BUREAU OF RECLAMATION

Boise River Basin Feasibility Study

Specialist Report:

Wildlife

Boise Project, Idaho

Interior Region 9: Columbia Pacific Northwest

U.S. Department of the Interior May 2020

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Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Acronyms and Abbreviations

Acronym or Abbreviation	Meaning
BCC	bird of conservation concern
BCR	bird conservation region
BNF	Boise National Forest
CFR	Code of Federal Regulations
cfs	cubic foot per second
Eagle Act	Bald and Golden Eagle Protection Act
ESA	Endangered Species Act
Forest Plan	Boise National Forest Land and Resource Management Plan
HD	Highway District
IDAPA	Idaho Administrative Procedures Act
IDFG	Idaho Department of Fish and Game
ITD	Idaho Transportation Department
MBTA	Migratory Bird Treaty Act
MDI	Mule Deer Initiative
Reclamation	Bureau of Reclamation
SGCN	species of greatest conservation need
SWAP	State Wildlife Action Plan
TES	threatened, endangered, and sensitive
U.S. 20	U.S. Highway 20
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

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1. Introduction

The Boise River Basin Feasibility Study is a feasibility study to evaluate increasing water storage opportunities within the Boise River basin by expanding Anderson Ranch Reservoir. The project is located at Anderson Ranch dam and reservoir, the farthest upstream of the three reservoirs within the Boise River system and located 28 miles northeast of the city of Mountain Home in Elmore County, Idaho. Anderson Ranch Dam is a zoned earth fill embankment structure that provides irrigation water, flood control, power generation, and recreation benefits. The reservoir also provides a permanent dead storage pool for silt control and the preservation and propagation of fish and wildlife. Anderson Ranch Dam is operated by the Bureau of Reclamation (Reclamation). Reclamation, in partnership with the Idaho Water Resource Board (IWRB), proposes to raise Anderson Ranch Dam. New water storage would provide the flexibility to capture additional water when available, for later delivery when and where it is needed to meet existing and future demands. The alternatives analyzed in this document include the No-Action Alternative (Alternative A), a 6-foot raise of Anderson Ranch Dam (Alternative B), and a 3-foot raise of Anderson Ranch Dam (Alternative C).

Alternative A provides a basis for comparison with the two action alternatives, Alternative B and Alternative C. Under Alternative A, current baseline conditions would continue, without increasing Anderson Ranch Dam height or constructing associated reservoir rim projects, access roads, or facilities. The expected project duration of Alternative B is approximately 51 months and Alternative C is 44 months. Reclamation would continue existing operations of Anderson Ranch Dam. Alternative B proposes to raise the dam by 6 feet from the present elevation of 4196 feet to 4202 feet to capture and store approximately 29,000 additional acre-feet of water. Alternative B would inundate an estimated 146 acres of additional land around the reservoir above the current full pool elevation of 4196 feet. Alternative C proposes to raise the dam by 3 feet to 4199 feet, allowing for the ability to capture and store approximately 14,400 additional acre-feet of water. Alternative C would inundate an estimated 73 acres of additional land around the reservoir above the current full pool elevation of 4196 feet.

Each of the two action alternatives, Alternative B and Alternative C, includes two separate, but similar, structural construction methods for the dam raise, downstream embankment raise, or mechanically stabilized earth wall raise. Otherwise, the only difference is the dam raise elevations of 6 feet for Alternative B and 3 feet for Alternative C. Project areas and construction durations for each method are nearly identical, except for a 200-foot difference in approach road length at the right abutment and an approximate 1-month difference in construction duration. The longer road length is within the dam footprint on previously disturbed ground. Because these differences are negligible, they are not differentiated within the analysis of each alternative. Alternative analysis assumes the longer road length and

construction duration, however, a final construction method will be chosen during later phases of engineering evaluation.

Chapter 1 and Chapter 2 of the Boise River Basin Feasibility Study Environmental Impact Statement (EIS) provide a detailed description of the proposed action, project's purpose and need, project area, and alternatives including design features applicable to the action alternatives. This specialist report supports the analysis of expected impacts to wildlife as described in the EIS.

1.1 Regulatory Framework

Wildlife resources in Idaho are protected and/or regulated by a variety of federal and state laws and policies. Key regulatory and conservation planning measures applicable to the project are discussed below.

1.1.1 Federal

The Endangered Species Act

The Endangered Species Act (ESA; United States. Congress. Senate. Committee on Environment and Public Works, 1983) provides that all federal agencies use their authorities to carry out programs for the conservation of listed species (16 U.S.C. §§1531-1544). Section 7(a) of the ESA, as amended, requires federal agencies to evaluate their actions with respect to any species that is proposed for listing or is listed as endangered or threatened. Section 7(a)(2) requires federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its designated critical habitat. Wildlife species protected under this legislation are addressed in the Threatened and Endangered Species Specialist Report.

The Migratory Bird Treaty Act

The U.S. Fish and Wildlife Service (USFWS) has statutory authority and responsibility for enforcing the Migratory Bird Treaty Act (MBTA), which makes it illegal to “take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs,” except with a federal permit (16 U.S.C. §§703-712) This prohibition includes direct and indirect acts, although harassment and habitat modifications are not included unless they result in direct loss of birds, nests, or eggs.

Executive Order 13186 directs federal agencies to take certain actions to further implement MBTA. It requires that each agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations develop and implement a Memorandum of Understanding (MOU) with USFWS that will promote the conservation of migratory bird populations.

The Bald and Golden Eagle Protection Act

Under the Bald and Golden Eagle Protection Act (Eagle Act), the destruction of a nest or take of any eagle or egg is prohibited. This includes the possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, export, or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C. §§668-668(c); 50 Code of Federal Regulations [CFR], Part 22). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause:

- injury to an eagle,
- a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or
- nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior (USFWS, 2007).

U.S. Forest Service Endangered, Threatened, and Sensitive Species

The National Forest Management Act requires the U.S. Forest Service (USFS) to "provide for a diversity of plant and animal communities" (16 U.S.C. §1604) as part of its multiple-use mandate. USFS must maintain "viable populations of existing native and desired nonnative species in the planning area" (36 CFR 219.19). The national Threatened, Endangered, and Sensitive (TES) Species Program, a USFS initiative, is designed to meet this mandate and to demonstrate the USFS commitment to maintaining biodiversity on National Forest System lands. The program is a proactive approach to conserving species to prevent a trend toward listing under the ESA and to ensure the continued existence of viable, well-distributed populations. A "sensitive species" is any species of plant or animal that has been recognized by the Regional Forester to need special management to prevent the species from becoming threatened or endangered. A list of USFS Intermountain Region 4 sensitive species are shown in Table 2 of Section 2.2 of this report (USFS, 2016).

Boise Forest Plan, 2010

The *Boise National Forest Land and Resource Management Plan* (Forest Plan; USFS, 2010) contains forest-wide desired conditions, goals, objectives, standards and guidelines designed to guide wildlife resource management for the Boise National Forest (BNF). The Boise Forest Plan was updated in 2010 to revise direction in response to new information and changing conditions concerning wildlife habitat and to integrate components of a wildlife conservation strategy. The following is an excerpt from the Forest Plan describing the desired conditions for wildlife resources (USFS, 2010).

> *The amount, distribution, and characteristics of source habitat are present at levels necessary to support persistence of native and desired non-native wildlife species within their respective ranges across the planning unit. For Region 4 Sensitive species, management actions retain desired source habitat conditions, or lead to restoration of those conditions. Habitat conditions contribute to the persistence of species and do not lead to listing under the ESA or as a Region 4*

Sensitive Species. Human activities do not affect source environments in a manner that prevents wildlife populations from attaining desired distribution and abundance during critical life stages. Habitat conditions support sustainability of species of socio-economic and tribal interest.

Goals are concise statements that help describe desired conditions, or how to achieve those conditions. Goals are typically designed to maintain conditions if they are currently within their desired range or restore conditions to their desired range if they are currently outside that range. Objectives are concise time-specific statements of actions or results designed to help achieve goals. Objectives form the basis for project-level actions or proposals to help achieve Forest goals.

Standards are binding limitations placed on management actions. Standards are typically action restrictions designed to prevent degradation of resource conditions, or exceeding a threshold of unacceptable effects, so that conditions can be maintained or restored over time. Standards must be within the authority and ability of the Forest Service to enforce. A project or action that varies from a relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive application of the standard. Guidelines represent a preferred or advisable course of action generally expected to be carried out. Deviation from compliance does not require a Forest Plan amendment (as with a standard), but rationale for deviation should be documented in the project decision document. Specific to this project the following wildlife standards are applicable.

WIST02: Design and implement projects within occupied habitats of Sensitive species to help prevent them from becoming listed. Use Forest Service-approved portions of Conservation Strategies and Agreements, as appropriate, in the management of Sensitive species habitat to keep management actions from contributing to a trend toward listing for these species.
WIST03: Mitigate management actions within known nesting or denning sites of sensitive species if those actions would disrupt the reproductive success of those sites during the nesting or denning period. Mitigation measures shall be determined during project planning.
WIST04: Mitigate management actions within known winter roosting sites or hibernacula (bats) of Sensitive species if those actions would measurably reduce the survival of wintering or roosting populations. Sites, periods, and mitigation measures will be determined during project planning.

USFS Greater Sage-grouse Record of Decision and Land Management Plan Amendments, 2015

This ROD is the culmination of a planning effort in cooperation with the BLM to conserve Greater Sage-grouse (GRSG) habitat on National Forest System (NFS) lands administered by the USFS and BLM-administered lands. The USFS, as a cooperating agency with the BLM, has developed a targeted, multi-tiered, collaborative landscape-level conservation strategy. This strategy is based on the best available science that offers the highest level of protection for GRSG in the most important habitat areas to address the specific threats identified in the 2010 USFWS "warranted but precluded" ESA listing decision, and the USFWS 2013 Conservation Objectives Team report. This ROD approves Land Management Plan (LMP) amendments for the GRSG Great Basin planning region, which includes BNF.

The management direction in the LMP amendments is accomplished through land use allocations that limit or eliminate new surface disturbance in Priority Habitat Management Areas and Sagebrush Focal Areas and minimize surface disturbance in General Habitat Management Areas. The LMP amendments also include a suite of other management actions, such as the establishment of disturbance limits, GRSG habitat objectives, lek buffers, mitigation requirements, monitoring protocols, adaptive management triggers and responses, and targeted restoration and habitat improvements. The cumulative effect of these measures is to conserve, enhance, and restore GRSG habitat across the remaining range of the species in the Great Basin region and provide greater certainty that Forest Service LMP decisions will lead to conservation of GRSG and other species associated with the sagebrush steppe ecosystem. Below are several of the key standards and guidelines specific to this project.

- GRSG-GEN-ST-006-Standard – Do not authorize new surface disturbing and disruptive activities that create noise at 10dB above ambient measured at the perimeter of an occupied lek during lekking (from March 1 to April 30) from 6 p.m. to 9 a.m. Do not include noise resulting from human activities that have been authorized and initiated within the past 10 years in the ambient baseline measurement.
- GRSG-GEN-GL-007-Guideline – During breeding and nesting (from March 1 to June 15), surface disturbing and disruptive activities to nesting birds should be avoided.
- GRSG-LR-SUA-ST-015-Standard – In priority and important habitat management areas and sagebrush focal areas, do not authorize temporary lands special-uses (i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., greater than 5 years) negative impact on the greater sage-grouse or its habitat.
- GRSG-RT-ST-067-Standard – In priority, important, and general habitat management areas and sagebrush focal areas, do not conduct or allow new road or trail construction (does not apply to realignments for resource protection) except when necessary for administrative access to existing and authorized uses, public safety, or to access valid existing rights. If necessary to construct new roads and trails for one of these purposes, construct them to the minimum standard, length, and number and avoid, minimize, and mitigate impacts.

- GRSG-RT-ST-068-Standard – Do not conduct or allow road and trail maintenance activities within 2 miles from the perimeter of active leks during lekking (from March 1 to April 30) from 6 p.m. to 9 a.m.
- GRSG-M-MM-ST-101-Standard – In priority and important habitat management areas and sagebrush focal areas, free-use mineral material collection permits may be issued and expansion of existing active pits may be allowed, except from March 1 to April 30 between 6 p.m. and 9 a.m. within 2 miles from the perimeter of occupied leks, within the Biologically Significant Unit and proposed project area if doing so does not exceed the disturbance cap.

1.1.2 State

Idaho State Wildlife Action Plan, 2015

This comprehensive 10-year revision of the Idaho State Wildlife Action Plan (SWAP) is a statewide plan for conserving and managing Idaho's diverse fish and wildlife and the habitats they depend on. The plan describes key conservation targets for the state of Idaho, threats to those targets, and recommendations for addressing those threats (Idaho Department of Fish and Game [IDFG], 2017). Under this plan, IDFG has identified species that have the most critical conservation needs and categorized them as Idaho species of greatest conservation need (SGCN), ranked in Tier 1, Tier 2, or Tier 3—Tier 1 represents the highest priority species.

Idaho Administrative Code

Under Idaho Code Section 36-104(b) and Section 36-201, the Idaho Fish and Game Commission is authorized to "adopt rules concerning the taking of wildlife species and the classification of all wildlife in the state of Idaho" (IDFG, 2019a). These rules are found under the Idaho Administrative Procedures Act (IDAPA) 13.01.06.000, et seq. "Rules Governing Classification and Protection of Wildlife."

2. Affected Environment

The analysis area for Alternative B and Alternative C includes the project area as defined in Chapter 2 of the EIS. In general, the project area is focused on Anderson Ranch Reservoir and the lower portion of its tributaries, South Fork Boise River immediately upstream of Anderson Ranch Reservoir, South Fork Boise River between Anderson Ranch Dam and the top of full pool at Arrowrock Reservoir. Project area features include Anderson Ranch Dam, rim construction sites, borrow areas, laydown areas, contractor staging areas, and transportation corridors including alternative driving routes and detours.

The South Fork Boise River and Anderson Ranch Reservoir are in the BNF in the southern portion of the Idaho Batholith, which is the largest ecoregion in Idaho. The immediate surrounding environment is characterized by dry montane forest and grassland, riparian corridors, and sagebrush steppe (IDFG, 2017). The range of vegetation types in the project area provide a variety of wildlife habitats, including wintering and nesting habitat for bald eagles and peregrine falcon. Much of the lower-elevation grasslands and shrublands are important winter range for elk and deer, as well as foraging habitat for mountain quail, sage-grouse, and introduced turkey and chukar. Mid-elevation forests provide habitat for several sensitive species, including northern goshawk, flammulated owl, and white-headed woodpecker. Higher-elevation forests provide nesting and foraging habitat for many migratory birds, as well as summer range for mammals such as elk, black bear, and mountain lion. The reservoir itself is home to several year-round and migratory waterfowl, such as merganser, common loon, and Clark's grebe. Yellow-billed cuckoo are present in cottonwood stands on the South Fork Boise River below the dam (USFS, 2010; USFS 2020).

2.1 State Wildlife Management

IDFG is charged with preserving, protecting, perpetuating and managing all wildlife in the state. The following sections describe protected species in the project area under the SWAP and other management directives.

2.1.1 Species of Greatest Conservation Need

Four IDFG habitat conservation targets identified in the SWAP are present in the project area (Table 1). These targets represent major ecosystems in the Idaho Batholith and provide key habitat for SGCN (IDFG, 2017). Important habitat conservation issues in the Idaho Batholith include changes in ecological condition and function of conifer forests, altered fire and hydrologic regimes compounded by changes in temperature and precipitation patterns, and increasing invasive species and noxious weeds presence. Each of the four target ecosystems and SGCN in the project area are described below in Table 1.

Table 1. Idaho SWAP target habitats and SGCN in the project area

Target Habitat	Description	Location within Project Area	Target SGCN Observed in Project Area
Dry Lower Montane–Foothill Forest	This conifer forest habitat occurs at lower elevations and along major river corridors. In this region of Idaho, it is typically the first forest zone above grassland-shrubland and is often dominated by ponderosa pine and Douglas fir.	Upland terrain in the northern end of the reservoir and in the tributary drainages (mostly on north-facing slopes).	Tier 2 - mountain quail, Lewis's woodpecker Tier 3 - common nighthawk, Townsend's big-eared bat*, little brown bat
Lower Montane–Foothill Grassland and Shrubland	This grassland-shrubland complex is tightly associated with the major river corridors in the Idaho Batholith, where it covers steep canyon slopes up to where the plant community transitions to montane-foothill forest.	Much of the upland area around the reservoir and South Fork Boise River below the dam.	Tier 2 - mountain quail, golden eagle Tier 3 - common nighthawk, Townsend's big-eared bat*, little brown bat
Riverine-Riparian Forest and Shrubland	Rivers and streams, including aquatic habitats and their associated upland riparian habitats.	Vegetation community adjacent to South Fork Boise River both upstream and downstream of the reservoir, as well as tributary streams.	Tier 2 - mountain quail, Lewis's woodpecker Tier 3 - sandhill crane, common nighthawk, Townsend's big-eared bat*, little brown bat
Lakes, Ponds, and Reservoirs	Includes all-natural lakes, deep ponds, dam-altered naturally formed lakes, and man-made waterbodies that fit the lacustrine definition.	The reservoir and adjacent shoreline.	Tier 2 - Western toad, Clark's grebe Tier 3 - sandhill crane, Townsend's big-eared bat*, little brown bat

Source: IDFG, species observations reports, and the Idaho State Wildlife Action Plan, 2015

**No documented observations within the immediate project area but suitable habitat exists, and year-round range covers all of Idaho.*

Other SGCN not identified as target species in the SWAP have been observed within the project area. Greater sage-grouse is a SCGN Tier 1 species present in the area. Tier 2 species include American white pelican, common loon, golden eagle, long-billed curlew, sage thrasher, sharp-tailed grouse, and western grebe. Tier 3 species include common nighthawk,

olive-sided flycatcher, and ring-billed gull. Numerous other protected non-game species not designated as SGCN occur within the project area.

2.1.2 Protected Game Species

The South Fork Boise River provides good habitat for several other notable wildlife species protected as game animals by IDFG under state of Idaho conservation measures. These rules fall under the IDAPA 13.01.06 and *Idaho State Wildlife Action Plan, 2015* (IDFG, 2017a).

Elk (*Cervus canadensis*)

Elk are classified under IDAPA as big game with state rank of S4, which declares them not rare and apparently secure, but with cause for long-term concern (IDFG, 2019b). Elk are among several species of game animals that are known to be present around or migrate through Anderson Ranch Reservoir and its tributaries. The upper South Fork Boise River drainage constitutes critical summer habitat for elk, while the river below the dam provides critical winter habitat (USFS, 2010).

Mule Deer (*Odocoileus hemionus*)

Like elk, mule deer are also classified as big game with a state rank of S4 (IDFG, 2019b). IDFG has established a Mule Deer Initiative (MDI). The three goals of this initiative are to protect and improve mule deer habitat, improve mule deer numbers, and increase hunter satisfaction (IDFG, 2019c). Change in the quality and quantity of mule deer habitat has a direct connection with fulfilling the goals of MDI. Priority habitats for this initiative include sage steppe, quaking aspen, and riparian community types (IDFG, 2019b). The upper South Fork Boise River drainage constitutes critical summer habitat for mule deer, while the river below the dam provides critical winter habitat (USFS, 2010).

Moose (*Alces americanus*)

Moose are classified as big game with a state rank of S3, which declares them as rare or uncommon but not imperiled (IDFG, 2019b). In Idaho, they prefer shrubby, mixed coniferous and deciduous forests with nearby lakes, marshes, and bogs. Moose have been observed along riparian areas in the vicinity of Anderson Ranch Reservoir (IDFG, 2020a).

Gray Wolf (*Canis lupus*)

Gray wolves are classified as big game in the state of Idaho, regardless of their conservation status in adjacent states. They also have a state rank of S4 (IDFG, 2019b). Two distinct wolf packs with documented activity as of 2015 have been spotted in the project area. These include the Van Pack on the northern end of the reservoir, and the Little Camas Pack south-southeast of the reservoir and west along the South Fork Boise River (IDFG, 2020a).

American Black Bear (*Ursus americanus*)

Black bears are classified as big game, with a state rank of S4 (IDFG, 2019b). They are found throughout both the foothills and forests in Idaho and have been observed in the vicinity of the South Fork Boise River (IDFG, 2020a).

Game Birds

Several native species of protected game birds (with their respective state ranks) are found in the project area. Dusky grouse (S5), ruffed grouse (S4), sharp-tailed grouse (S3; also a SGCN Tier 2 species) and greater sage-grouse (S3; also a SGCN Tier 1 species) are designated as upland game birds and are found year-round throughout the basin. Migratory game birds include American coot (S4), Canada goose (S5), common merganser (S3), mallard (S4), mourning dove (S5), and ring-necked duck (S4) (IDFG, 2019b).

2.2 USFS Wildlife Management

Sensitive species on National Forest System lands are managed under the national TES Species Program. This includes the conservation of sensitive species and their habitats and providing for the diversity of plant and animal communities on National Forest System lands (USFS, 1997).

Each USFS region maintains a list of threatened, endangered, and sensitive species (USFS, 2016). BNF provides habitat for two federally listed threatened species: Canada lynx and yellow-billed cuckoo, and one candidate species: North American wolverine (USFWS, 2019). These are covered in detail in the Threatened and Endangered Species Specialist Report in Appendix B of the EIS. Sensitive species that have the potential to occur or have been observed within BNF in the project area are listed below in Table 2. BNF has identified six sensitive mammal species, 12 bird species, and one amphibian species and/or their habitats that occur within the forest. Some of these species possess highly specific habitat requirements and only occur in a few places. Others exhibit broad distributions and occur in a variety of habitat types.

Table 2. USFS R4 sensitive wildlife species with the potential to occur in the project area

Scientific Name	Common Name	Habitat	Potential to Occur in the Project Area
Mammals			
Ovis canadensis	Bighorn sheep	Rugged mountainous terrain, steep slopes, and open habitats, such as alpine meadows, grasslands, shrub-steppe, talus slopes, rock outcrops, and cliffs. Semiarid to arid climates and a wide elevation range, from 2000-10,000 feet depending on season.	Known distribution and suitable habitat in BNF. Might occur within project area; however, no observations have been reported to IDFG or USFS.
Canis lupus	Gray wolf	Diversity of habitats including forests, shrub-steppe, grasslands and deserts.	Known distribution and/or suitable habitat in BNF. Could occur within project area. Most recent activity documented in 2015 within the project area.
Euderma maculatum	Spotted bat	Roost in cracks or crevices in rock outcrops and cliffs. Dominant vegetation includes sagebrush, juniper, mountain mahogany, cottonwood, and ponderosa pine forests.	Known distribution and/or suitable habitat in BNF. Observed near Danskin Bridge, and a high likelihood for presence in South Fork Boise River canyon.
Martes pennanti	Fisher	Low- to mid-elevation mesic coniferous and mixed conifer forests, generally with large diameter trees and high canopy cover.	Known distribution and/or suitable habitat in BNF. Could occur within the project area. Most recent observation reported in 2013 north of the project area near Featherville.
Spermophilus brunneus endemicus	Southern Idaho ground squirrel	Rolling foothills at elevations of 2200–3600 feet. Dominant vegetation includes sagebrush and bitterbrush with mixed native grasses and forbs.	Known suitable habitat in BNF, but not likely to occur within project area. There are no documented observations have been reported to IDFG or USFS.
Corynorhinus townsendii townsendii	Townsend's western big-eared bat	Diversity of habitats including sage-steppe, deciduous and coniferous forests at a wide range of elevations. Roosts in caves or large tree hollows.	Known distribution and/or suitable habitat in BNF. Could occur within project area; however, no documented observations have been reported to IDFG or USFS.

Scientific Name	Common Name	Habitat	Potential to Occur in the Project Area
Birds			
Haliaeetus leucocephalus	Bald eagle	Forested areas near open water, rivers, and streams where they feed on fish and waterfowl. Nests in large trees, snags, cliffs, and rock outcrops close to water.	Known distribution and suitable habitat in BNF. Occurs within project area. Observed year-round and annually along the reservoir and South Fork Boise River, including known active nest sites.
Aquila chrysaetos	Golden eagle	Open shrubland and grasslands of shortgrass, mixed-grass, and xeric grasslands are preferred but will use riparian or woodland/ brushland habitat. Typically nest on cliffs but also in trees such as cottonwood.	Known distribution and suitable habitat in BNF. Occurs within project area. Observed year-round and annually along the reservoir and South Fork Boise River, and likely nest in the area.
Aegolius funereus	Boreal owl	High elevation mixed conifer forests. Nests mostly in forests where coniferous trees such as spruce or fir are mixed with deciduous trees including aspen or birch.	Known distribution and/or suitable habitat in BNF. Due to higher elevation range, not likely to occur within project area. No observations within or near project area reported to IDFG or USFS.
Centrocercus urophasianus	Greater sage-grouse	High-quality sage-steppe with native bunchgrasses; requires sagebrush for cover, nesting, and food.	Known distribution and suitable habitat in BNF. Likely to occur within project area. Observed annually in the project area, the most recent lek surveys were performed near Cow Creek road in 2018.
Falco peregrinus anatum	Peregrine falcon	Versatile species that can live in almost any type of climate and habitat. Nests in high cliffs.	Known distribution and suitable habitat in BNF. Likely to occur within project area. Most recent observation reported on South Fork Boise River in 2009.

Scientific Name	Common Name	Habitat	Potential to Occur in the Project Area
Gavia immer	Common loon	Large, clear lakes with forested, tundra, or rocky shorelines generally below 6000 feet.	Known distribution and suitable habitat in BNF. Likely to occur within project area. Observed annually on the reservoir and shoreline during spring migration to breeding areas further north.
Oreortyx pictus	Mountain quail	Riparian areas of hawthorn, willow, and chokecherry in shrub-dominated steep terrain. Migrate to higher forested habitats depending on snowpack and food availability.	Known distribution and/or suitable habitat in BNF. Could occur within project area; however, no reported observations within the last 10 years.
Otus flammeolus	Flammulated owl	Mid-elevation mature stands of open ponderosa pine and Douglas-fir, with brushy understories and mixed aspen stands and grassland edge habitat. Nests in tree cavities.	Known distribution and suitable habitat in BNF. Documented occurrences throughout the project are and are likely to inhabit the eastern side of the reservoir.
Picoides albolarvatus	White-headed woodpecker	Montane coniferous forests dominated by ponderosa pine, typically multi-storied and open-canopied mature and old-growth trees. Nests in cavities of snags and stumps.	Known distribution and/or suitable habitat in BNF. Likely to occur within project area. Most recent observations reported north of Pine.
Picoides tridactylus	Three-toed woodpecker	Generally associated with spruce forests, old-growth and/or disturbed areas that have high densities of bark beetle larvae. Nests in snags.	Known distribution and/or suitable habitat in BNF. Could occur within project area, observed in Elmore County. No observations reported near or within the project area.
Strix nebulosa	Great gray owl	Found in denser coniferous and mixed conifer-deciduous forests, most commonly near open areas such as meadows or bogs. Lower elevations and agricultural areas during winter, and mid-elevation forests in spring and summer.	Known distribution and/or suitable habitat in BNF. Could occur within project area. No observations reported near or within the project area.

Scientific Name	Common Name	Habitat	Potential to Occur in the Project Area
Tympanuchus phasianellus columbianus	Columbian sharp-tailed grouse	Primarily shrub-steppe and native bunchgrass dominated communities in diverse terrain. Can also use and thrive in agricultural croplands that occur near permanent cover.	Known distribution and suitable habitat in BNF, although Elmore County is outside of current range. No observations reported near or within the project area.
Accipiter gentilis	Northern goshawk	Wide variety of forest types including deciduous, coniferous, and mixed. Most often nests in mature or old-growth forest.	Known distribution and suitable habitat in BNF. Could occur within project area; however, no reported observations within the past 10 years.
Reptiles and Amphibians			
Rana luteiventris	Columbia spotted frog	Structurally complex wetland and riparian habitat with diverse pool and meadow components. Suitable sites contain shallow breeding pools and deeper-water overwintering sites.	Known distribution and/or suitable habitat in BNF. Breeding populations are present in the project area, documented in borrow pit areas and tributaries of the reservoir.

Source: IDFG species observations, USFS Natural Resources Manager (NRM) database, USFS Mountain Home Ranger District observations

BNF Mountain Home Ranger District recently performed winter eagle surveys, and nest site locations are up to date for this report. Currently there are seven known nest locations along Anderson Ranch Reservoir shoreline and the South Fork Boise River (USFS, 2020). The reservoir and the South Fork Boise River provide important winter habitat for both bald and golden eagles, and they are frequently observed along the reservoir and South Fork Canyon. The home range for eagles includes all potential habitat within 2 miles of a nest site (IDFG, 2008). Eagle nests are usually established in the tallest trees (sometimes on cliffs or rock outcroppings), from which the birds have a clear view of their surroundings (USFWS, 2007).

Greater sage-grouse are observed annually in the vicinity of Cow Creek Road (HD 131), and recent surveys have documented the presence of nearby leks (IDFG, 2020a; USFS, 2020). The BNF also surveys for flammulated owls, white-headed woodpeckers, and Columbia spotted frogs, all of which are documented throughout the project area (USFS, 2020). Spotted bats are observed along the South Fork below the dam and are presumed to occupy sites along the canyon, but have not yet been formally surveyed; however, due to the probability of occupancy, BNF has plans to survey this species in the future (USFS, 2020).

2.3 USFWS Migratory Birds

USFWS identified 13 species of migratory birds (USFWS, 2018) that may occur in the project area that are protected under MBTA (Table 3). Of these, bald and golden eagles are further protected under the Eagle Act. Many of these migratory bird species prefer habitat that include riparian and shoreline habitats, characterized by proximity to water and the presence of riparian vegetation for shelter and forage, such as willows and cottonwood (National Audubon Society, 2019).

Birds of conservation concern (BCC) are species whose conservation status and efforts are of concern to USFWS. Not all birds protected under MBTA are a BCC species everywhere they are present. Bird conservation regions (BCRs) are areas where certain species have the designation of BCC. Table 3 outlines which species are designated BCC within the project area, where the habitat is characterized as a BCR (USFWS, 2008).

Table 3. Birds protected under MBTA that are present in the project region

Species	BCC	BCR in Region	BCC throughout its range	USFWS Sensitive Species	USFWS Endangered Species
Bald eagle (Haliaeetus leucocephalus)	X			X	
Brewer's sparrow (Spizella beweri)	X	X			
Cassin's Finch (Carpodacus cassinii)	X	X	X		
Clark's grebe (Aechmophorus clarkii)	X	X	X		
Golden eagle (Aquila chrysaetos)	X	X			
Lewis's woodpecker (Melanerpes lewis)	X	X	X		
Long-billed curlew (Numenius americanus)	X	X	X		
Marbled godwit (Limosa fedoa)	X	X	X		
Olive-sided flycatcher (Contopus cooperi)	X	X	X		
Rufous hummingbird (Selasphorus rufus)	X	X	X		
Sage thrasher (Oreoscoptes montanus)	X	X			
Willet (Tringa semipalmata)	X	X	X		
Willow flycatcher (Empidonax traillii)	X	X			X

Source: U.S. Fish and Wildlife Service

3. Environmental Consequences

3.1 Methods for Evaluating Impacts

Potential impacts to wildlife and wildlife habitat were identified by evaluating habitat that would be inundated or disturbed by the increase in water surface elevation or change in downstream flows in the South Fork Boise River. Additionally, construction activities were identified that might disturb wildlife within the project area. The analysis of impacts to wildlife resources resulting from implementation of the project alternative(s) under consideration is based on review of existing documentation and GIS data that addresses biological resources in or near the project area. In addition to an on-site visit, federal and state documentation, USFS and IDFG species observations were reviewed to determine species likely to be located within the project area and subjected to project actions. USFS and IDFG biologists were consulted for access to pertinent available data sources from recent wildlife surveys performed in the project area. Federal, state, and local agency regulations for species-specific management and protection were reviewed. Impacts are classified as either short term or long term. Short-term impacts are those that would be limited to the duration of project activities (0 to 4 years) and long-term impacts are those that would last past project completion. Mitigation measures were identified that would decrease impacts to wildlife affected by implementing the project alternative(s).

3.2 Significance Criteria

Potential impacts to wildlife, including mammals, migratory birds, and eagles are indicated by effects and significance criteria that include loss or degradation of habitat due to inundation, decrease in landscape connectivity, altered river flows resulting in loss of habitat access, construction-related disturbances and increase in human activity, and an increase in human activity that will hinder the habitability of the area for wildlife. Significance criteria used to analyze the potential impacts of the project on wildlife resources include factual and scientific information and regulatory standards of federal and state agencies. Table 4 lists wildlife impact indicators and significance criteria.

Table 4. Wildlife impact indicators and significance criteria

Impact Indicator	Significance Criteria
WL1 - Permanent loss or degradation of suitable habitat	Reduction of habitat quality or quantity substantial enough to impact breeding, rearing and/or foraging of species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations by the IDFG, USFS, and/or USFWS
WL2 - Decreased landscape connectivity	Habitat alterations that permanently interfere with the movement of any native resident or migratory wildlife species, disruption of established native resident or migratory wildlife corridors, or impediment of the use of native wildlife nursery sites

Impact Indicator	Significance Criteria
WL3 - Altered river flows resulting in loss of habitat access	Inundation or degradation of riparian habitat as a result of higher water flows; significant reduction in ability for wildlife to access or cross water due to dangerous, high flow conditions
WL 4 – Construction-related disturbance due to noise and human activity	Disturbance, injury, or death of wildlife that could permanently reduce populations of species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations by IDFG, USFS, and/or USFWS
WL5 - Increase in human activity or disturbance due to project implementation that will hinder the habitability of the area for wildlife	Long-term increase in human activity due to project implementation deterring wildlife from inhabiting the area

3.3 Direct, Indirect, and Cumulative Impacts

3.3.1 Alternative A – No Action

Under Alternative A, the conditions for wildlife populations and habitat would remain as they currently exist because there would be no increase in the Anderson Ranch Dam height or construction of the associated reservoir rim projects, access roads, or facilities. No construction would occur at the dam site and no facilities around the reservoir rim would be relocated to accommodate higher water levels; thus, there would be no construction-related impacts. In addition, operations and maintenance of Anderson Ranch Dam would not change and downstream releases from Anderson Ranch Dam would not change.

Alternative A would not result in significant impacts to wildlife because there would be no project-related loss or degradation of habitat, disturbance to wildlife, or decreased landscape connectivity. Wildlife patterns and trends for habitation would continue as they currently occur. Impacts to wildlife in the area would continue from seasonal inundation fluctuations, habitat loss from invasive species (Vegetation Specialist Report, Appendix B) and increases in human activity that are likely to occur under current growth trends in recreational pressure and development in the area. Ongoing dispersed camping and day use activities along the reservoir and South Fork Boise River would continue to cause degradation of wildlife habitat and disturbance to wildlife in those areas.

3.3.2 Alternative B – 6-foot Anderson Ranch Dam Raise

A 6-foot dam raise would include short-term construction-related activities that include an increase in human and vehicular activity and vegetation/tree removal along the reservoir rim. Long-term, the 6-foot surface water elevation increase will inundate an additional 146 acres of land around the reservoir rim at full pool. This would only occur in years with sufficient runoff, or roughly 60% of years as modeled. The additional area of inundation is

approximately a 7% increase in active capacity at Anderson Ranch Reservoir and would last for an estimated 14 additional days. (Hydrology/ Water Operations Specialist Report, Appendix B of the EIS).

WL1 – Permanent Loss or Degradation of Suitable Habitat - Inundation

In years full pool is achieved, both short-term and long-term impacts to wildlife habitat would be expected due to increased inundation. The additional acres that would experience inundation are exclusive to areas along the edge of the reservoir, and along the lower part of tributary streams that enter upstream of the dam. Vegetation will be submerged along the shoreline that provides forage, shelter, and breeding habitat for bird and mammal species. Long term, these areas would be converted from upland areas to wetland areas that provide different functions and habitat. The larger shrub and woody vegetation such as willows and cottonwoods are highly likely to survive the additional 14 days of inundation, during the 60% of years full pool is achieved (Vegetation Specialist Report, Appendix B of the EIS). Herbaceous riparian vegetation would also likely be able to withstand short periods of increased inundation. Other less flood-tolerant species, particularly conifers, would eventually die with prolonged exposure to water and be replaced with flood-tolerant riparian and wetland vegetation. Shifts in vegetation would occur gradually over time as high-water years are achieved.

Conifer mortality could result in some loss of breeding habitat over the long term for certain bird species that use those trees for nests, such as eagles and northern goshawks. Suitable nearby habitat will be unaffected by inundation and remain available for use by these species. Large tree mortality could, however, benefit other species in the area by creating additional snags available for nesting. Special status species in the project area that nest in tree cavities include the flammulated owl, Lewis's woodpecker, and white-headed woodpecker (National Audubon Society, 2019; USFS, 2020). Fishers will also den in hollows of large snags (Schwartz et al., 2013). Townsends big-eared bats and little brown bats roost in snags, although no observations of these species have been documented along the reservoir (IDFG, 2019b; Montana Field Guide). The density of tree species more tolerant of inundation, such as most willow species and cottonwood, could increase in the future and improve breeding conditions for other bird species, as well as foraging for ungulates such as moose. These beneficial impacts would be long term because tree mortality and shifts in vegetation from inundation usually occurs over many years. Long-term adverse impacts to wildlife from inundation would be minor because significant changes in tree species are not expected due to the small area affected.

Adverse impacts to wildlife could occur where foraging habitat or nesting sites for waterfowl or burrowing wildlife are present along currently undisturbed portions of the shoreline. Several sensitive ground-nesting bird species are known to breed adjacent to Anderson Ranch Reservoir shoreline, including Clark's and western grebes, long-billed curlew, sandhill crane, and willet (IDFG, 2019b). These species are listed as SGCN, USFS sensitive, and/or are protected under the MBTA. Their nesting seasons are described in Table 5. Common loon has been observed in the area during the spring migration but has not been

observed to nest there (USFS, 2020). During the years that achieve full pool elevation following completion of the project, increased reservoir levels would inundate ground nests along the shoreline, causing direct loss of eggs and requiring breeding individuals to expend energy to establish a new nest site. The period of additional inundation would overlap most of the incubation periods for the species identified in the area. Although these impacts are adverse and considered long term per analysis criteria, they are considered minor because nearby suitable habitat is available for foraging and relocation, although competition for food and other resources would increase between displaced individuals and wildlife already using those habitats. Species that nest, burrow, and forage along the shoreline are likely adapt to slight shifts in habitat over time because reservoir fluctuations already occur. Because these species will be able to use nearby habitat, no permanent loss of habitat for waterfowl or burrowing wildlife is expected and impacts are not considered significant.

Table 5. Nesting season of sensitive bird species known to inhabit the project area

Scientific Name	Common Name	Nesting Season
Haliaeetus leucocephalus	Bald eagle	January 1 – August 31
Haemorhous cassinii	Cassin's finch	May 15 – June 15
Aechmophorus clarkii	Clark's grebe	May 1 – July 31 (ground nesting)
Gavia immer	Common loon	May 1 – July 31 (ground nesting)
Otus flammeolus	Flammulated owl	April 15 – May 31
Aquila chrysaetos	Golden eagle	January 1 – August 31
Centrocercus urophasianus	Greater sage-grouse	April 1-June 15 (ground nesting)
Melanerpes lewis	Lewis's woodpecker	June 15 – August 15
Numenius americanus	Long-billed curlew	May 1 – July 31 (ground nesting)
Falco peregrinus anatum	Peregrine falcon	April 1 – August 31
Oreoscoptes montanus	Sage thrasher	May 1 – August 31 (ground nesting)
Antigone canadensis	Sandhill Crane	April 15 – July 31 (ground nesting)
Aechmophorus occidentalis	Western Grebe	May 1 – July 31 (ground nesting)
Picoides albolarvatus	White-headed woodpecker	May 1 – July 31

Scientific Name	Common Name	Nesting Season
Tringa semipalmata	Willet	May 1 – June 15 (ground nesting)

Source: Idaho Department of Fish and Game and U.S. Fish and Wildlife Service

In summary, increased inundation would not result in a significant impact to the loss or degradation of suitable habitat affecting breeding, rearing, or foraging for any species due to the small spatial extent of habitat effected, the brief period of time habitat would be inundated, and the availability of nearby similar suitable habitat. Impacts would occur along a relatively narrow strip of shoreline, and some of the affected areas do not contain vegetation or provide wildlife habitat.

WL1 – Permanent Loss or Degradation of Suitable Habitat - Construction

Several USFS R4 sensitive wildlife species have been observed in the project vicinity or have the potential to occur (Table 2). Construction at the dam, around the rim of the reservoir, and along Cow Creek Road at the new alignment, is scheduled to begin as early as March and April. Removing vegetation during this time of the year could have adverse impacts to nesting of multiple sensitive bird species, particularly those that nest on the ground, such as greater sage-grouse (Idaho Sage Grouse Advisory Committee, 2006) and sage thrashers. Impacts to ground nesting birds would be short term for the duration of construction phases; however, disturbance could result in abandoning or destroying nests and the death of offspring, which could result in reduced populations. Impacts to breeding habitat could be potentially significant, however would be reduced by requiring that vegetation removal take place in the winter months ahead of the nesting season. It could be reasonably assumed that birds would avoid the newly cleared area and utilize similar nearby suitable nesting habitat. If winter vegetation clearing could not take place, surveys should be completed ahead of any construction activity to confirm there are no active nests or leks that would be disturbed, and to apply mitigation measures if they are found.

Greater sage-grouse are observed annually in the vicinity of Cow Creek Road (HD 131), and recent surveys have documented the presence of nearby leks (IDFG, 2020a; USFS, 2020). Compliance with the USFS 2015 Greater Sage-grouse FIES would be required. This would include adhering to the applicable standards and guidelines outlined in section 1.1.1, which require avoiding surface disturbance or disruption to birds during breeding and nesting season (March 1 to June 15), and not conducting road maintenance activities or expansion of borrow pits within 2 miles from the perimeter of active leks during lekking (from March 1 to April 30) from 6 p.m. to 9 a.m.

Columbia spotted frogs occur below the dam along the South Fork Boise River. Breeding occurs within ponds at barrow pits proposed for use as a part of this project. Populations also occur along several of the tributaries that feed into Anderson Ranch reservoir where road or facilities modifications are proposed, including Fall Creek, Evans creek, Wood Creek, and

Wilson Creek (USFS, 2020). The proposed project would have direct adverse impacts to Columbia spotted frogs by either removing breeding habitat or direct mortality possibly during the breeding period causing loss of all age classes. This could result in reduced populations; therefore, these impacts could be potentially significant for this species. As determined in the Boise Forest Plan, mitigations are necessary if actions would disrupt reproductive success. Impacts would be reduced by either a seasonal restriction for construction activities, or by clearing the site all through the breeding season with surveys.

Spotted bats have been observed in the South Fork Boise River canyon near Danskin bridge (USFS, 2020). Although formal surveys have not occurred yet for this area, they are believed by BNF to have a high likelihood for presence throughout the canyon. Damage to roosting habitat could occur if any removal of rock outcrops is required for construction projects or staging areas, some of which is proposed for realignment of HD 131. Due to the limited areas where this activity is proposed, potential impacts to spotted bats would be relatively minor so are not considered significant; however, these impacts could be reduced even further or eliminated by performing surveys for presence of roosting bats at any areas requiring rock removal or blasting.

Large tree removal is required at Curlew Creek, Evans Creek, and Fall Creek Boat Ramp to facilitate improvements required to accommodate the increased reservoir elevation (see Recreation Specialist Report, Appendix B of the EIS). The trees would be replaced in number and type; however, habitat for bird species reliant on the higher canopy would be adversely impacted while the new saplings grow over many decades. Sensitive and/or protected species frequently observed in these areas that utilize this habitat include bald and golden eagles, flammulated owls, Lewis's and white-headed woodpeckers, among many other resident and migratory birds (USFS, 2020). Areas to be cleared have no reported eagle nesting sites (IDFG, 2020a), but surveys would be needed verify that these large trees are not occupied nest sites of other protected bird species. As long as there are no active nesting sites present, removal of these trees is not anticipated to be a significant long-term impact because suitable large tree canopy habitat will remain within the immediate vicinity.

In summary, construction associated with Alternative B would have short-term and long-term adverse impacts to wildlife. These adverse impacts could be potentially significant for certain species, including greater sage-grouse and Columbia spotted frogs; without mitigation, there is a likelihood that actions would result in loss of breeding habitat, disruptions during breeding and nesting season, and/or direct mortality of individuals. Impacts to these species would be addressed through compliance with USFS and USFWS regulations, as well as mitigation measures implemented prior to and during construction. Mitigation would reduce these impacts to less than significant so long as disruptions to breeding and direct mortality are avoided.

WL2 – Decreased landscape connectivity

Alternative B will not modify the landscape such that it would permanently disrupt wildlife movement within the project area. Project design features are all associated with current

developed facilities and roads around the reservoir rim and at the existing dam. Areas cleared of vegetation will be restored after construction is completed, so would not result in permanent disruptions in habitat connectivity.

During the approximate 47-month construction period, reservoir levels will be lowered due to operational restrictions associated with the required coffer dam. This may cause a short-term moderate adverse effect on wildlife breeding, rearing, or foraging on or near the shoreline. Mammals such as elk, mule deer, moose, and black bear maintain ample upland browsing and foraging habitat away from the edges of the reservoir and in tributaries where additional water sources are available. Downstream minimum flows will be met, maintaining habitat along the South Fork Boise River during construction, and habitat upstream of the reservoir will remain unaffected. Post-construction, water operations will be restored to historical regimes with no change to existing habitat expected.

Riparian areas along the South Fork Boise River serve as an important movement corridor for wildlife. Riparian habitat provides cover for migration, breeding, and foraging, and a place to escape predators. Construction activities for approximately 47 months at the dam site and along HD 121 along the river have the potential to disrupt movement from the lower South Fork to upstream of the reservoir through these riparian areas. Also, shorter duration road, bridge and facilities modification projects around the reservoir to accommodate the new full pool elevation of 4202 feet could also disrupt movement along the shoreline and to and from tributary streams and the upper South Fork. These moderate adverse impacts will be short-term for the duration of construction and would not permanently interfere with the movement of any native resident or migratory wildlife species. Therefore, no significant impacts will occur due to implementation of Alternative B.

WL3 – Altered river flows resulting in loss of habitat access

Water modeling completed by Reclamation indicates that post-construction water operations will continue to be within historical ranges. The water in Anderson Ranch Reservoir is managed in coordination with downstream Arrowrock Reservoir and Lucky Peak Reservoir. The three reservoirs have a total combined capacity of 1,067,500 acre-feet of water. The additional 29,000 acre-feet proposed to be added as part of Alternative B, in conjunction with the total existing capacity of the reservoir system, will require no changes to the existing operations of downstream South Fork Boise River flows. Additional information regarding the water modeling, future demand scenarios, and South Fork Boise River flows is included in the Hydrology/ Water Operations Specialist Report in Appendix B of the EIS. No long-term impacts to the South Fork Boise River flow adversely impacting habitat are anticipated to occur. In the short term, unseasonably low flows may be realized due to the coffer dam construction within Anderson Ranch Reservoir and the required drawdown. Reclamation water modeling was completed, and minimum flows are anticipated to be met. In general, those flows are for fish survival.

> 300 cfs (cubic feet per second) from September 16 to March 31 (fall/winter fish habitat maintenance and survival)

600 cfs from April 1 to September 15 (rainbow trout spawning and rearing habitat maintenance).

More information regarding impacts of flows on aquatic species is included in the Fish and Aquatic Species Specialist Report in Appendix B of the EIS. Due to minimum flows being met during and after construction, impacts to loss of wildlife habitat access during the construction period along the South Fork Boise River would be negligible.

WL4 – Construction-related disturbance due to noise and human activity

Construction would be expected to have a direct, moderate adverse effect on wildlife. Generally involving heavy equipment and dump trucks, construction would occur at the dam and along the reservoir rim at developed recreational facilities, along short road sections and at two bridges as described Chapter 2 of the EIS. Disturbance from noise, light, and human activity during construction could disrupt foraging, breeding, and nesting activities of wildlife in the project area. Construction activities could also result in injury or death of wildlife that inhabit impacted areas.

Around the reservoir rim, construction at the various sites is staggered, which will reduce impacts to wildlife. Additionally, the average length of construction at each site is projected to be approximately 30 days, with exception of a few sites requiring more intensive work (6-foot Dam Raise Engineering Summary in Appendix C of EIS). The longest duration is expected at Pine Bridge, which is estimated around 90 days. During these periods of construction wildlife is likely to avoid these areas; however, alternate nearby habitat will be available and many of these sites are recreational facilities where human activity already deters sensitive wildlife presence. Impacts to species that utilize habitat surrounding rim construction sites could be reduced if construction were required to take place outside of breeding or nesting seasons when sensitivity to human activity increases. Species of concern commonly found along the reservoir rim include moose, bears, bald and golden eagles, flammulated owls, Lewis's and white-headed woodpeckers, and various other ground-nesting birds. Pre-construction surveys should be performed to ensure actions do not result in direct injury or mortality of individuals. Due to the staggered timing and short duration of rim construction projects, these impacts will be short-term and are not expected to reduce populations of sensitive species in the area.

As described above for impacts related to habitat loss, greater sage-grouse are observed along Cow Creek Road (HD 131) with leks in the vicinity. This area is breeding habitat for sage-grouse, and behavior or nesting sites could be disturbed by construction-related activities associated with the realignment of HD 131, as well as increased detour traffic (IDFG, 2020a; USFS, 2020). Impacts to breeding populations of greater sage-grouse could be potentially significant; however seasonal and spatial restrictions for construction would reduce these impacts. Compliance with the USFS 2015 Greater Sage-grouse FIES would be required. This would include adhering to the applicable standards and guidelines outlined in section 1.1.1, which require avoiding surface disturbance or disruption to birds during breeding and nesting season (March 1 to June 15), designing road construction to the minimum standard

and width, and not conducting road construction or maintenance activities within 2 miles from the perimeter of active leks during lekking (from March 1 to April 30) from 6 p.m. to 9 a.m.

The South Fork Boise River is important winter range for many species of concern, including mule deer, elk, and eagles (USFS, 2020). Migrating deer and elk utilize these areas from roughly November to May when deeper snowpack pushes them down from higher elevations. There are seasonal closures to protect wintering wildlife, including motor vehicle restrictions on the lower South Fork near the proposed detour across Cow Creek Bridge, and along the northeast portion of the reservoir along HD 61 (IDFG, 2020b). Construction-related activities and traffic below the dam, as well as increased vehicle traffic using the detour to Cow Creek Bridge, could adversely impact these species during the sensitive winter months when foraging becomes more difficult and access to suitable habitat becomes crucial for survival (IDFG, 2019c; Lendrum et al., 2013). Providing year-round maintenance of the proposed detour would also increase the risk of more vehicle collisions from higher than average traffic along HD 121 and HD 131, which isn't normally maintained during the winter. Construction proposed in the late-fall and winter months to avoid disruptions to recreation at Curlew Creek, Fall Creek, and Elk Creek, could also adversely impact wildlife that is moving through those areas during the winter. Snow levels during some of the critical winter months would be expected to limit construction and related vehicle travel; therefore, no impacts would occur during those months. Impacts to winter range would be short-term for the duration of the project, and activity levels during the winter would be expected to return to normal use under current seasonal restrictions; therefore, impacts are not expected to result in long-term reductions in population, and are considered significant.

The long duration of construction activity at the dam site would have an adverse impact on wildlife by deterring them from occupying the area for the duration of construction, approximately 47 months. Disturbance from noise, light, and human activity during construction could disrupt foraging, breeding, and nesting activities near the dam site. There is one documented occupied bald eagle nest about a quarter mile from Anderson Ranch Dam that could be impacted by construction activities (USFS, 2020). As of April 2020, this nest was confirmed to have an adult sitting on eggs (USFS, 2020). Eagles are most vulnerable to disturbance early in the nesting period, roughly February through April. Disturbance during this critical period may lead to nest abandonment. Human activity near a nest later in the nesting cycle may cause premature fledging, thereby lessening the chance of survival (USFWS, 2007). With the availability of nearby large trees for alternative nesting sites, this disturbance would not likely impact their ability to maintain their territory and would not result in overall population reduction. However, since they are protected under the Eagle Act, any activity causing disturbance to nesting eagles requires consultation with USWFS and an application for an incidental take permit.

Other sensitive wildlife in the project area will be deterred from the vicinity of the dam for the duration of construction, including wolves, bears, moose, and bats. The gray wolf has a range of 50 to more than 1,000 square miles (Idaho Legislative Wolf Oversight Committee,

2002). With ample range outside of the project area vicinity, wolves are likely to avoid areas under construction with higher human activity and use other suitable habitats. The same avoidance behavior would be reasonably assumed for other mammals of concern. Similar suitable habitat would be available downstream or further from the dam along the reservoir shoreline and movement through the area could still occur at night once activities have stopped. Therefore, impacts to other sensitive mammal species would be minor, and are not considered significant.

In summary, disruptions from construction activity associated with Alternative B would have short-term direct adverse impacts to wildlife. These impacts would not be substantial enough to result in a trend of permanently reducing populations of any species of concern in the project area; therefore, impacts are not considered significant.

WL5 – Increase in human activity or disturbance due to project implementation that will hinder the habitability of the area for wildlife

Alternative B includes no increase in facility capacity that would encourage an increase in long-term human activity in or around the reservoir or the South Fork Boise River. However, recreational use has been increasing at Anderson Ranch Reservoir and along the South Fork Boise River. Restrictions to recreational facilities or other activities as a result of temporary closures, including day use, and dispersed camping, could concentrate human activity in previously less-disturbed areas or lead to new unauthorized use (Recreation Special Report, Appendix B). Increased overall human activity and disturbance directly related to Alternative B is associated with construction and would be expected to return to normal use trends after project implementation. Again, because no increase in facility capacity is included in Alternative B and impacts would be short-term, no significant impacts to wildlife are expected.

3.3.3 Alternative C – 3-foot Anderson Ranch Dam Raise

A 3-foot dam raise would include the same short-term construction-related activities as described for Alternative B. These include an increase in human and vehicular activity and vegetation/tree removal along the reservoir rim. As described in Chapter 2 of the EIS, Alternative C does not include realignment of Pine Airport, raising of Pine Bridge and reduces construction impacts to Pine Campground, as well as a slight reduction of project and inundation footprints. The total project duration is approximately 44 months while the construction duration is approximately 40 months, 7 months less than Alternative B. Long term, the 3-foot surface water elevation increase will inundate an additional 73 acres of land around the reservoir rim at full pool. As stated for Alternative B, this would only occur in years with sufficient runoff, or roughly 60% of years as modeled. The additional area of inundation is approximately a 3% increase in active capacity at Anderson Ranch Reservoir. The shoreline would be inundated above the current full pool elevation of 4196 for approximately 18 days under normal spring operational scenarios. (Hydrology/ Water Operations Specialist Report, Appendix B of the EIS).

WL1 – Permanent Loss or Degradation of Suitable Habitat - Inundation

Impacts to wildlife from inundation would be similar for Alternative C and described for Alternative B, but with 50% less acreage of additional inundation. In summary, increased inundation would not result in substantial loss or degradation of suitable habitat affecting breeding, rearing, or foraging for any species due to the small spatial extent of habitat effected, the brief period of time habitat would be inundated, and the availability of nearby similar suitable habitat. Impacts would occur along a relatively narrow strip of shoreline, and some of the affected areas do not contain vegetation or provide wildlife habitat. No permanent loss or degradation will occur with Alternative C, therefore no significant impacts are identified.

WL1 – Permanent Loss or Degradation of Suitable Habitat - Construction

Impacts to wildlife from construction would be similar for Alternative C and described for Alternative B, but with an overall shorter duration of project construction and fewer road modifications required to accommodate a full pool elevation of 4199. As stated in Section 3.3.2, pre-construction surveys would be needed verify that construction areas and large trees marked for removal are not occupied nesting sites for sensitive resident or migratory bird species, including eagles and greater sage-grouse, or active breeding sites for Columbia spotted frog. Compliance with management regulations for these species would be required to mitigate impacts to these species and their habitat. Removing trees and other vegetation could result in significant impacts to breeding habitat of species of concern, however they would be reduced by adhering to Boise Forest Plan and USFS 2015 Greater Sage-grouse FEIS standards and guidelines for conservation of these species. Suitable habitat will remain within the immediate vicinity, and restoration of native plants would occur after completion.

WL2 - Decreased landscape connectivity

Impacts to wildlife from inundation would be similar for Alternative C and described for Alternative B, but with a shorter duration of project construction and fewer road modifications required to accommodate a full pool elevation of 4199. Alternative C does not propose to modify the landscape such that it would permanently disrupt wildlife movement within the project area. Because of this, impacts are not considered significant.

WL3 – Altered river flows resulting in loss of habitat access

Wildlife impacts are the same for Alternative C as described for Alternative B. Due to minimum flows being met during and after construction, impacts to loss of wildlife habitat access during the construction period along the South Fork Boise River would be negligible.

WL4 – Construction-related disturbance due to noise and human activity

Impacts to wildlife from construction disturbance would be similar for Alternative C as described for Alternative B, but with a shorter duration of project construction and fewer road modifications required to accommodate a full pool elevation of 4199. In summary, disruptions from construction activity associated with Alternative C would have short-term direct adverse impacts to wildlife. These adverse impacts would not be substantial enough to result in a trend of permanently reducing populations of any species of concern in the project area; therefore, impacts are not considered significant.

WL5 – Increase in human activity or disturbance due to project implementation that will hinder the habitability of the area for wildlife

Wildlife impacts are the same for Alternative C as described for Alternative B. Alternative C includes no increase in facility capacity that would encourage an increase in long-term human activity in or around the reservoir or the South Fork Boise River. Any increases in human activity would be related to current trends for growth in recreation and development in the area, and would not be a result of project implementation. No significant impacts to wildlife from human activity are expected because animals would not be deterred from using habitat once the project is complete.

3.3.4 Cumulative Impacts

Cumulative effects are analyzed for the Alternative B and Alternative C. Cumulative effects are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The cumulative effects analysis considers projects, programs, and policies that are not speculative and are based on known or reasonably foreseeable long-range plans, regulations, operating agreements, or other information that establishes them as reasonably foreseeable. While no present actions are identified, Reclamation has identified two past actions: Pine Bridge replacement and the 4-foot Anderson Ranch Dam crest raise for security enhancement. Reclamation has also identified two potential future projects to be considered for the cumulative impact analysis: Cat Creek Energy Project and South Fork Boise River Diversion Project. Additional project proposal information for these, as known by Reclamation to date, is provided in Chapter 2 of the EIS.

The proposed 2025 dam construction date is well removed in time from the 2018 installation of the newly replaced Pine Bridge and the 2010 construction of the security berm along the dam crest. Any potential direct or indirect impacts to wildlife from the proposed Pine Bridge construction or dam raise would not be additive; therefore, no cumulative impacts to wildlife are identified for these past actions.

The Cat Creek Energy project proposes an energy and water storage renewable power station; a 100,000-acre-foot reservoir created near the mouth of Cat Creek above Anderson Ranch Reservoir; a pipeline from Anderson Ranch reservoir to Cat Creek reservoir; and wind and solar energy equipment. The South Fork Boise River Diversion Project is a pipeline and

pumping station project proposed to be located on the far southeast side of the reservoir toward the dam. A pipeline would carry water to Elmore County, approximately 28 miles to the southwest of the reservoir. It can be assumed that the Cat Creek Energy project would cause disturbance to wildlife and habitat loss as a result from construction of a pipeline from Anderson Ranch reservoir to Cat Creek reservoir, construction of the reservoir, and installation of the wind and solar energy equipment and related facilities. The South Fork Boise River Diversion Project would also cause disruptions to wildlife due to installation of a pipeline. These projects would impact wildlife through the removal of additional vegetation, displacement, breeding interference and/or direct mortality from construction activities. Wind turbines could result in injury or mortality of migratory and other sensitive resident birds discussed for the proposed Alternatives.

Minor disturbances to wildlife would occur during construction of the proposed Alternatives at Anderson Ranch and would cause minor losses of habitat along the shoreline area from inundation and vegetation clearing. Impacts to most species are not considered significant, although would contribute to an overall trend of reduced habitat within the region. There are, however, impacts to certain species, namely greater sage-grouse and Columbia spotted frogs, that have been identified as being potentially significant unless mitigation measures are properly implemented. If greater sage-grouse or spotted frogs that occupy habitat near or within the construction zones of Cat Creek Energy or South Fork Boise River Diversion were to be disturbed during breeding or suffer direct mortality from either or both projects, these impacts could contribute to the overall decline of this species in the region. In combination with impacts on wildlife from Cat Creek Energy and South Fork Boise River Diversion projects, the proposed Alternatives would cumulatively impact wildlife in the Boise River basin. All future projects would be expected to require compliance with the same federal and state laws and wildlife management regulations as are required for the proposed Alternatives, with similar mitigation to prevent significant impacts to sensitive species such as greater sage-grouse. Any cumulative effects on wildlife, although not anticipated to be significant, would be dependent on activities developed for construction and operations of the Cat Creek Energy Project and the South Fork Boise River Diversion Project.

3.3.5 Mitigation

Potentially significant impacts as a result of the proposed alternatives are identified for several species of concern because actions could disrupt breeding populations and therefore conflict with USFS regulatory standards and guidelines. Compliance with Boise Forest Plan and USFS 2015 FEIS for Greater Sage-Grouse would require mitigative actions prior to and during construction to minimize impacts to these species. Pre-construction surveys would confirm presence or absence of sensitive species prior to ground disturbance and tree removal. Timing restrictions during breeding and nesting seasons would be required, as well as spatial buffers. Minimization measures would be applied during construction to reduce impacts to sensitive species and other species of conservation concern. Consultation with USFWS will occur to obtain an incidental take permit for disturbance to the eagles nesting near the dam.

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