRRIP adjustments (Program Document, section VI).
Reinitiation of consultation over the Gross Reservoir Environmental Pool Project will not be required at the end of the first 13-years of the PRRIP provided a subsequent Program increment or first increment Program extension is adopted pursuant to appropriate ESA and NEPA compliance procedures, and, for a subsequent increment, the effects of the Project are covered under a Tier 1 PBO for that increment addressing continued operation of previously consulted-on water-related activities.

This concludes formal consultation on the actions outlined in the September 1, 2015, request from the Corps. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the specific action(s) causing such take shall be subject to reinitiation expeditiously.

Requests for reinitiation, or questions regarding reinitiation should be directed to the Service’s Colorado Field Office at the above address. If you have any questions regarding this consultation, please contact Sandy Vana-Miller of my staff at (303) 236-4748.

Sincerely,

Drue L. DeBerry
Acting Colorado Field Supervisor

ec: FWSR6/WTR, T. Econopouly
     FWSR6/ES/NE, M. Rabbe
     FWSR6/ES/LK, S. Vana-Miller
LITERATURE CITED


