

**WILDLIFE AND BOTANICAL RESOURCES
IDYLWILDE HYDROELECTRIC PROJECT**



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Wildlife and Botanical Resources

Idylwilde Hydroelectric Project

Introduction

The City of Loveland, Colorado (City) is proposing to relicense Federal Energy Regulatory Commission (FERC) Project No. 2829, Idylwilde Hydroelectric Project (the Project). The Project is owned and operated by the City. Water Consult retained ERO Resources Corporation (ERO) to prepare preapplication materials associated with wildlife and botanical resources for the proposed relicensing. This report addresses the requirements for a preapplication document described in FERC's Integrated License Application Process (18 CFR 5.6).

Project Description

The Project is on the Big Thompson River along U.S. Highway 34 (U.S. 34), 14 miles west of the City (Figure 1). The dam is on National Forest lands managed by the Arapaho-Roosevelt National Forest. A hydroelectric plant was built on municipally owned property, allowing generation and distribution of energy from the Project to begin in 1925. The original dam and hydroelectric plant were destroyed in the Big Thompson River flood on July 31, 1976, and were subsequently rebuilt and returned to full service in 1981.

The dam is 50.5 feet high and has a total length of 239.1 feet. The reservoir has a surface area of 3.67 acres at spillway elevation, and impounds about 45 acre-feet of water. A minimum bypass flow of 7 cubic feet per second (cfs) is maintained through the dam to provide suitable habitat in the stream reach below. The penstock, 9,534 feet in length, originates at the dam and delivers water to two 450-kilowatt turbine-generator units in Loveland's Viestenz-Smith Mountain Park. The penstock crosses Forest Service and privately owned lands, and U.S. 34. Two taps along the penstock provide access to water for fire protection and 15 irrigation services are tapped into the line. The power generated is connected to the City's distribution system through a 22-kilovolt transmission line 1,153 feet in length.

Existing Environment

VEGETATION

The Project is in the Big Thompson Canyon in Larimer County, Colorado at an elevation of 6,000 feet. The reservoir is on the Big Thompson River, a perennial stream. The northern bank of the reservoir consists mostly of large riprap, with a few narrowleaf cottonwood (*Populus angustifolia*), elm (*Ulmus* sp.), and Russian olive (*Elaeagnus angustifolia*) trees above the bank. Upland species observed along the northern terrace surrounding the parking lot include crested wheatgrass (*Agropyron desertorum*),

intermediate wheatgrass (*Thinopyrum intermedium*), smooth brome (*Bromopsis inermis*), rabbitbrush (*Chrysothamnus nauseosus*), horsetweed (*Conyza canadensis*), and common mullein (*Verbascum thapsus*). The southern bank of the reservoir is a steep cliff and eroded bank, with ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) forest above the bank.

The penstock is, in part, along a riparian terrace downstream of the reservoir for a distance of 3,100 feet. The terrace is dominated by ponderosa pine and sandbar willow (*Salix exigua*), with an understory of smooth brome, dropseed (*Sporobolus* sp.), and wheatgrass (*Pascopyrum* sp.). Farther east, the penstock is in a ponderosa pine forest with a smooth brome-dominant understory. The hydroelectric plant and outlet are in a landscaped park, with mostly ponderosa pine, landscape variety shrubs, and mowed bluegrass (*Poa* sp.) dominating the vegetation.

Federally Listed Species

The U.S. Fish and Wildlife Service (Service) lists several threatened and endangered plant species potentially affected by projects in Larimer County (Table 1).

Table 1. Federally threatened, endangered, and candidate plant species potentially affected by projects in Larimer County.

Common Name	Scientific Name	Status*	Habitat	Potential Habitat Present in Project Area
Colorado butterfly plant	<i>Gaura neomexicana</i> ssp. <i>coloradensis</i>	T	Subirrigated, alluvial soils on level floodplains and drainage bottoms between 5,000 and 6,000 feet in elevation	Yes
North Park phacelia	<i>Phacelia formosula</i>	E	Sparsely vegetated areas on steep ravines, sandy hills, or bluffs in North Park	No
Ute ladies'-tresses orchid	<i>Spiranthes diluvialis</i>	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 6,500 feet in elevation	Yes
Western prairie fringed orchid**	<i>Platanthera praeclara</i>	T	Moist to wet prairies and meadows	No

*T = Threatened Species, E = Endangered Species.

**Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.

Source: Service 2010.

The North Park phacelia does not have suitable habitat within the Project vicinity. The western prairie fringed orchid is discussed in the Wildlife section under Platte River

species. The Colorado butterfly plant and Ute ladies'-tresses orchid and are discussed below. No critical habitat for any of these species occurs within the Project vicinity.

Ute Ladies'-Tresses Orchid and Colorado Butterfly Plant

The Colorado butterfly plant (CBP) and Ute ladies'-tresses orchid (ULTO) are federally threatened species found in similar habitat along streams and wet meadows in the Colorado Front Range (Service 1992). The CBP is a short-lived perennial herb found in moist areas of floodplains. It occurs on subirrigated alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations from 5,000 to 6,400 feet (NatureServe 2006). The ULTO occurs at elevations below 6,500 feet in moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes where the soil is seasonally saturated within 18 inches of the surface. Generally, ULTO occurs where the vegetative cover is relatively open and not overly dense or overgrazed. These species have not been recorded in the Project vicinity or in the Big Thompson River drainage (Service 1992). The reservoir contains steep rocky banks that likely would prevent the establishment of CBP or ULTO. Although areas of gravelly substrate occur on the riparian terrace downstream of the reservoir, the terrace is dominated by mesic and upland species, and does not contain any species usually associated with CBP or ULTO.

WILDLIFE

Federally Listed Species

The Service lists several threatened and endangered wildlife species potentially affected by projects in Larimer County (Table 2). Aquatic species (greenback cutthroat trout (*Oncorhynchus clarki stomias*) and pallid sturgeon (*Scaphirhynchus albus*)) are discussed in the Fisheries and Aquatic Resources Technical Report (Miller Ecological Consultants, Inc. 2011).

Many of the species listed as federally threatened, endangered, or as candidate or proposed species do not have suitable habitat within the Project vicinity, including the black-footed ferret, Canada lynx, greater sage-grouse, and mountain plover. The species that have potential habitat or that may be adversely impacted by the Project are discussed below. No critical habitat for any federally listed species occurs within the Project vicinity.

Table 2. Federally threatened, endangered, and candidate wildlife species potentially affected by projects in Larimer County.

Common Name	Scientific Name	Status*	Habitat	Potential Habitat Present in Project Area
Mammals				
Black-footed ferret	<i>Mustela nigripes</i>	E	Active prairie dog towns	No
Canada lynx	<i>Lynx canadensis</i>	T	Climax boreal forest with a dense understory of thickets and windfalls	No
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	T	Shrub riparian/wet meadows	Yes
Birds				
Greater sage-grouse	<i>Centrocercus urophasianus</i>	C	Sagebrush flats or hills between 6,000 and 8,500 feet in elevation	No
Interior least tern**	<i>Sterna antillarum athalassos</i>	E	Sandy/pebble beaches on lakes, reservoirs, and rivers	No
Mexican spotted owl	<i>Strix occidentalis</i>	T	Closed canopy forests in steep canyons	Yes
Mountain plover	<i>Charadrius montanus</i>	P	Shortgrass prairie	No
Piping plover**	<i>Charadrius melodus</i>	T	Sandy lakeshore beaches, river sandbars	No
Whooping crane**	<i>Grus americana</i>	E	Mudflats around reservoirs and in agricultural areas	No

*T = Threatened Species, E = Endangered Species, C = Candidate Species, P = Proposed species for listing.

**Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.

Source: Service 2010.

Preble's Meadow Jumping Mouse

Preble's meadow jumping mouse (Preble's) is a federally threatened species found in stream and riparian habitats along the Colorado Front Range and southeastern Wyoming. Preble's are known to occur 7 miles upstream of the reservoir along the North Fork Big Thompson River (Shenk 1998). Several trapping surveys conducted within 10 miles downstream of the reservoir found no Preble's (Wildland Consultants 2001a, 2001b; Meaney and Ruggles 1999). The reservoir does not contain suitable habitat for Preble's because the banks are very steep and provide little shrub habitat. Although the riparian terrace downstream of the reservoir provides some shrub habitat suitable for Preble's, the presence of U.S. 34 and rocky banks along the river likely preclude a population of Preble's from occurring.

Platte River Species

The interior least tern (*Sternula antillarum*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), and western prairie fringed orchid (*Platanthera praeclara*) are federally listed species that rely on habitat provided by the Platte River system. The Service has determined that historical and new depletions to the Platte River basin adversely affect federally listed species and their designated critical habitat along the Platte River in central Nebraska. The Platte River Recovery Implementation Program (Program) was created to provide Endangered Species Act (ESA) compliance for water users in the Platte River basin upstream of the Loup River confluence in Nebraska for effects on the target species and critical habitat, while managing certain land and water resources to provide benefits for those species. The Service issued a programmatic biological opinion in 2006, which determined that the Program, including the continuation of existing and certain new water-related activities in the Platte River basin, is not likely to jeopardize the continued existence of the four target species nor adversely modify designated critical habitat in Nebraska (Service 2006). The City is a member of the South Platte Water Related Activities Program (SPWRAP), which provides ESA compliance for its members regarding depletions to the Platte River and effects to these species (SPWRAP 2010). The Project area does not provide suitable habitat for the interior least tern, piping plover, or whooping crane; and the western prairie fringed orchid does not occur in Colorado. The proposed Project would not directly affect these species.

Mexican Spotted Owl

The Mexican spotted owl (spotted owl) is a federally threatened species that inhabits areas with steep exposed cliffs; canyons that are characterized by piñon-juniper; and old-growth forests mixed with Douglas-fir, ponderosa pine, and white fir. The steep exposed cliffs along the Big Thompson Canyon provide potential habitat for the spotted owl, and spotted owls are known to occur in Larimer County (NDIS 2010a). The known occurrence, however, is likely historical because no observations have been documented with the Colorado Natural Heritage Program (2011).

State Listed and Rare or Imperiled Wildlife Species

The majority of species on the Colorado Division of Wildlife (CDOW) threatened and endangered list do not have suitable habitat within the Project vicinity (CDOW 2010). The species potentially affected by the Project are discussed below.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is a state-listed threatened species protected by the Bald and Golden Eagle Protection Act (BGEPA) that nests and overwinters in Colorado. Typical bald eagle nesting habitat consists of forests or wooded areas that

contain tall, aged, dying, and dead trees (Martell 1992). No known nest sites occur within a 2-mile radius of the Project vicinity (NDIS 2010b). The reservoir provides some foraging habitat for bald eagles. The riparian areas downstream of the reservoir provide suitable nesting and roosting habitat, and the ponderosa pine forest also provides suitable nesting habitat.

American Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) is a Colorado species of concern and is protected under the Migratory Bird Treaty Act (MBTA). The CDOW has recommended buffers around active peregrine falcon nest sites. Peregrines prefer nesting on rugged, remote cliffs (Craig and Enderson 2004). Nests can be found in the Rocky Mountains at elevations up to 11,811 feet (White et al. 2002). The reservoir may provide hunting habitat for the American peregrine falcon, and the surrounding cliffs and ponderosa pine forest provides potential nesting habitat.

River Otter

The river otter (*Lutra canadensis*), a state threatened species, inhabits high quality perennial rivers that support abundant fish or crustaceans within many habitats ranging from semidesert shrublands to montane and subalpine forests. River otters require ice-free water in winter, which means they are usually found at low to moderate elevations (Fitzgerald et al. 1994). In Colorado, river otters have mainly been found on large rivers with adjacent riparian habitat. It is unlikely river otters are present in the Project vicinity because of the lack of riparian habitat and because the reservoir is typically frozen in the winter.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is a state species of special concern. In Colorado, the bat is usually found in abandoned mines, sagebrush, semidesert scrub, piñon-juniper forests, and ponderosa pine woodlands (Adams 2003). The ponderosa pine forest in the Project area provides suitable habitat for the Townsend's big-eared bat.

Northern Leopard Frog

The northern leopard frog (*Rana pipiens*) is a state species of concern that prefers the banks and shallow portions of marshes, wet meadows, ponds, lakes, and streams particularly where rooted aquatic vegetation is present. Potential habitat for the northern leopard frog is present along the margins of the reservoir, downstream of the reservoir along the river, and along the pond in Viestenz-Smith Mountain Park, where wetland vegetation is present.

Common Garter Snake

The common garter snake (*Thamnophis sirtalis*) is a state species of concern that inhabits marshes, ponds, and edges of streams. In Colorado, the common garter snake is restricted to floodplains of the South Platte River and its tributaries, and appears to prefer floodplains of streams (Hammerson 1999). The common garter snake is usually found below 6,000 feet in elevation. The Project area lies in a relatively narrow floodplain and is at the upper elevation limit of common garter snakes and, therefore, it is unlikely the species is present.

Commercially Important Wildlife

Big game species likely to occur in the Project vicinity include American elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), bighorn sheep (*Ovis canadensis*), and mountain lion (*Felis concolor*) (NDIS 2010c). These species are often found along riparian corridors and in ponderosa pine forest. Human disturbance from U.S. 34 may prevent a large population of these species from occurring within the Project area. Furbearing species likely to be present in the Project area include the American badger (*Taxidea taxus*), American beaver (*Castor canadensis*), bobcat (*Lync rufus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), common muskrat (*Ondatra zibethicus*), and raccoon (*Procyon lotor*).

Other Wildlife

Raptors, or birds of prey, are protected by the MBTA. Bald and golden eagles are also protected under the BGEPA. The golden eagle, bald eagle, osprey, Swainson's hawk, red-tailed hawk, American kestrel, and great horned owl may occur in the Project vicinity. The reservoir and riparian habitat downstream of the reservoir may provide foraging and nesting habitat for raptors, and nesting could also occur in the ponderosa pine forest.

Other wildlife species likely to be present in the Project vicinity include smaller mammals such as the Nuttall's cottontail (*Sylvilagus nuttallii*) and Abert's squirrel (*Sciurus aberti*). Common bird species found in ponderosa pine forest include Steller's jay (*Cyanocitta stelleri*), American robin (*Turdus migratorius*), and Pygmy nuthatch (*Sitta pygmaea*). Birds likely to occur in the riparian and wetland areas include mountain chickadee (*Poecile gambeli*), song sparrow (*Melospiza melodia*), American dipper (*Cinclus mexicanus*), yellow warbler (*Dendroica petechia*), and western wood-pewee (*Contopus sordidulus*).

Potential Impacts

DIRECT AND INDIRECT IMPACTS

Vegetation

The continued operation of the Project would have no direct or indirect impacts to the existing vegetation communities. The existing plant communities would be maintained, which are a mix of native and nonnative species. The fluctuations in water levels at the reservoir might allow for new establishment of native and nonnative species when water levels are low. However, minor fluctuations in reservoir levels normally occur only during winter months, when flows are low. During the spring, summer, and fall, flows into the reservoir are much higher than diversions through the penstock (Miller Ecological Consultants, Inc. 2010). Flow over the spillway would be maintained, with virtually no change or a small increase in reservoir elevation. Some riparian and wetland habitat would likely be inundated due to the reservoir that would otherwise provide habitat for various wildlife species; however, due to the small size of the reservoir, the facility would not have a significant impact on vegetation.

Federally Listed Species

It is unlikely the Project vicinity supports a population of CBP or ULTO, and the Project would have no effect on CBP or ULTO. The continued operation of the Project would have no impact on any of these species or their habitat, and would not decrease the likelihood of the survival or recovery of these species.

Wildlife

Federally Listed Species

The City is a member of the SPWRAP and, therefore, there would be no new effects to the interior least tern, piping plover, whooping crane, and western prairie fringed orchid from the continued operation of the Project.

Suitable habitat for Preble's and the Mexican spotted owl is present in the Project vicinity; however, the Project has existed for several decades and impacts to these species would have already occurred. The continued operation of the Project would have no impact on any of these species or their habitat, and would not decrease the likelihood of the survival or recovery of these species.

State Listed Species

The Project area contains suitable habitat for the bald eagle, American peregrine falcon, river otter, Townsend's big-eared bat, northern leopard frog, and common garter snake. River otter habitat in the Project area is suboptimal and the Project area is at the upper elevational limit of the known distribution of the common garter snake; thus, it is

unlikely that either species occurs in the Project area. The reservoir may provide foraging habitat for bald eagles and American peregrine falcons. Although the reservoir may inundate areas that would otherwise provide habitat for the northern leopard frog, suitable habitat is still present along the edge of the reservoir, downstream along the river, and at the outlet pond. The continued operation of the Project would have no impact on any of these species or their habitat, and would not reduce the likelihood of the survival and recovery of these species.

Commercially Important and Other Wildlife

The reservoir could impede movement for big game species along the riparian corridor. Human activities associated with the reservoir, such as maintenance activities and recreation, may cause wildlife to avoid the reservoir and surrounding habitat. The continued operation of the Project is not likely to have a significant impact to the general wildlife in the area.

CUMULATIVE IMPACTS

The only reasonably foreseeable action is implementation of the Windy Gap Firming Project, which would slightly increase flows in the river in the Project area during some months (Table 3) in average flow years or wet years (Bureau of Reclamation 2007). This would be at most a 9 percent increase in the average monthly flow of the river. In April of a wet year there would be an estimated flow decrease of 1 cfs (a 1 percent decrease), but flows would not decrease during any other month or in April of an average flow year. There would be no changes in flows during a dry year. The increased flow would be brought through the Adams Tunnel to the Big Thompson River. These small increases in flow would be too small to impact any wildlife or botanical resources in the Project area. Cumulative impacts from the continued operation of the facility in combination with the Windy Gap Firming Project would be negligible.

Table 3. Maximum possible monthly streamflow increase in Big Thompson River below Lake Estes due to Windy Gap Firming Project during an average or wet year.

Month	Predicted Monthly Flow Increase (cfs)
November – March	0
April	1
May	15
June	19
July	18
August	3
September – October	1

MITIGATION MEASURES

The continued membership in the SPWRAP would be necessary to mitigate for depletions from the continued operation of the Idylwilde Hydroelectric Plant. No additional mitigation measures are necessary.

Preliminary Issues and Recommended Studies

No preliminary issues or additional studies are necessary regarding wildlife and botanical resources.

Agencies Contacted

The agencies contacted for this report are:

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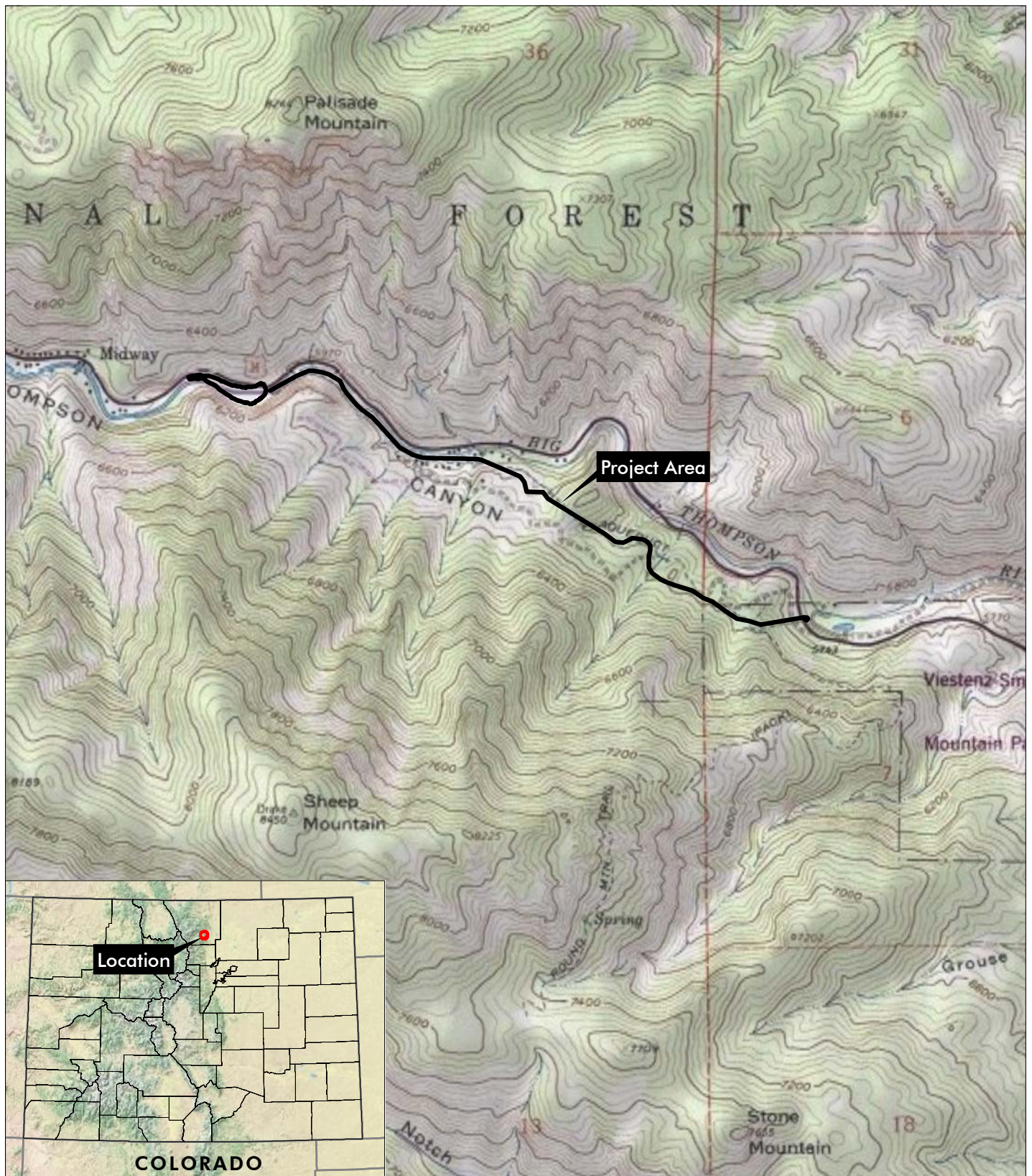
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Idylwilde Hydroelectric Project

Sections 1 and 2, T5N, R71W; Section 7, T5N, R70W; 6th PM

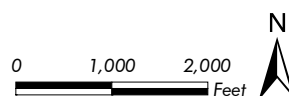
UTM NAD 83: Zone 13N; 474730mE, 4474958mN

Latitude, Longitude: 40.424874°N, 105.297895°W

USGS Drake, CO Quadrangle

Larimer County, Colorado

Figure 1
Site Location



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