Biological Survey Report for the Rancho Viejo Solar Project in Santa Fe County, New Mexico

MAY 2022

PREPARED FOR

Rancho Viejo Solar, LLC

PREPARED BY

SWCA Environmental Consultants

BIOLOGICAL SURVEY REPORT FOR THE RANCHO VIEJO SOLAR PROJECT IN SANTA FE COUNTY, NEW MEXICO

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List of Acronyms and Abbreviations

°F	degrees Fahrenheit
amsl	above mean sea level
BISON-M	Biota Information System of New Mexico
Commission	New Mexico Public Regulation Commission
EMNRD	New Mexico Energy, Minerals and Natural Resources Department
ESA	Endangered Species Act
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
M	meter
MW	megawatt
NMDGF	New Mexico Department of Game and Fish
NMSA	New Mexico Statutes Annotated
NRCS	Natural Resources Conservation Service
project	Rancho Viejo Solar Project
Rancho Viejo	Rancho Viejo Solar, LLC
SFPSWCD	Santa Fe – Pojoaque Soil and Water Conservation District
SWCA	SWCA Environmental Consultants
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

Rancho Viejo Solar, LLC (Rancho Viejo), is proposing to build the Rancho Viejo Solar Project (project), which would include a 1,003-acre solar facility, a 2.2-acre substation, 0.7-mile generation tie-in line (gen-tie), and a 1.4-mile access road, on private land in Santa Fe County, New Mexico. The project would be approximately 1 mile south of Santa Fe city limits and approximately 4.2 miles east of La Cienaga (see Figures A-1 and A-2 in Appendix A). The project would generate 100 megawatts (MW). SWCA Environmental Consultants (SWCA) completed a biological survey and prepared this associated report to support the permitting and completion of the project.

Because the solar facility's capacity would be less than 300 MW, this project is not subject to location approval from the New Mexico Public Regulation Commission (Commission). Location approval is required when a transmission line has a capacity of 230 or more kilovolts and is associated with a power plant that requires the Commission's location approval for new generation of 300 or more MW (62-9-3.B New Mexico Statutes Annotated [NMSA] 1978). In addition, the right-of-way width for the generation tie line, once fully designed, would not exceed the 100-foot-wide threshold for transmission line oversight by the Commission.

The biological survey completed for this report covers the 1,018.7-acre proposed location of the project (proposed project area) (Figure A-3). Rancho Viejo would clear and grade the entire project area, except for any sensitive areas that must be avoided.

This report details the evaluation of the potential impacts of the project on federally threatened or endangered species listed under the Endangered Species Act of 1973 (ESA), as amended (16 United States Code 531–1541 et seq.), state threatened or endangered species listed under the New Mexico Wildlife Conservation Act (17-2-41 NMSA 1978), and the state's endangered plant species regulations (75-6-1 NMSA 1978). This report also provides a description of general site characteristics, soils, vegetation, and wildlife within the project area.

2 METHODOLOGY

2.1 Survey Methods

SWCA biologists Kimberly Goering, William Youmans, and Joseph Acord conducted a biological survey of the project area on April 4-11, 2022. Prior to the biological survey, SWCA reviewed baseline data for the project area, including U.S. Geological Survey topographic maps; Natural Resources Conservation Service (NRCS) soil maps (NRCS 2022a); New Mexico Crucial Habitat Assessment Tool data (New Mexico Crucial Habitat Data Set 2013); U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system data (USFWS 2022a); the USFWS Critical Habitat Portal (USFWS 2022b); the New Mexico Department of Game and Fish (NMDGF) Biota Information System of New Mexico (BISON-M) data (BISON-M 2022); the New Mexico Rare Plants website (New Mexico Rare Plant Technical Council 1999); and the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) state endangered plant species list (EMNRD 2021). During the biological survey, SWCA used maps and shapefiles provided by Rancho Viejo to locate the project area's boundaries and to create maps of the proposed project area (see Appendix A).

2.2 Species Covered in the Evaluation of Potential Impacts

The special-status species evaluated in this report consist of 1) federally protected (endangered and threatened) species (USFWS 2022a); 2) additional species listed by the USFWS as candidate and proposed species (USFWS 2022a); and 3) state-listed endangered and threatened species (EMNRD 2021; BISON-M 2022). The potential for local species occurrence was based on 1) existing information on distribution and 2) qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the proposed project area. SWCA identified the potential occurrence of a given species using the following categories:

- *Known to occur*: The species was documented in the proposed project area either during or prior to the biological survey by a reliable observer.
- *May occur*: The proposed project area is within the species' currently known range, and vegetation communities, soils, and water quality conditions, among other factors, resemble those of habitats known to be used by the species.
- *Unlikely to occur*: The proposed project area is within the species' currently known range, but vegetation communities, soils, and water quality conditions, among other factors, do not resemble those known to be used by the species, or the proposed project area is clearly outside the species' currently known range.

SWCA used the USFWS IPaC database and the USFWS Critical Habitat Portal (USFWS 2022a, 2022b) to examine distribution of critical habitat.

3 RESULTS

3.1 General Characteristics

The proposed project area is approximately 1 mile south of Santa Fe city limits and approximately 4.2 miles east of La Cienaga. Elevation in the proposed project area is approximately 6,420 feet (1,957 meters) above mean sea level (amsl). The climate of the area, according to the climatic records for Santa Fe 2, New Mexico (COOP Station 298085), has an average annual maximum temperature of 64.9 degrees Fahrenheit (°F) and an average annual minimum temperature of 36.0°F. The average annual precipitation is 13.68 inches, with the majority of it occurring between May and October, while the average annual total snowfall is 21.0 inches, which largely occurs between November and March (Western Regional Climate Center 2022). During the biological survey, temperatures ranged between 41°F and 71°F and the weather was sunny to cloudy with western, northwestern, and eastern winds of 0 to 35 miles per hour.

3.2 Soils

According to the NRCS (2022a), 12 soil map units are mapped within the 1,018.7-acre proposed project area (Table 1). These soils are considered well drained to excessively drained and non-hydric. None of the soils are considered prime farmland of statewide importance (NRCS 2022a).

Table 1. Soils in the Proposed Project Area

Soil Type Name	Soil Map Unit Symbol	Acres in Project Area	Percent of Project Area
Alire loam, 2 to 6 percent slopes	202	2.3	0.2
Arents-Urban land-Orthents complex, 1 to 60 percent slopes	116	<0.1	<0.1
Buckhorse-Altazano complex, 2 to 8 percent slopes, flooded	203	1.0	0.1
Dondiego loam, 1 to 3 percent slopes	216	0.5	0.1
Khapo sandy loam, 3 to 8 percent slopes	102	261.9	25.7
Levante-Riverwash complex, 1 to 3 percent slopes, flooded	213	0.1	<0.1
Ohke sandy loam, 1 to 3 percent slopes	217	0.3	<0.1
Panky loam, 1 to 4 percent slopes	100	665.4	65.3
Predawn loam, 1 to 4 percent slopes	200	0.2	<0.1
Tanoan-Encantado complex, 5 to 25 percent slopes	201	2.0	0.2
Zepol silt loam, 0 to 2 percent slopes, flooded	103	4.0	3.9
Zozobra-Jaconita complex, 5 to 25 percent slopes	101	45.0	4.4
Total		**1,018.7**	**100.0**

Source: NRCS (2022a).

3.3 Vegetation

The proposed project area is located within the Arizona/New Mexico Plateau: North-Central New Mexico Valleys and Mesas U.S. Environmental Protection Agency Level IV ecoregion (Griffith et al. 2006). During the biological survey, the biologists identified two distinct habitat types within the proposed project area. Habitat 1 is grasslands dominated by blue grama (*Bouteloua gracilis*), prickly Russian thistle (*Salsola tragus*), and rubber rabbitbrush (*Ericameria nauseosa*) (see Figures B-1 through B-4 in Appendix B) and features approximately 61% vegetative cover. Habitat 2 is pinyon-juniper savanna dominated by blue grama, twoneedle piñon (*Pinus edulis*), oneseed juniper (*Juniperus monosperma*), and rubber rabbitbrush and features approximately 21% vegetative cover. The proposed project area and surrounding landscape have been previously disturbed by two-track roads, cattle grazing, State Route 14, and transmission lines. Plant species recorded during the biological survey are listed in Table 2. Photographs of the vegetative communities are provided in Appendix B.

Table 2. Plant Species Observed during Biological Survey

Common Name	Scientific Name	Habitat 1 (Grasslands)	Habitat 2 (Pinyon-juniper savanna)
Bigelow sage	*Artemisia bigelovii*	x	x
Blue grama	*Bouteloua gracilis*	x*	x*
Broom snakeweed	*Gutierrezia sarothrae*	x	x
Club cholla	*Grusonia clavata*	x	–
Curly dock	*Rumex crispus*	x	–
Hairy crinklemat	*Tiquilia hispidissima*	x	–
Hairy grama	*Bouteloua hirsuta*	–	x
Jimsonweed	*Datura* sp.	x	–
Kingcup cactus	*Echinocereus triglochidiatus*	x	–
Mock vervain	*Glandularia* sp.	x	–
Narrowleaf yucca	*Yucca angustissima*	x	x
Oneseed juniper	*Juniperus monosperma*	x	x*
Plains pricklypear	*Opuntia polyacantha*	x	–
Prickly Russian thistle	*Salsola tragus*	x*	–

Common Name	Scientific Name	Habitat 1 (Grasslands)	Habitat 2 (Pinyon-juniper savanna)
Pricklypear	*Opuntia* sp.	–	x
Rubber rabbitbrush	*Ericameria nauseosa*	x*	x*
Spinystar	*Escobaria vivipara*	x	–
Springparsley	*Cymopterus* sp.	x	–
Tree cholla	*Cylindropuntia imbricata*	x	x
Twoneedle piñon	*Pinus edulis*	x	x*

Note: Nomenclature follows the PLANTS Database (NRCS 2022b).

* Dominant species

3.4 Noxious Weeds

During the biological survey, no U.S. Department of Agriculture (USDA)–listed noxious weed species or New Mexico Department of Agriculture–listed invasive or non-native plant species were observed within or around the project area (New Mexico Department of Agriculture 2020; USDA 2010). However, the biologists observed prickly Russian thistle (*Salsola tragus*). Prickly Russian thistle is not a designated noxious weed but is an introduced species to the project area and throughout New Mexico (NRCS 2022c). The plant is considered as a species that may cause economic or environmental harm or harm to human health or safety. Mitigation measures, such as noxious weed washing stations, can be used to reduce the introduction of noxious, invasive, and non-native plants. SWCA recommends that Rancho Viejo prepare a weed management plan for the project.

3.5 Wildlife

The Arizona/New Mexico Plateau: North-Central New Mexico Valleys and Mesas Ecoregion provides habitat for a variety of wildlife species. The SWCA biologists detected 15 bird species and six mammal species during the biological survey of the project area (Table 3). One of the mammal species detected is domestic. In addition, a Gunnison's prairie dog (*Cynomys gunnisoni*) colony was detected. Prairie dog colonies provide habitat for burrowing owls, which were also observed during the April 2022 biological survey.

Table 3. Wildlife Detected during Biological Survey

Common Name	Scientific Name
Birds	
American Kestrel	*Falco sparverius*
Black-throated sparrow	*Amphispiza bilineata*
Burrowing owl	*Athene cunicularia*
Bushtit	*Psaltriparus minimus*
Common raven	*Corvus corax*
Curve-bill thrasher	*Toxostoma curvirostra*
Eastern meadowlark	*Sturnella magna*
Horned Lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
Pinyon jay	*Gymnorhinus cyanocephalus*
Red-tailed hawk	*Buteo jamaicensis*
Say's phoebe	*Sayornis saya*
Scaled quail	*Callipepla squamata*
Turkey vulture	*Cathartes aura*

Common Name	Scientific Name
Western meadowlark	*Sturnella neglecta*
Mammals	
Black-tailed jackrabbit	*Lepus californicus*
Coyote (scat)	*Canis latrans*
Domestic cattle (scat)	*Bos taurus*
Gunnison's prairie dog (colony, scat)	*Cynomys gunnisoni*
Northern grasshopper mouse (dead)	*Onychomys leucogaster*
Pronghorn	*Antilocapra americana*

Note: Individuals of each species were observed unless otherwise noted.

3.5.1 Migratory Bird Treaty Act

Most bird species are protected by the Migratory Bird Treaty Act (MBTA). The MBTA implements various treaties and conventions between the United States and other countries for the protection of migratory birds. Under the MBTA, unless permitted by regulations, it is unlawful to 1) pursue, hunt, take, capture, or kill; 2) attempt to take, capture, or kill; and 3) possess, offer to sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. USFWS regulations broadly define "take" under the MBTA to mean "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." Under the MBTA, take does not include habitat loss or alteration.

Suitable nesting habitat for migratory birds, such as oneseed juniper and twoneedle piñon, was present throughout the proposed project area during the survey. In addition, the biologist also observed one active curve-billed thrasher (*Toxostoma curvirostra*) nest, 14 inactive passerine nests in fair to poor condition, and two undetectable activity passerine nests during the biological survey (see Figure A-3 and Figures B-5 and B-6).

SWCA observed several burrows throughout the project area that could be utilized by burrowing owls (*Athene cunicularia*) (Photograph B-7). In addition, the biologists observed one burrowing owl during the April 2022 biological survey. To prevent impacts to migratory bird species, any vegetation removal during the breeding season (March–August) could be preceded by a pre-construction nesting survey up to 2 weeks prior to vegetation removal to establish the occupancy status of any potentially suitable nesting burrows detected within the proposed project area.

3.5.2 Bald and Golden Eagle Protection Act

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the MBTA and the Bald and Golden Eagle Protection Act. Bald eagles are found typically in association with water and nest and breed from October to July throughout the state of New Mexico. Golden eagles nest primarily on rock ledges or cliffs and occasionally in large trees at elevations ranging from 4,000 to 10,000 feet amsl. Golden eagles are typically found in mountainous regions of open country, prairies, arctic and alpine tundra, open wooded areas, and barren areas. Both bald and golden eagles are carnivores. Bald eagles prey on fish but also on mammals, especially prairie dogs (*Cynomys* sp.). Golden eagles feed mainly on small mammals, invertebrates, other wildlife, and carrion (BISON-M 2022; Stahlecker and Walker 2010).

No bald or golden eagle individuals were observed during the biological survey. The habitat in and surrounding the proposed project area is not ideal foraging habitat for golden eagles because of the lack of available perching locations and lack of nearby mountains and is not ideal foraging habitat for bald

eagles because of the lack of riparian habitat. It is unlikely that bald or golden eagles inhabit the proposed project area.

3.6 Special-status Species

SWCA reviewed the federally listed and state-listed species with the potential to occur in Santa Fe County, New Mexico (EMNRD 2021; BISON-M 2022; USFWS 2022a). One federally listed candidate species, the monarch butterfly (*Danaus plexippus plexippus*), may occur in the project area during migration; however, neither this species nor larval host plants were observed during the biological survey. This species is further discussed in Section 3.6.1. Two additional species are known to occur in the proposed project area: burrowing owls (see Section 3.6.2) and Gunnison's prairie dogs (see Section 3.6.3). Neither of these species are listed in Santa Fe County. Prairie dog colonies provide habitat for burrowing owls, which are MBTA-protected. The remaining species are not likely to occur in the proposed project area because of lack of suitable habitat and because the proposed project area is outside the known range of some of the species. The special-status species with the potential to occur in Santa Fe County, New Mexico, their habitat, and their likelihood to occur in the proposed project area are described in Table 4.

Table 4. Special-status Species Listed for Santa Fe County, New Mexico

Common Name (scientific name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Plants			
Holy Ghost ipomopsis (*Ipomopsis sancti-spiritus*)	USFWS E NM E	This species grows on relatively dry, steep west to southwest-facing slopes in open ponderosa pine or mixed conifer forest at 2,400 to 2,500 meters (m) (7,730-8,220 feet) amsl in San Miguel County and is found only in one canyon in the upper Pecos River drainage of the southern Sangre de Cristo Mountains. The geologic substrate is partly weathered Tererro limestone. This plant appears to grow best in bare mineral soils and is highest in density on disturbed sites such as road cuts. Flowers from July to September.	Unlikely to occur within the proposed project area, as the only known population is restricted to one canyon in the Sangre de Cristo Mountains.
Santa Fe cholla (*Cylindropuntia viridiflora*)	NM E	The Santa Fe cholla is known from only three areas between Santa Fe and Chimayo and occurs in gravelly rolling hills in pinion-juniper woodland at 1,770 to 2,200 m (5,800-7,200 feet) amsl. Flowers in July.	Unlikely to occur within the proposed project area, as the closest known population is approximately 6 miles north of the project area (NHNM 2022).
Wood lily (*Lilium philadelphicum* var. *andinum*)	NM E	This species occurs in moist woodlands and meadows in mixed conifer forests and canyon bottoms between 7,550 and 10,000 feet in Sandoval, Otero, Santa Fe, San Miguel, Los Alamos, and Colfax Counties. The plant is widespread in Canada and the United States. Flowers late spring- through summer (late May through August).	Unlikely to occur within the proposed project area because of the lack of mixed conifer forests and canyon bottoms there. The project area is also below the elevation range of the species.
Great Plains Lady's tresses (*Spiranthes magnicamporum*)	NM E	This species is widely distributed in the Great Plains and Great Lakes regions north to Ontario, Canada and is rare in New Mexico. The plant occurs in wetlands, ciénegas, and stream sides in New Mexico from 4,560 to 6,500 feet amsl. Flowers from mid-July to August.	Unlikely to occur within the proposed project area because of the lack of wetlands, ciénegas, and streams there.

Common Name (scientific name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Arthropods			
Monarch butterfly (*Danaus plexippus plexippus)*	USFWS C	In New Mexico, this species' migration peaks in April and subsides by mid-May. Breeding occurs within the state, and a new generation matures in New Mexico by each July. In-state population numbers peak in August and September. The southward migration back to Mexico begins in late August and September. During the breeding season in New Mexico, young monarch butterfly caterpillars require milkweed species (*Asclepias* sp.) as a food source (Cary and DeLay 2016). Overall, monarch butterflies seem to be most abundant in southeast New Mexico. There is currently no evidence that monarchs overwinter in New Mexico.	May occur within the proposed project area for foraging if the area contains herbaceous flowering plants, including milkweed species, during breeding periods. Neither this species nor milkweed vegetation was observed during the April 2022 biological survey.
Mollusks			
Lilljeborg peaclam (*Pisidium lilljeborgi*)	NM T	In New Mexico, this species occurs in cold, alpine Nambe Lake, which is surrounded by rocky talus, stands of Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*), and grass-sedge-forb communities at approximately 11,350 m amsl.	Unlikely to occur in proposed project area because of the lack of wetlands and the species restriction to Nambe Lake, which is approximately 17 miles northeast of the project area.
Fish			
Rio Grande cutthroat trout (*Oncorhynchus clarkia virginalis*)	USFWS C	This subspecies of cutthroat trout is endemic to the Rio Grande, Pecos, and possibly the Canadian River Basins in New Mexico and Colorado. The species' historical range included Colorado, New Mexico, Texas.	Unlikely to occur in the proposed project area because of the lack of major rivers.
Birds			
Baird's sparrow (*Ammodramus bairdii*)	NM T	A winter resident in New Mexico, this species has been found on Otero Mesa and in the Animas Valley and may occur in other areas of suitable winter habitat, particularly in the southern portion of state. Generally, this species prefers dense, extensive grasslands with few shrubs and avoids heavily grazed areas.	Not known to occur in this area, although marginally suitable grassland habitat is present. The species is known to occur only in the southern portion of the state.
Bald eagle (*Haliaeetus leucocephalus*)	NM T	This species occurs in New Mexico year-round. Bald eagle breeding is restricted to a few areas mainly in the northern part of the state or near lakes. During migration and winter months, the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog (*Cynomys* sp.) colonies. Bald eagles typically perch in trees.	Although prairie dog colonies were present, this species is unlikely to occur in the proposed project area because of lack suitable habitat, water features. In addition, no suitable perching trees were observed during the biological survey.
Boreal owl (*Aegolius funereus*)	NM T	This species is found predominantly in spruce-fir forests. Populations are thought to be unviable in New Mexico because the state lacks adequate spruce-fir habitat in isolated mountain ranges, but small populations have been found in in spruce fir and similar habitats in the San Juan, Sangre de Cristo, and Jemez Mountains (Stahlecker and Duncan 1996).	Unlikely to occur within the proposed project area because of the lack of spruce-fir forests. The project area is approximately 9 miles southwest of the closest known population.
Gray vireo (*Vireo vicinior*)	NM T	This species is strongly associated with piñon-juniper (*Pinus* and *Juniperus* spp.) and scrub oak (*Quercus* spp.) habitats and is distributed mainly across the western two-thirds of the state. The gray vireo [refers gently sloped canyons, rock outcrops, ridgetops, and moderate scrub cover.	Unlikely to occur within the proposed project area because of lack of canyon habitat and exposed rock outcropping.

Common Name (scientific name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Least tern (*Sterna antillarum*)	NM E	This migratory species occurring in North America during the breeding season and is associated with water (e.g., lakes, reservoirs, and rivers). In New Mexico, the species' breeding is restricted to the Pecos River Basin, primarily at Bitter Lake National Wildlife Refuge in Chaves County. The least tern may occur in the Bureau of Land Management Farmington Field Office planning area during migration but has not been recorded there. Suitable least tern habitat along rivers consists of bare sandy shorelines and salt flats.	Unlikely to occur in the proposed project area because of the lack of perennial river bodies. The project area is also more than 150 miles north of the species' known breeding range within the state.
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	This species occupies mountainous areas and deep canyons incised within flat plateaus. The owl's habitat consists typically of mixed-conifer, ponderosa pine, and ponderosa pine–Gambel oak forest. The species prefers shaded mesic environments such as canyon bottoms and mountainous riparian areas.	Unlikely to occur within the proposed project area because of the lack of mountainous habitat, old-growth mixed conifer forest, and deep canyons preferred by the species.
Peregrine falcon (*Falco peregrinus*)	NM T	This species occurs in New Mexico year-round. All peregrine falcon nests in New Mexico are found on cliffs. During migration and winter, New Mexico's peregrine falcons are typically associated with water and large wetlands.	Unlikely to occur in the proposed project area because of the lack of water, dense riparian habitat, large wetlands, and cliff roosting habitat.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E NM E	This species breeds and migrates through relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes and reservoirs. The southwestern willow flycatcher historically nested in native vegetation such as willow (*Salix* spp.), seepwillow, boxelder (*Acer negundo*), buttonbush (*Cephalanthus* spp.), and cottonwood. This subspecies nests in native vegetation but also uses thickets dominated by non-native tamarisk (*Tamarix* spp.) and Russian olive (*Elaeagnus angustifolia*) and mixed native and non-native stands of vegetation. In New Mexico the southwestern willow flycatcher is known to breed along the Gila River and the Rio Grande.	Unlikely to occur in the proposed project area due to the lack of dense riparian habitat.
Violet-crowned hummingbird (*Leucolia violiceps*)	NM T	In New Mexico, this species is found primarily in riparian woodlands at low to moderate elevations (Baltosser et al. 1985) and seeks only well-developed riparian areas of Guadalupe Canyon in the summer (NMDGF 1994).	Unlikely to occur in the proposed project area due to a lack of riparian woodlands. In addition, the proposed project area is not near the Guadalupe Canyon.
White-tailed ptarmigan (*Lagopus leucura*)	NM E	This species inhabits alpine tundra and timberline habitat in New Mexico above about 10,500 feet (Hubbard and Eley 1985). Associated with sedges (*Carex*) and grasslike plants (*Heleocharis*, *Scirpus*) above the treeline.	Unlikely to occur in the proposed project area due to a lack of suitable tundra habitat and elevation.
Yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	USFWS T	Only the western population of this species beyond the Pecos River drainage has been listed as threatened under the ESA. The yellow-billed cuckoo breeds and migrates through riparian habitat and associated drainages; springs, developed wells, and earthen ponds supporting mesic vegetation; and deciduous woodlands with cottonwoods and willows. Dense understory foliage is important for nest site selection. The species nests in willow, mesquite, cottonwood, and hackberry; forages in similar riparian woodlands; and requires patches of at least 25 acres for breeding and nesting.	Unlikely to occur. The proposed project area lacks riparian and deciduous woodland habitat.

Common Name (scientific name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Mammals			
Spotted bat (*Euderma maculatum*)	NM T	This species is found in open habitats, ponderosa pine forests, and marshlands. Distribution is limited to areas within flying distance of cliffs and stony outcrops, which provide suitable roosting sites. Spotted bats have been documented at numerous localities throughout the western two-thirds of New Mexico, and in 2014 through 2016, the species was detected by its distinct audible calls at multiple sites along the Gila River in Grant County.	Unlikely to occur because the proposed project area lacks suitable roosting habitat, such as cliffs and limestone outcroppings, dense forests, and marshes.
Pacific marten (*Martes caurina*)	NM T	This species has been observed in the San Juan and Sangre de Cristo Mountains. The Pacific marten prefers late successional stands of conifer-dominated mesic forest of spruce (*Picea* sp.), fir (*Abies* spp.), Douglas fir (*Pseudotsuga menziesii*), and associated trees. Optimal habitat likely consists of mature old-growth spruce-fir communities with more than 30% canopy cover, a well-established understory of fallen logs and stumps, and lush shrub and forb vegetation. The species avoids large openings.	Unlikely to occur in the proposed project area due to the lack of mature conifer habitat of spruce, fir, or Douglas fir.
Meadow jumping mouse (*Zapus luteus luteus*)	NM E	In New Mexico primarily associated with riparian habitats with short vegetation, high herbaceous vegetation cover, and species including common three-square, coyote willow, dogbane, foxtail barley, and Japanese brome.	Unlikely to occur in the proposed project area due to lack of associated species and lack of riparian habitat.

Sources: Except where otherwise noted, range or habitat information for wildlife species comes from the BISON-M (2022) website, IPaC (USFWS 2022b), EMNRD (2021), and NatureServe (2022)

* Federal (USFWS) status: E = Endangered, T = Threatened, C = Candidate

State of New Mexico status: NM E = Endangered, NM T = Threatened.

3.6.1 Monarch Butterfly

The monarch butterfly is designated as a federally listed candidate species. This species was listed due to the decline in populations across North America because of habitat reduction and fragmentation. This species is important ecologically for plant population stability, as the species is an opportunistic pollinator. This species is known to occur throughout New Mexico during seasonal migration and breeding season and the warmer months of April to October but is not known to overwinter within the state (Cary and Delay 2016). Monarch butterflies use milkweed (*Asclepias* sp.) habitat for breeding and milkweed is the sole source of food for this species during the caterpillar phase of life.

The species was not observed during the April 2022 biological survey of the proposed project area. With the annual migratory path of the species, adult monarch butterflies may occur within the project area, and with the presence of flowering plants, the proposed project area provides suitable foraging habitat for the species. During the April 2022 survey, SWCA did not observe any milkweed vegetation suitable for monarch butterfly breeding within the project area; however, revisiting the project area during this species' flowering period (June–August) would involve determining whether the project area provides milkweed habitat suitable for breeding.

A lack of milkweed vegetation within the proposed project area would confirm that the proposed project footprint does not contain the plants required for monarch butterfly egg laying; in that case, the breeding efforts of the species likely would not be impacted by the proposed project. Also, because of their ability to move out of areas of human activity, adult butterflies are not likely to be directly harmed by the proposed project. Removal of vegetation in the proposed project area would reduce the availability of flowering plants and thus possibly impact the species' food sources. The proposed project could impact

individuals but would not likely contribute to a trend toward federal listing or cause a loss of population or species viability.

3.6.2 Burrowing Owl

The burrowing owl is protected under the MBTA and State of New Mexico Statute 17-2-14. Populations of burrowing owls are declining across much of North America, particularly in the northern portion of the continent, chiefly because of prairie grassland habitat loss and fragmentation, human-caused mortality on wintering grounds and during migration, and the loss of colonial sciurids such as prairie dogs (Desmond 2010). During the 2022 biological survey, SWCA observed one active burrowing owl burrow with two adults in addition to a prairie dog colony during the 2022 biological survey (Figure A-3 and Photograph B-8).

Potential impacts to burrowing owls could range from temporary habitat disturbance to loss of foraging habitat. Due to the permanent disturbance associated with the proposed project, foraging habitat would be impacted. However, the habitat within the proposed project area is not unique to its surroundings; therefore, adult burrowing owls could relocate. The proposed project may impact individuals or localized foraging habitat but would not likely contribute to a trend toward federal listing or cause a loss of population or species viability.

3.6.3 Gunnison's Prairie Dog

Gunnison's prairie dog is native only to North America, inhabiting montane shrublands and high mountain valleys and plateaus in the southern Rocky Mountains at 6,000 to 12,000 feet amsl east of the continental divide. As a fossorial mammal, this species inhabits burrow complexes within sagebrush shrubland and pinyon-juniper habitats (BISON-M 2022). This species lives in colonies that can contain thousands of individuals within a complex (Miller and Cully 2001). These colonies provide an important food source for many predators within grassland habitats, and their burrows provide suitable burrows for burrowing owls.

SWCA observed an extensive prairie dog colony during the 2022 biological survey (Figure A-3 and Photograph B-7). Although Gunnison's prairie dog is not listed in Santa Fe County, burrows can be a concern in regard to construction safety, and their destruction can affect burrowing owl habitat. If construction begins during the burrowing owl nesting season (March 1–October 31), SWCA could conduct occupied nesting burrow surveys, including verifying the presence/absence of prairie dogs, before then. The proposed project may impact potential habitat for this species but, with the implementation of mitigation measures to protect the species from entrapment and presence/absence surveys before construction, is not likely to contribute toward a federal listing or loss of viability.

4 IMPACT ANALYSIS AND CONCLUSIONS

Impacts to wildlife and vegetation would result from actions that alter wildlife habitats, including changes to vegetation and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels, increased human activity, and the presence of fugitive dust).

The loss of wildlife habitat from project construction would not cause undue degradation to general wildlife or vegetation because habitat characteristic of the project area is common across the regional

landscape and is readily available on lands adjacent to the project area. The project is not expected to unduly impair important environmental values relating to biological resources.

4.1 Vegetation and Noxious Weeds

At this time, it is assumed that during project construction, the entire project area would be cleared of all vegetation. Vegetation in vicinity of the project area would be affected by the deposition of fugitive dust generated by clearing and grading activities, the use of access roads, and wind erosion of exposed soils. This could reduce photosynthesis and productivity, increase water loss (Eveling and Bataille 1984), and result in injury to leaves in plants near the project area. Areas of soil exposed by blading associated with construction could also be a source of localized fugitive dust. Vegetative community composition could subsequently be altered, resulting in habitat degradation. Localized impacts to plant populations and communities could occur if seed production in plant species is reduced. Construction traffic and equipment brought to the site also represent a pathway for the introduction and spread of noxious weeds and invasive species. One invasive species, prickly Russian thistle was observed in the project area during the biological survey. Rancho Viejo could coordinate with the Santa Fe – Pojoaque Soil and Water Conservation District (SFPSWCD) to ensure that the best management practices for meeting invasive and noxious plant management objectives within the district are implemented for the project (SFPSWCD 2022). These best management practices may include implementation of control methods for the listed invasive and noxious plant species outlined in New Mexico State's booklet *Troublesome Weeds of New Mexico* (Ashigh et al. 2010).

Postconstruction, interim reclamation could occur in areas not needed for long-term operations and maintenance. Reclamation could include establishment of native vegetation. Rancho Viejo could also consult with the SFPSWCD on developing a reclamation plan. Impacts to vegetation from decommissioning activities would be similar to impacts from construction. Once decommissioning is complete, final reclamation of the project area would reestablish vegetation.

4.2 General Wildlife

Direct impacts to wildlife from construction would include the removal of 1,018.7 acres of existing vegetation, risk of direct mortality of species during construction, loss or degradation of native habitat, and displacement of wildlife species from their habitat. Additional potential indirect impacts could include disruption or displacement of species from nesting/birthing and foraging areas, changes in activity patterns resulting from construction, increased human activity, and noise disturbance. Noise disturbance could impact wildlife by interfering with animals' abilities to detect important sounds or by posing an artificial threat to animals (Clinton and Barber 2013). Construction equipment associated with the project would contribute the highest noise levels.

Gunnison's prairie dogs are known to occur in the proposed project area as an extensive colony was observed during the 2022 biological survey. Wherever possible, occupied prairie dog colonies should be left undisturbed, and all project activities should be directed off the colonies. Any burrows that are located on the project site should be surveyed during the period of 1 March-1 September to determine whether burrows are active or inactive, and whether burrowing owls may be utilizing the site. If ground-disturbing activities cannot be relocated off the prairie dog colony, or if project activities involve control of prairie dogs, NMDGF recommends live-trapping and relocation of prairie dogs. The NMDGF can provide recommendations regarding suitability of potential translocation areas and procedures.

During operation and maintenance, personnel could fence the solar facility perimeter, limiting the types of wildlife that may use the project area, such as reptiles, birds, and small mammals. Operations activities

would occasionally include noise disturbances that would temporarily displace wildlife in the proposed project area and vicinity. These impacts may be short-term and could occur approximately twice per year under routine operations. Affected individuals would be able to shift use to adjacent land. Long-term impacts to wildlife species would be negligible and unlikely to result in population-level effects

4.3 Migratory Bird Treaty Act

During the biological survey of the proposed project area, SWCA detected 15 bird species (see Table 3). One active curve-billed thrasher nest, 14 inactive passerine nests in fair to poor condition, and two undetectable activity passerine nests were observed. In addition, several prairie dog colonies, which could be utilized by burrowing owls, were observed.

No major or long-term effects on migratory birds from the proposed project are anticipated. Incidental mortality or displacement of migratory bird species is possible on a local scale as a result of construction disturbance. However, many birds occurring locally would likely move into adjacent habitat in response to disturbance. Adult migratory birds likely would not be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity. Because of the abundance of similar habitat in the surrounding area, the impacts on bird populations that use this habitat type within the project area would be low.

All migratory birds are protected against direct take under the Migratory Bird Treaty Act. In addition, hawks, falcons, vultures, songbirds, and other insect-eating birds are protected under New Mexico State Statutes (17-2-13 and 17-2-14 NMSA), unless permitted by the applicable regulatory agency. To minimize potential impacts to migratory birds, SWCA recommends that construction take place outside the bird breeding season (March 1–August 31). However, if construction and vegetation removal take place during the migratory bird breeding season, a preconstruction nesting survey up to 2 weeks before vegetation removal is recommended to prevent impacts to migratory bird species. The preconstruction nesting survey would establish the occupancy status of any potentially suitable nests and burrows detected within the project area. SWCA can provide a scope of work and cost proposal for preconstruction nesting survey.

If active nests or burrows are detected, nest disturbance should be avoided until the young have fledged. For active nests, adequate buffer zones should be established to minimize disturbance to nesting birds. Buffer distances should be greater than 100 feet from songbird and raven nests, and 0.25 mile from raptor nests. Buffer zones of up to 0.5 mile may be established for golden eagle, ferruginous hawk, prairie falcon and peregrine falcon active nests. Active nest sites in trees or shrubs that must be removed should be mitigated by qualified biologists or wildlife rehabilitators. NMDGF biologists are available for consultation regarding nest site mitigation, and can facilitate contact with qualified personnel.

Operations activities, such as occasional noise disturbances, would temporarily displace migratory birds in the proposed project area and vicinity. These impacts would be short term, occurring approximately twice per year under routine operations. Affected individuals would be able to shift use to adjacent land. Long-term impacts to migratory bird species would be minimal and unlikely to result in population-level effects.

4.4 Bald and Golden Eagle Protection Act

No bald or golden eagles were observed during the biological survey. Activities in the proposed project area are not expected to impact bald or golden eagles. Because the proposed project area and surrounding area lack suitable nesting and foraging habitat for these two species, the project is not anticipated to cause

take of individual bald or golden eagles, their nests, or their eggs. Because of their mobility and ability to avoid areas of human activity, adult eagles likely would not be directly harmed by the proposed project.

4.5 Special-status Species

One federally listed candidate species, the monarch butterfly, has the potential to occur in the project area. Because of the timing of biological survey early in the season, the presence of milkweed species in the project area cannot be confirmed. A follow-up survey to confirm the presence of milkweed vegetation would determine whether suitable breeding habitat is present. If milkweed vegetation is present, SWCA recommends that the revegetation seed mix includes pollinator species such as milkweed, and impacts to this vegetation is minimized to the greatest extent possible.

In addition, SWCA observed burrowing owls, which are protected by the MBTA, and Gunnison's prairie dog colonies, which could provide habitat for this species, within the proposed project area. If construction begins during the burrowing owl nesting season (March 1–October 31), SWCA could conduct occupied nesting burrow surveys, including verifying the presence/absence of prairie dogs.

Currently, the project does not have a state or federal nexus, so no regulatory agency is requiring additional biological surveys. If any of these species or any other listed species are found in the project area (either during a species-specific survey or during construction and operation), any harm to those species would violate 75-6-1 NMSA and the New Mexico Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978) (NMDGF 2020). For endangered animal species, SWCA recommends that Rancho Viejo coordinate with the NMDGF if any individuals are detected. Avoidance or minimization is recommended to avoid impacts to these species.

5 RECOMMENDED ACTIONS

SWCA recommends the following actions for the project:

- Avoidance or minimization of impacts to burrowing owls and prairie dogs are recommended. If burrowing owls or prairie dogs are identified in the project area during construction, Rancho Viejo should immediately contact a biologist to confirm the identification of this species and coordinate with the NMDGF.
- If milkweed vegetation is present, the revegetation seed mix would include pollinator species such as milkweed. Milkweed vegetation removal will be minimized to the greatest extent possible.
- Conduct preconstruction nest surveys to avoid potential impacts to MBTA protected species. If active nests are observed, recommended buffers should be applied until the young have fledged.
- Enroll the construction crew in a worker environmental awareness program.
- Any new powerlines, generation interconnection lines, inverters, substations, or upgrades to existing transmission line infrastructure necessary for the proposed project should be in conformance with the Avian Power Line Interaction Committee's suggestions (APLIC 2006; 2012).

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APPENDIX A

Project Maps

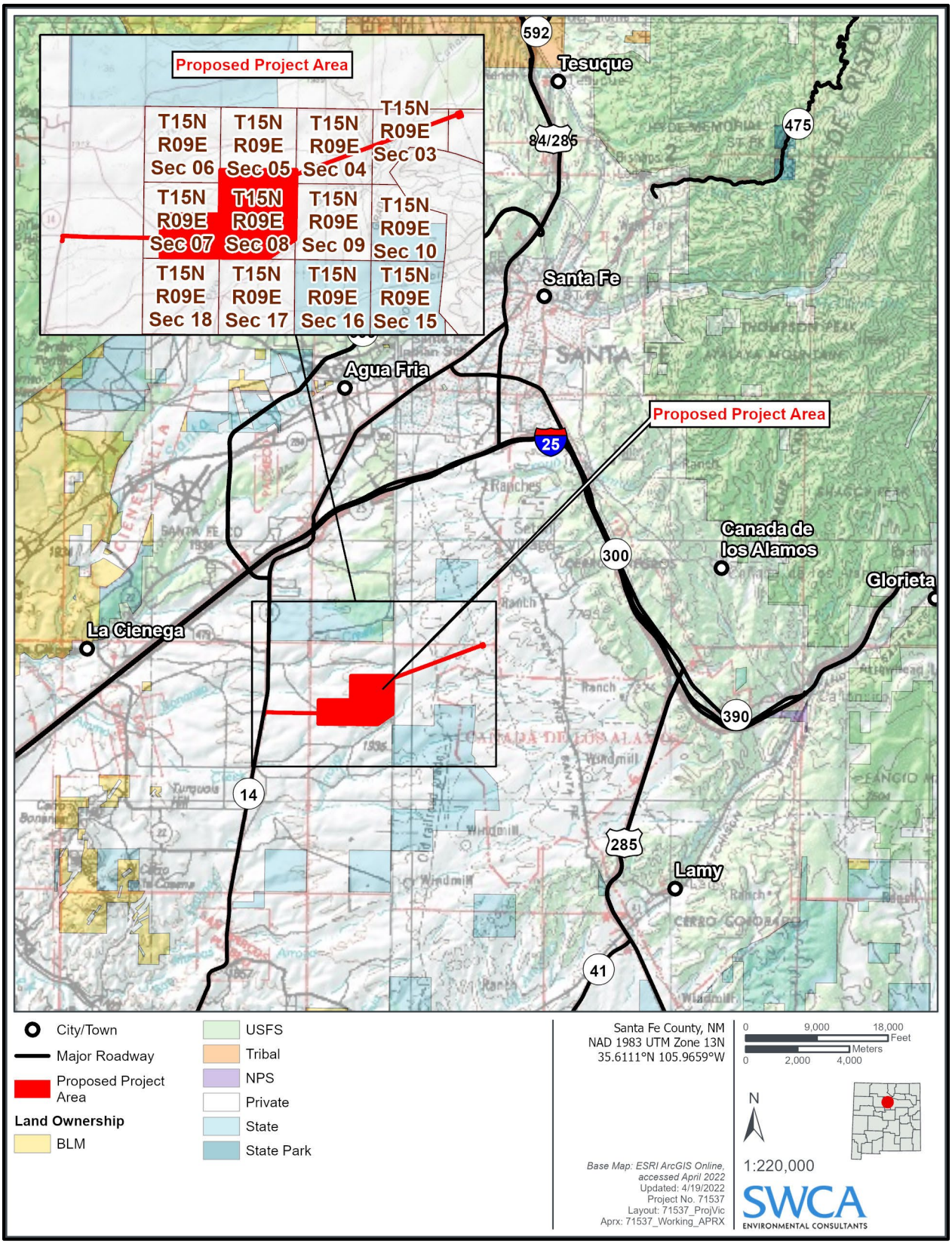

Figure A-1. Project location map.

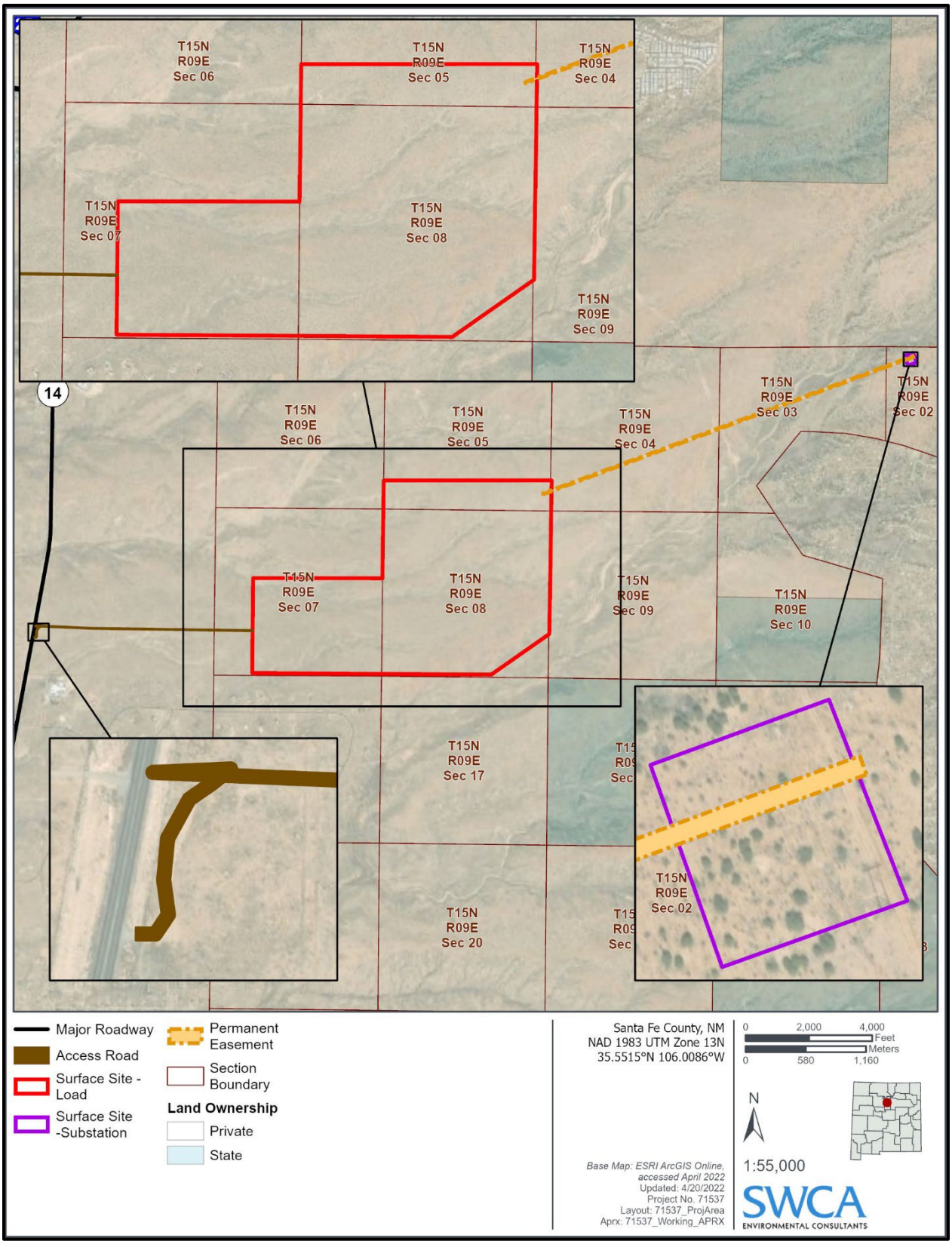

Figure A-2. Project area map.

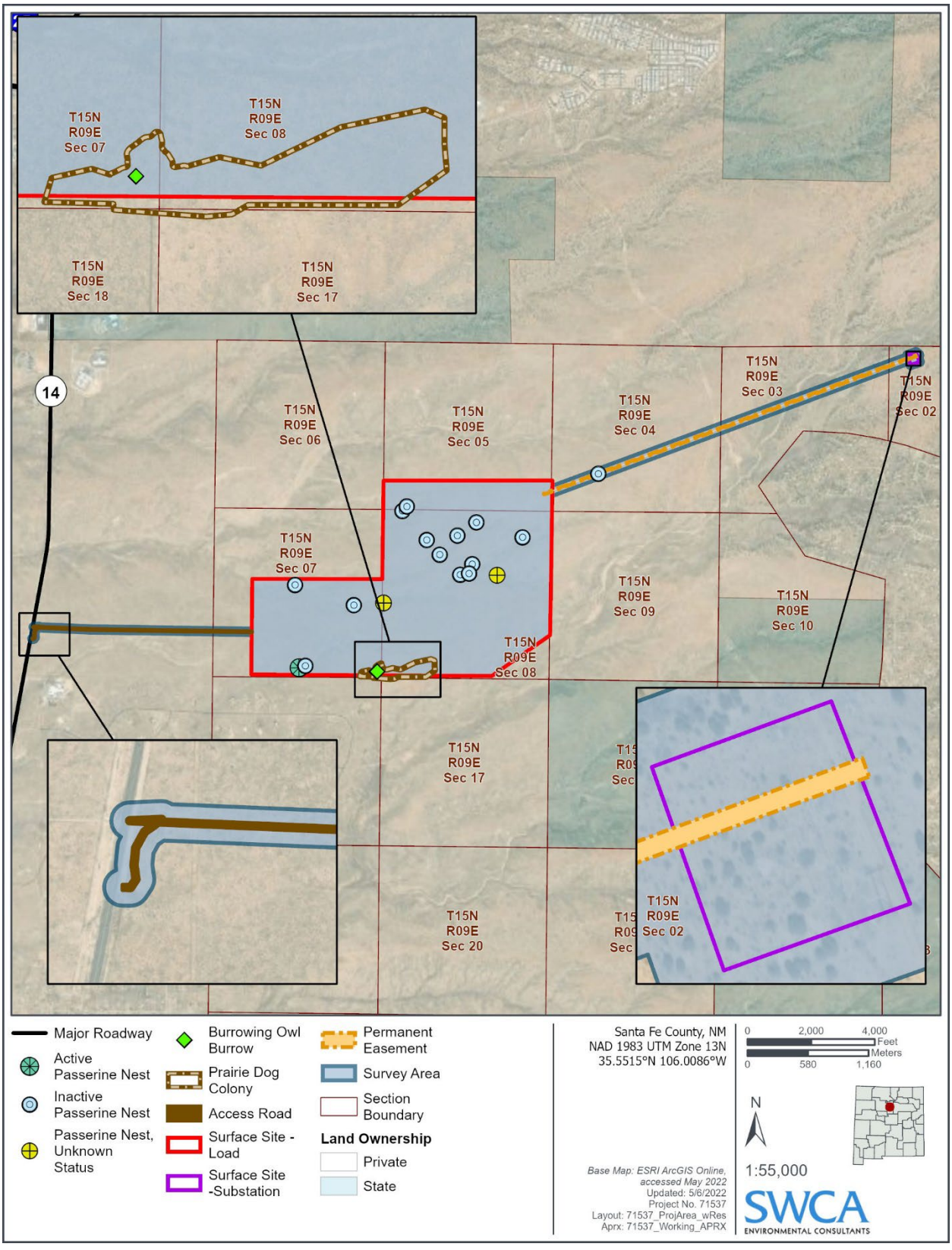

Figure A-3. Proposed project area map with natural resources.

APPENDIX B

Project Photographs

Figure B-1. View of Habitat 1 (grasslands) within the proposed project area, facing north.

Figure B-2. View of Habitat 1 (grasslands) within the proposed project area, facing east.

Figure B-3. View of Habitat 2 (pinyon-juniper savanna) within the proposed project area, facing north.

Figure B-4. View of Habitat 2 (pinyon-juniper savanna) within the proposed project area, facing west.

Figure B-5. View of an inactive passerine nest in fair condition in tree cholla (*Cylindropuntia imbricata*), facing northeast.

Figure B-6. View of an active curve-billed thrasher nest under construction and in good condition in tree cholla, facing northeast.

Figure B-7. Gunnison's prairie dog colony in project area, facing north.

Figure B-8. Burrow complex suitable for burrowing owls, facing north.