

Weld Solar Project

*Draft Environmental Assessment
Weld County, Colorado*



**Western Area
Power Administration**

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Abbreviations

| | |
|--------------------------------|--------------------------------------|
| $\mu\text{g}/\text{m}^3$ | micrograms per cubic meter |
| AC | alternating current |
| APE | area of potential effects |
| BESS | battery energy storage system |
| BGEPA | Bald and Golden Eagle Protection Act |
| BLM | Bureau of Land Management |
| CCR | Code of Colorado Regulations |
| CNHP | Colorado Natural Heritage Program |
| CO | carbon monoxide |
| CO ₂ e | carbon dioxide equivalent |
| CPW | Colorado Parks and Wildlife |
| CR | Weld County Road |
| CRS | Colorado Revised Statutes |
| dBA | decibels |
| DC | direct current |
| DNA | deoxyribonucleic acid |
| EA | environmental assessment |
| EMF | electromagnetic fields |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| gen-tie line | generation tie-in line |
| GHG | greenhouse gas |
| gm/m^2 | grams per square meter |
| GMU | game management unit |
| H ₂ SO ₄ | sulfuric acid mist |
| HAP | hazardous air pollutant |



| | |
|-------------------|---|
| IPaC | Information for Planning and Conservation |
| km | kilometers |
| kV | kilovolt |
| Ma | mega annum |
| MBTA | Migratory Bird Treaty Act |
| MW | megawatt |
| NAAQS | National Ambient Air Quality Standards |
| NEI | National Emissions Inventory |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NO ₂ | nitrogen dioxide |
| NO _x | oxides of nitrogen |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| O ₃ | ozone |
| PB | lead |
| PFYC | Potential Fossil Yield Classification |
| PM ₁₀ | particulate matter smaller than 10 microns in aerodynamic diameter |
| PM _{2.5} | particulate matter smaller than 2.5 microns in aerodynamic diameter |
| ppm | parts per million |
| Project | Weld Solar Project |
| PV | photovoltaic |
| RFFA | reasonably foreseeable future action |
| SCADA | supervisory control and data acquisition |
| SF ₆ | sulfur hexafluoride |
| SHPO | State Historic Preservation Office |
| SLB | Colorado State Land Board |



| | |
|-----------------|-----------------------------------|
| SSURGO | Soil Survey Geographic Database |
| SO ₂ | sulfur dioxide |
| SOC | species of concern |
| SO _x | sulfur oxides |
| SQRU | Scenic quality rating units |
| SWCA | SWCA Environmental Consultants |
| tpy | tons per year |
| USC | United States Code |
| USFWS | U.S. Fish and Wildlife Service |
| VOC | volatile organic compound |
| WAPA | Western Area Power Administration |
| WRAP | Western Regional Air Partnership |



CHAPTER 1. INTRODUCTION AND BACKGROUND

Weld Solar, LLC (Weld Solar) is proposing to construct, operate, maintain, and decommission an up to 150-megawatt (MW) nameplate capacity solar photovoltaic (PV) facility and a 100-MW battery energy storage system (BESS) with a storage duration of 4 hours (the Weld Solar Project [Project]) on approximately 1,028 acres of private land and 472 acres of state land approximately 4 miles northwest of Ault in Weld County, Colorado (Project area) (Figure 1-1). The proposed Project's generation tie-in (gen-tie) line would interconnect with Western Area Power Administration's (WAPA's) adjacent Ault Substation. The approximately 0.2-mile-long 345-kilovolt (kV) gen-tie line would extend south from an on-site Project substation, across Weld County Road (CR) 86 to the existing Ault Substation. Weld Solar is requesting interconnection of the Project to the WAPA transmission system at the Ault Substation. This interconnection would consist of an interconnection switchyard and substation located on approximately 12 acres directly adjacent to the north side of the existing substation. In addition to the solar facility and gen-tie, the proposed Project would include an on-site substation, BESS, and ancillary facilities including inverters, perimeter fencing, roads, and a supervisory control and data acquisition (SCADA) system.

In accordance with its Open Access Transmission Service Tariff, WAPA's consideration to grant an interconnection request is a major federal action subject to environmental review pursuant to the National Environmental Policy Act of 1969 (NEPA) and the Department of Energy's, as well as the Council on Environmental Quality's, NEPA implementing regulations. Under these regulations, Weld Solar's project is considered a connected action to WAPA's federal decision of granting an interconnection to its transmission system. Therefore, this environmental assessment (EA) was prepared for WAPA to analyze the impacts of the interconnection, along with the connected action of the proposed solar facility and BESS.

1.1 WESTERN AREA POWER ADMINISTRATIONS'S PURPOSE AND NEED

WAPA's purpose and need is to consider and respond to the request for an interconnection agreement in accordance with its Open Access Transmission Service Tariff and the Federal Power Act, as amended.

1.2 WELD SOLAR'S GOALS AND OBJECTIVES

Weld Solar's goal is to increase the availability of renewable energy and deliver electric utility service to its Colorado customer base through construction and operation of the Weld Solar Project, including interconnection to the WAPA transmission system. The Project's objective is to deliver renewable energy into the Colorado transmission system to support the state's goal of reducing greenhouse gas emissions and transition the state to clean energy. Colorado's renewable energy standard requires 30% renewable energy for investor-owned utilities; 0% or 20% for municipalities and electric cooperatives depending on size; and 100% clean energy by 2050 for utilities serving 500,000 or more customers.

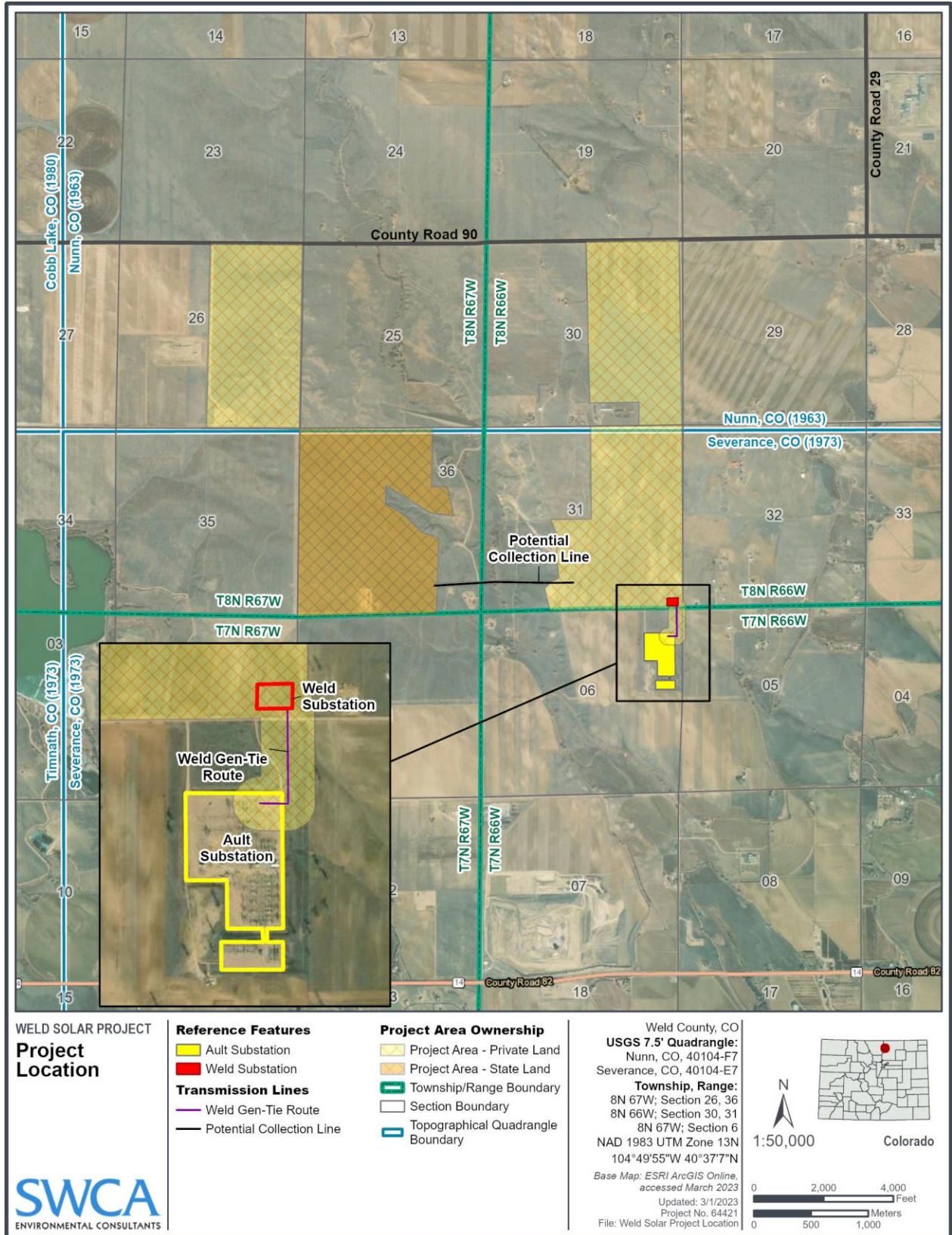


Figure 1-1. Project overview.

1.3 PUBLIC INVOLVEMENT, CONSULTATION, AND COORDINATION

1.3.1 Public Involvement

The scoping process used for this Project was initiated on June 21, 2022, with the publication of a description of the Project and a request for public input in the *Fort Collins Coloradoan*, which ran from June 21 through July 5, 2022. The same Project description and request for public input was also published in the *Greely Tribune* and ran from June 22 through July 6, 2022. Additionally, on June 22, 2022, a description of the Project and invitation for public comment was sent out to a mailing list composed of names and addresses obtained from the Weld County Property Portal website for all landowners within the Project area and immediately adjacent to, or bordering, the Project area. The 33-day period for submitting scoping comments was from June 21 through July 23, 2022. In total, two public comments were collected during the public scoping period. Table 1-1 provides a brief summary of comments received.

The draft EA will be released for public review and comment, and notice of the draft EA’s availability for comment will be provided on WAPA’s website (<https://www.wapa.gov/regions/RM/environment/Pages/DOEEA-TBD-Weld-Solar,-Weld-County,-CO.aspx>). The public comment period for the draft EA will last for 30 days after the document is posted to the WAPA website. Additional information about the process, including notices, documents, updates to the schedule, etc., also will be posted at this link.

Table 1-1. Summary of Public Scoping Comments Received During the Public Scoping Period

| Party Contacted | Comment Summary |
|-----------------|---|
| WAPA | Concerns for two bald eagle nesting territories in the vicinity and impacts to their hunting grounds as a result of Project construction. Also concerns for impacts to the hunting area for golden eagles and other raptor species observed in the area. The area also supports other wildlife species, such as big game and other mammals, reptiles, and amphibians. |
| WAPA | Concerns for the effects of the Project on property values, air quality, wildlife, economic, and environmental resources. Also concerned the Project may negatively impact Conservation Reserve Program lands by clearing vegetation and preventing new growth, leading to a dry, arid habitat prone to dust and tumbleweeds. |

1.3.2 Coordination and Consultation

WAPA has contacted key federal, state, county, and local agencies to initiate coordination throughout the NEPA review process. Weld Solar initiated coordination with WAPA on November 29, 2018, when an interconnection request for the Ault Substation was submitted. WAPA determined the level of analysis for the Project, which was agreed to by Weld Solar, and coordination on the resulting EA has been ongoing since.

Weld Solar also engaged Colorado Parks and Wildlife (CPW) on June 16, 2022, to introduce the Project and to establish a time to meet for a discussion. The first meeting with CPW occurred on July 7, 2022, to discuss Project details and the timeline, natural resources and cultural resources surveys completed for the Project, results, and to receive CPW’s feedback on the Project. Coordination with CPW will continue as needed through Project permitting.

Weld Solar is in the process of submitting a Weld County 1041 permit application for the Project. A pre-application meeting between Weld County and Weld Solar was held on June 15, 2022, to discuss the

requirements for the permit application submittal. The permit application is expected to be submitted in 2023.

1.3.3 Tribal Consultation

WAPA is conducting formal consultation with interested tribes on a government-to-government level, according to Section 106 of the National Historic Preservation Act (NHPA). WAPA has invited nine federally recognized tribes to participate in the Section 106 consultation process (Table 1-2). WAPA began informal coordination with tribes through letter outreach. Letters of invitation were sent on January 25, 2023. No tribe has accepted WAPA's invitation. Consultation remains open to any tribe that wishes to participate, and consultation will be ongoing throughout the NEPA process.

Table 1-2. Tribes Invited to be Consulting Parties under National Historic Preservation Act Section 106

| Tribe |
|---|
| Apache Tribe of Oklahoma |
| Arapaho Tribe of the Wind River Reservation |
| Cheyenne and Arapaho Tribes |
| Comanche Nation |
| Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation |
| Rosebud Sioux Tribe |
| Sisseton Wahpeton Oyate of the Lake Traverse Reservation |
| Standing Rock Sioux Tribe |
| Yankton Sioux Tribe |



CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES CONSIDERED

This EA analyzes two alternatives: the Proposed Action and the No Action Alternative. This chapter describes the action that Weld Solar is proposing and that WAPA is considering (the Proposed Action), as well as the No Action Alternative.

2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, WAPA would deny the request for interconnection and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY

Weld Solar evaluated other private and state land with similar potential for interconnection; however, other nearby sites would have required substantially longer gen-tie lines that would cause additional environmental impact and increase Project cost. Weld Solar estimates that if the Project was built elsewhere, an additional cost of more than \$1 million would be accrued for every additional mile of transmission line. Further, there are no other large contiguous tracts of private land parcels that are available for lease near the interconnection point to facilitate a project of this size.

Additionally, Weld Solar evaluated routing the Project gen-tie line to interconnect into the west side of WAPA's Ault Substation; however, Weld Solar was advised by WAPA that a western interconnect into the Ault Substation would not be possible due to planned upgrades to that side of the substation. Based on this, an eastern interconnect into the Ault Substation was the only feasible option available.

2.3 PROPOSED ACTION

Under the Proposed Action, Weld Solar would construct, maintain, operate, and decommission the approximately 150-MW nameplate capacity solar facility and approximately 100-MW BESS, which would consist of the following components:

- A solar facility
- An on-site substation
- An approximately 0.2-mile long 345-kV gen-tie line
- A 100-MW BESS
- Ancillary facilities
- Interconnection to WAPA's Ault Substation

As is typical with development of energy generation projects, final layout of the solar facility, on-site substation, 345-kV gen-tie line, BESS, other ancillary facilities, and interconnection to WAPA's Ault Substation have not been finalized, though the entire facility would be located within approximately 1,028

acres of private land and 472 acres of state land approximately 4 miles northwest of Ault in Weld County, Colorado (see Figure 1-1). The anticipated surface disturbance is shown in Table 2-1.

WAPA would enter into an Interconnection Agreement with Weld Solar, which would allow the Project to interconnect to WAPA’s existing Ault Substation.

Table 2-1. Anticipated Surface Disturbance

| Component | Assumptions | Temporary Disturbance (acres) | Permanent Disturbance (acres) |
|--|---|-------------------------------|-------------------------------|
| Solar facility | Up to 1,178 acres* | — | 1,178 |
| Access roads | Project access roads would typically be 20 feet wide; internal access roads to the onsite substation, switching station, and BESS would be 10 feet wide. Approximately 9 miles of new access roads are anticipated. | — | 18 |
| Buried collection line | Collection lines would be used to connect solar panels across the Project. An approximately 0.75-mile collection line would be used to deliver energy collected in the western portion of the Project to the eastern portion before eventually tying into the Project substation. | 9 | — |
| Substation | An approximately 10-acre substation would step up power from the 34.5-kV solar collection lines and deliver it to the gen-tie line. | — | 10 |
| Transmission line route (345-kV gen-tie line) | Approximately 0.2-mile long with a corridor of 500 feet on the proposed gen-tie center line, which includes 200 feet on each side for temporary use and a 100-foot permanent right-of-way. | 17 | 3 |
| BESS | The 100-MW system would have a storage duration of 4 hours and consist of several housing units placed on concrete pads. It would occupy approximately 6 acres, depending on the size of the system contracted and technology selected. | — | 6 |
| Interconnection switchyard | The gen-tie line would terminate within the interconnection switchyard, which would contain the necessary electrical equipment to interconnect. | — | 2 |
| Operations and maintenance facility and parking area | This building could have a footprint of approximately 50 × 50 feet with an overall height of 30-feet, housing controls for the Project, offices, meeting rooms, breakroom space, shop space, and maintenance vehicle bays. | — | 1 |
| Project laydown area | Most general construction materials would be offloaded and stored in this area. | 5 | — |

* The solar facility would contain other Project components such as access roads; therefore, such disturbance acreages should not be considered additive.

2.3.1 Solar Facility

The Proposed Action includes an up to 150-MW nameplate capacity solar power-generating installation. The site would house all structures, including solar panels, tracking/support structures, inverters, SCADA system, substation, and BESS facilities, all of which will be enclosed by a perimeter security fence containing approximately 1,178 acres. Solar energy will be captured by an array of panels mounted to a single-axis tracking system.

Prior to initiation of grading operations, the construction areas would be cleared and grubbed of vegetation and miscellaneous debris. Grading activities would be associated with the development of access roads, with lesser quantities associated with the substation, and the associated foundations. For these areas, grading would consist of the excavation and compaction of earth to meet the design

requirements. Grading within the solar field would match existing grades as close as possible. The existing contours would be smoothed out for access purposes.

2.3.1.1 Solar Arrays

Solar energy would be captured by an array of panels mounted to a single-axis tracking system. The high-efficiency commercially available PV panels convert incoming sunlight to direct current (DC) electrical energy. The panels would be arranged in series to effectively increase output voltage to approximately 1,500 volts. These series of panels are called “strings” and provide the basic building block of power conversion in the solar array. The strings would be combined in the solar field via a belowground DC collection system, and then further ganged together at the inverter stations, where the energy is converted to alternating current (AC) and then stepped to an intermediate voltage, typically 345 kV. The chosen PV panels would either be crystalline silicon or thin film and would be well suited for the environment due to their durability and reliability. PV panels may be single-sided or bifacial.

The minimum clearance from the lower edge of the panel to ground level would be approximately 18 to 24 inches, pending final design. The final number of panels would be determined based on the selected panel manufacturer and size of the panel selected.

2.3.1.2 Tracking and Support Structures

The tracking system would be parallel to the ground and supported, when practical, by driven piers (piles) directly embedded into the ground. The system would rotate slowly throughout the day at a range of +/- 60 degrees facing east to west to stay perpendicular to the incoming solar rays so that production is optimized. Each tracker would have a maximum height of approximately 15 feet above grade, depending on the dimensions of the chosen panel.

2.3.1.3 Inverter Stations

The inverter stations would be up to approximately 13 feet in height and perform three critical functions for the solar plant: 1) collect DC power in a central location, 2) convert the DC power into AC power, and 3) convert low-voltage AC power to medium-voltage AC power. The inverter stations are typically open air and well suited for dry and dusty environments. The stations consist of DC collection equipment, utility-scale inverters, and a low- to medium-voltage transformer. The output power from the inverter stations is then fed to the AC collection system via a belowground collection system. This AC collection system would deliver the electricity to the on-site substation, where the voltage would be stepped up to the interconnection voltage.

2.3.1.4 On-Site Electrical Distribution

A distribution line to the Project substation would be needed to provide construction power and backup power to the solar and energy storage facilities for lighting and communications purposes, as well as to potential groundwater well pumps, if required for Project operations and maintenance. It is anticipated that on-site electrical distribution would come from the existing Poudre Valley Rural Electric Association line that traverses the area. Alternatively, generators could be used to provide construction and backup power.

2.3.1.5 Battery Energy Storage System

The Proposed Action would use a BESS with a capacity of approximately 100 MW and a storage duration of 4 hours, connected using either an AC- or DC-coupled system. Selection of an AC- or DC-coupled

system is ultimately determined through off-taker preference and contract terms. All energy stored on the BESS would solely be generated by the Project and no other sources of energy would be used to charge the BESS.

If an AC-coupled BESS is used, battery units would be connected to a bidirectional inverter to convert DC energy to AC energy, allowing for energy to flow in or out of the batteries to provide charge and discharge. This AC energy would be coupled to the PV array at the 34.5-kV busbars. Power switches and relays would protect the system. The system would consist of several housing units, similar to shipping containers. The containers would be placed on concrete pads and occupy approximately 6 acres, depending on the size of the system contracted and technology selected. The equipment enclosures and buildings would be located next to the substation and operations and maintenance building.

If a DC-coupled BESS is used, battery units would be stored in numerous smaller containers. Those containers would make use of the solar inverters, feeding them in DC power. Therefore, the battery containers would be distributed throughout the solar arrays, adjacent to their respective inverters. The containers would be similar in size (20–40 feet long) to the solar inverter skids. The battery and solar inputs would be metered separately prior to signal inversion. The charge and discharge of the DC-coupled batteries would be controlled by signal from the inverters. As is typical for the industry, inverters would be controlled by a central control system. The protections to the batteries would be internal to the battery management systems and control boxes located within the containers and inverters.

2.3.2 Substation

The on-site Project substation would be a new, approximately 10-acre substation that would step up power from the 34.5-kV solar collection lines and deliver it to the gen-tie line.

2.3.3 Generation Tie-In Line

The gen-tie line would be 345 kV and transmit the power approximately 0.2 mile from the on-site substation to the interconnection switching station adjacent to WAPA's Ault Substation. A corridor of 500 feet on the centerline of the proposed gen-tie center line would be evaluated, which includes 200 feet on each side for temporary use and a 100-foot-wide permanent right-of-way.

2.3.3.1 Interconnection Switchyard

The 345-kV gen-tie line would terminate within the interconnection switchyard, which would contain the necessary electrical equipment to interconnect directly to WAPA's Ault Substation.

2.3.4 Access Roads

Primary access to the Project would be from Colorado Highway 14 and/or U.S. Highway 85. County roads that would be used for access include CRs 86, 88, and 90, which run east-west, and CRs 25 and 27, which run north-south. Primary proposed Project access road(s) would typically be 20 feet wide and composed of 6 inches of Type II Class B aggregate base compacted to 95% maximum dry density. Internal access roads to the on-site substation, switching station, and BESS would consist of approximately 10-foot-wide roads with compacted gravel or dirt. Approximately 9 miles of new access roads are anticipated.

2.3.5 Construction Timing

Construction associated with the Proposed Action would begin in February 2024. The proposed Project is intended to be constructed in a single phase; however, it could be developed in multiple phases depending on final power purchase agreements. The total construction duration, assuming a single phase, is planned to take 12 months from the notice to proceed to final connection and commissioning. If multiple phases are constructed, total construction length would be extended. It is anticipated that the work can be completed in 8- to 10-hour shifts, with a total of up to six shifts per week.

2.3.6 Traffic

For a 150-MW project, the peak daily construction employees would be approximately 250 to 300 workers. Most daily workers would travel to the site in personal vehicles. Truck trips for road construction can average 60 to 70 per day but would only occur for a short time. There would be an estimated 20 to 30 truck trips per day for deliveries and equipment hauling. Most of the truck deliveries would be for the solar facility installation and any aggregate material that could be required for road base.

The heaviest delivery loads to the site would consist of the tracker structures, rock truck deliveries, and the generator step up. These loads would typically be limited to a total weight of 80,000 pounds, with a cargo load of approximately 25 tons or 50,000 pounds of rock or tracker structures. The generator step up could be up to 160,000 pounds. Typically, the rock would be delivered in bottom dump trucks or transfer trucks with six axles, and the tracker structures would be delivered on traditional flatbed trucks with a minimum of five axles. Low-bed transport trucks would transport the construction equipment to the site as needed. The size of the low-bed truck (number of axles for weight distribution) would depend on the equipment transported.

2.3.7 Water Use

Water consumption during construction would be used for dust suppression and earthwork over approximately 12 months. Weld Solar anticipates that between 50 and 75 acre-feet of water will be needed for the construction phase of the Project, primarily for dust abatement; 75 acre-feet is equivalent to the annual water use of approximately 150 households (Colorado State University 2014). Construction water would be trucked in from a nearby municipality with an available source, most likely either Ault, Pierce, or Nunn, Colorado, and water use would drastically decline with the completion of construction activities. Operations and maintenance could require the drilling of an on-site well for personnel use if an operations and maintenance building is constructed on the Project instead of being housed at an off-site location; this water use for the operations and maintenance building would be negligible. Scheduled panel rinsing is not proposed for the Project, which further limits the need for water consumption.

2.3.8 Operations and Maintenance

The Proposed Action would include the construction of an operations and maintenance building located either on-site or at an off-site location in proximity to the Project. This approximately 1-acre facility would include a building with a footprint of approximately 50 × 50 feet and an overall height of 30 feet, housing controls for the Project, offices, meeting rooms, breakroom space, shop space, and maintenance vehicle bays. Personnel stationed at the operations and maintenance building would be responsible for monitoring Project operations through the SCADA system, and for completing periodic on-site inspections and coordinating maintenance as required across the Project site. The Project may operate for up to 40 years.

2.3.9 Decommissioning and Reclamation

A decommissioning plan would be prepared for the Project. The solar facility and BESS (including structure) would be recycled when the Project's effective operating life is over. Decommissioning would be completed by licensed subcontractors who would use similar methods as those used in construction of the Project. Most parts of the proposed system are recyclable. Panels typically consist of silicon, glass, and a metal frame and can sometimes be reused or recycled through the manufacturer. Batteries include lithium-ion, which degrades but can be recycled and/or repurposed. The substation transformer and equipment would be transported offsite for re-use or disposal at an approved facility. Gravel and other granular material would be removed from the Project site and taken to a facility where it may be processed for salvage. Cables and lines would be disconnected and recycled (if possible) or disposed of at an approved facility unless such infrastructure is buried below 3 feet, in which case it would be left in the ground, if approved by the landowner. Site structures including steel or wood and concrete would be recycled as appropriate, and all pilings would be removed. Any pieces that are not able to be recycled would be removed and disposed of at an appropriate off-site facility.

Upon removal of the Project components, the site would be restored to pre-development conditions through revegetation and reclamation implementation.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1 AIR QUALITY AND EMISSIONS

This section analyzes impacts of the Proposed Action and the No Action Alternative on air quality issues such as air pollutant emissions from vehicles, equipment, and fugitive dust.

3.1.1 Existing Conditions

Air pollutants tend to disperse into the atmosphere, becoming more spread out as they travel away from a source of pollution, and therefore cannot be confined within defined boundaries, such as the boundary of the Project area or county lines. Because of the nature of air pollutants, the air quality analysis area for direct and indirect effects extends (3 miles) in all directions beyond the Project area.

National Ambient Air Quality Standards (NAAQS) are set by the U.S. Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards. Ambient air quality standards define the allowable concentrations of criteria pollutants in ambient air. The EPA has set air quality standards for the following criteria pollutants: nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter smaller than 10 microns in aerodynamic diameter (PM₁₀), particulate matter smaller than 2.5 microns in aerodynamic diameter (PM_{2.5}), ozone (O₃), and lead (Pb). Under the provisions of the Clean Air Act, any state can have requirements that are more stringent than those of the national program. In Colorado, ambient air quality standards are codified in the Code of Colorado Regulations (CCR) 1001-14. Colorado has set air quality standards for SO₂. The National and Colorado Ambient Air Quality Standards are provided in Table 3-1.

Table 3-1. Ambient Air Quality Standards

| Pollutant | Averaging Time | National Primary Standards | National Secondary Standards | Colorado Standards |
|-------------------|---------------------------------|----------------------------|------------------------------|--------------------|
| CO | 1 hour ^c | 35 ppm | – | – |
| | 8 hour ^c | 9 ppm | – | – |
| Pb | 3 months (rolling) [†] | 0.15 µg/m ³ | Same as primary | – |
| NO ₂ | 1 hour | 0.100 ppm [‡] | – | – |
| | Annual | 0.053 ppm [§] | Same as primary | – |
| O ₃ | 8 hour [¶] | 0.07 ppm | Same as primary | – |
| PM ₁₀ | 24 hour | 150 µg/m ³ # | Same as primary | – |
| PM _{2.5} | 24 hour ^{**} | 35 µg/m ³ | Same as primary | – |
| | Annual ^{††} | 12 µg/m ³ | 15 µg/m ³ | – |
| SO ₂ | 1 hour | 0.075 ppm ^{††} | – | – |
| | 3 hour ^c | – | 0.5 ppm | 0.267 ppm |

Source: EPA (2022a), 5 CCR 1001-14

Notes: µg/m³ = micrograms per cubic meter; gm/m² = grams per square meter; ppm = parts per million.

^c Not to be exceeded more than once per year.

[†] Not to be exceeded.

[‡] The 3-year average of the 98th percentile of the 1-hour daily maximum concentration must not exceed this standard.

[§] Annual mean.

[¶] The 3-year average of the 4th highest daily maximum 8-hour average O₃ concentration measured at each monitor within an area over each year must not exceed this standard.

[#] Not to be exceeded more than once per year on average over 3 years.

^{**} The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed this standard.

^{††} The 3-year average of the annual arithmetic mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed this standard.

^{‡‡} The 3-year average of the annual 99th percentile of the 1-hour daily maximum must not exceed this standard.

The EPA assigns classifications to geographic areas based on monitored ambient air quality conditions. Areas that meet both the primary and secondary standards of a pollutant subject to NAAQS are classified as being in attainment for that pollutant. Areas that do not meet the NAAQS for a pollutant are designated as being in nonattainment for that pollutant. Areas that cannot be classified based on available information for a pollutant are designated as being unclassified. An area's attainment status is designated separately for each criteria pollutant; one area may have all three classifications. Previously designated nonattainment areas for one of the NAAQS that have since met the NAAQS standards are referred to as attainment areas with a maintenance plan. To ensure that the air quality in those areas continues to meet the standards, a maintenance plan is developed and implemented. As of June 2, 2022, the EPA designates Weld County as in marginal nonattainment for the 2015 ozone standard, serious nonattainment with the 2008 8-hour ozone standard, and in attainment or unclassified for all other criteria pollutants. This means that the air in Weld County meets the NAAQS, except for ozone (EPA 2022b).

The General Conformity Rule was established under Clean Air Act Section 176(c)(4) and serves to ensure that federal actions do not inhibit a state's attainment plans for areas designated as non-attainment or maintenance. The term conformity (as it pertains to the rule), means "conformity to a State Implementation Plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards." The rule effectively applies to all federal actions that take place in areas designated as nonattainment or maintenance, except for actions covered under the transportation conformity rule, actions with associated emissions below specified *de*

minimis levels, and other actions that are exempt or presumed to conform (EPA 2022c). The Project is located within a nonattainment area for ozone, thus the General Conformity Rule applies.

The National Emissions Inventory (NEI) is a detailed annual estimate of criterial pollutants and hazardous air pollutants (HAPs) from air emission sources. Emission inventories provide an overview of the types of pollution sources in the area, as well as the amount of pollution being emitted on an annual basis. Emission inventories are useful in comparing emission source categories to determine which industries or practices are contributing to the general level of pollution in an area. The emissions inventory includes estimates of emissions from many sources, including point sources (facilities such as power plants, airports, and commercial sources), nonpoint sources (such as asphalt paving, solvent use, and residential heating), on-road vehicles, non-road sources (such as construction equipment, lawn and garden equipment, trains, barges, ships, and other marine vessels), and event sources (such as wildfires). This inventory is a good estimate of how much each county and state is contributing to air pollution for a given year. Table 3-2 summarizes the emission inventory data for Weld County from the most recent NEI available, which was conducted in 2017.

Table 3-2. 2017 Emissions Inventory in Tons per Year for Weld County

| Source | CO | NO _x | SO _x | PM ₁₀ | PM _{2.5} | VOC | HAPs | CO ₂ e [†] |
|----------------------------|---------------|-----------------|-----------------|------------------|-------------------|---------------|--------------|--------------------------------|
| Agriculture | 0 | 0 | 0 | 11,750 | 2,408 | 903 | 126 | 0 |
| Biogenics [†] | 2,392 | 2,141 | 0 | 0 | 0 | 7,070 | 2,127 | 0 |
| Dust | 0 | 0 | 0 | 14,818 | 1,612 | 0 | 0 | 0 |
| Fires | 1,868 | 39 | 18 | 231 | 174 | 395 | 106 | 18,141 |
| Fuel combustion | 8,394 | 5,775 | 72 | 596 | 595 | 2,712 | 772 | 0 |
| Industrial processes | 15,546 | 16,172 | 230 | 891 | 445 | 78,016 | 5,535 | 3,075,041 |
| Miscellaneous [‡] | 120 | 10 | 0 | 95 | 87 | 2,849 | 300 | 0 |
| Mobile | 32,982 | 5,936 | 25 | 621 | 307 | 2,711 | 813 | 1,988,759 |
| Waste disposal | 265 | 22 | 5 | 361 | 257 | 810 | 77 | 0 |
| Total | 61,565 | 30,096 | 350 | 29,364 | 5,885 | 95,465 | 9,855 | 5,081,942 |

Source: EPA (2020)

Note: CO₂e is listed in metric tons. NO_x = oxides of nitrogen; SO_x = sulfur oxides; VOC = volatile organic compound

[†] CO₂e = carbon dioxide equivalent. Emissions are reported in metric tons.

[†] Biogenic emissions are those emissions derived from natural processes (such as vegetation and soil).

[‡] Miscellaneous categories include bulk gasoline terminals, commercial cooking, gas stations, miscellaneous non-industrial (not elsewhere classified), and solvent use.

According to the 2017 NEI, the major pollutants emitted in Weld County are volatile organic compounds (VOCs), CO, and greenhouse gases. The major sources contributing to VOC emissions are industrial processes and biogenics. The major sources contributing to CO emissions are mobile sources, industrial processes, and fuel combustion. The major sources contributing to greenhouse gases are industrial processes and mobile sources.

3.1.2 Environmental Impacts: Proposed Action

For the purposes of this analysis, an impact on air quality depends on the following from the construction, operations and maintenance, and decommissioning of the Project:

- Emission estimates for regulated pollutants and greenhouse gases (GHGs)
- Comparison of Project emission estimates to county emission inventory

Impacts to air quality are discussed in terms of Project emissions of criteria air pollutants and HAPs. Regulated pollutant emissions from the construction and operation of the Proposed Action have been estimated to characterize the potential emission increases. These emissions estimates are compared to Weld County's emissions inventory as a percentage of the county's annual emissions.

The emission calculations use emission factors for construction and maintenance equipment that were developed by California's South Coast Air Quality Management District to calculate construction worker commute and on-road construction equipment emissions (South Coast Air Quality Management District 2007a, 2007b). For off-road equipment, the appropriate emission factor, equipment type, quantity of equipment needed, and duration of use during construction of the Project were used to determine emissions from construction equipment. Construction workers were assumed to commute from within Fort Collins, Colorado, an average of 17 miles (one way) from the Project area. It was estimated that approximately 9,040 total trips would be required to deliver all the material and off-road equipment. The material and equipment were assumed to be sourced from Fort Collins, Colorado, approximately 17 miles from the Project site.

The emissions of PM₁₀ and PM_{2.5} estimated include emissions from on-road vehicle and off-road equipment exhaust, as well as fugitive dust. PM₁₀ and PM_{2.5} emissions from fugitive dust generated by earthmoving activities were estimated using the Western Regional Air Partnership's (WRAP) Fugitive Dust Handbook (WRAP 2006). The estimated construction emissions calculations account for the Project's dust control methods, including using water during construction to control fugitive dust.

3.1.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to air quality from the Project (SWCA Environmental Consultants [SWCA] 2022a):

- During construction water or soil binders will be applied at regular intervals to the Project site, vehicular speed will be limited, and soil-disturbing activities during periods of high winds will be avoided.
- Requirements of those entities having jurisdiction over air quality matters will be adhered to and any necessary permits for construction activities will be obtained. Open burning of construction trash will not be allowed unless permitted by appropriate authorities.
- In construction areas where ground disturbance is significant or where re-contouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches, as applicable.

3.1.2.2 Direct and Indirect Impacts

During construction, the Project would create short-term air pollutant emissions from equipment exhaust, vehicle exhaust from travel to and from the Project site, and fugitive dust from soil disturbance. Table 3-3 presents the estimated total emissions that would occur from construction of the Project. The estimated construction emissions calculations account for using water during construction to control fugitive dust.

Table 3-3. Estimated Proposed Action Construction Emissions in Tons per Year

| Source | CO | NO _x | SO _x | PM ₁₀ | PM _{2.5} | VOC | HAPs | CO ₂ e | |
|---|--------------|-----------------|-----------------|------------------|-------------------|-------------|-------------|-------------------|---------------|
| | | | | | | | | (100-year) | (20-year) |
| Construction equipment (off-road) | 42.67 | 41.37 | 0.18 | 1.33 | 1.18 | 8.22 | 0.82 | 15,669 | 15,707 |
| Worker and on-road construction equipment commuting | 3.90 | 0.37 | 0.01 | 16.63 | 1.86 | 0.49 | 0.05 | 1,049 | 1,051 |
| Equipment/material delivery | 1.07 | 1.11 | 0.00 | 5.84 | 0.73 | 0.17 | 0.02 | 425 | 425 |
| Fugitive dust from construction operations | – | – | – | 78.99 | 7.90 | – | – | – | – |
| Total | 47.64 | 42.85 | 0.19 | 102.79 | 11.68 | 8.87 | 0.89 | 17,143 | 17,183 |
| General Conformity <i>de minimis</i> level | N/A | 50 | N/A | N/A | N/A | 50 | N/A | N/A | N/A |
| Is Project construction below <i>de minimis</i> level? | N/A | Yes | N/A | N/A | N/A | Yes | N/A | N/A | N/A |
| Weld County emissions inventory total | 61,565 | 30,096 | 350 | 29,364 | 5,885 | 95,465 | 9,855 | 5,081,942 | 5,081,942 |
| Proposed Action's construction emissions increase as percent of Weld County's emissions inventory total | 0.08% | 0.14% | 0.05% | 0.35% | 0.20% | 0.01% | 0.01% | 0.34% | 0.34% |

Source: EPA (2020)

Note: CO₂e is listed in metric tons. N/A = not applicable; SO_x = sulfur oxides; VOC = volatile organic compound

Table 3-3 presents the estimated total Project construction emissions that would be emitted during a 12-month construction period. The highest pollutant emissions produced by construction are carbon dioxide equivalent (CO₂e), PM₁₀, and CO. The projected emission estimate for each pollutant from the construction of the Project is negligible in comparison to the county's annual emissions, representing an increase of 0.34% or less for each pollutant. To prevent and control fugitive dust, emissions mitigation, such as watering soils, would be implemented. As a result, PM₁₀ and PM_{2.5} emissions generated by construction would increase Weld County's annual emissions only by 0.35% and 0.20%, respectively, and these emissions would be temporary, ceasing when construction is completed. Furthermore, the disturbance area was conservatively assumed to be equivalent to the Project area. However, disturbance is not anticipated to occur throughout the entire Project area. Thus, the actual PM₁₀ and PM_{2.5} construction emissions are likely to be less than the estimates in Table 3-3.

The construction emissions would be temporary, lasting only for the duration of the 12-month construction period. Although Project construction would generate emissions of criteria pollutants, given

the temporary nature of emissions, scope of construction activities, and remote location of the Project, it is unlikely that emissions would exceed NAAQS. The estimated construction emissions are also below *de minimis* levels so a conformity determination would not be required. Construction would have minor, short-term impacts to air quality. Overall, construction impacts to air quality would be less than significant.

Construction of the Project would also result in GHG emissions from internal combustion engines associated with Project construction vehicles and equipment. GHG emissions from construction would result in a maximum of 17,183 metric tons of CO_{2e} being emitted during the construction phase of the Project. This is equivalent to the GHG emissions from 3,702 gasoline-powered passenger vehicles driven for 1 year (EPA 2023). The Project construction GHG emissions could equal up to 0.34% of Weld County’s total emission inventory for CO_{2e}, representing a negligible increase. Construction activities and corresponding GHG emissions would be temporary, localized, and typical of similarly sized construction Projects. Therefore, any GHG emissions associated with the Project would be less than significant.

Operations-related emissions from the Project are summarized in Table 3-4 and include emissions from inspection activities such as exhaust from on-road inspection vehicles and fugitive dust from travel on paved and unpaved roads; emissions from maintenance activities including exhaust from worker vehicles and any needed construction equipment; and fugitive dust from travel on paved and unpaved roads. Operations and maintenance emissions would include vehicle and equipment exhaust from routine inspections and maintenance activities as needed.

Table 3-4. Estimated Proposed Action Operational Emissions in Tons per Year

| Source | CO | NO _x | SO _x | PM ₁₀ | PM _{2.5} | VOC | HAPs | CO _{2e} | |
|---|-------------|-----------------|-----------------|------------------|-------------------|-------------|-------------|------------------|-----------|
| | | | | | | | | (100-year) | (20-year) |
| Maintenance/inspection activities | 0.15 | 0.14 | 0.00 | 0.03 | 0.01 | 0.02 | 0.00 | 47 | 52 |
| Total | 0.15 | 0.14 | 0.00 | 0.03 | 0.01 | 0.02 | 0.00 | 47 | 52 |
| General conformity <i>de minimis</i> level | N/A | 50 | N/A | N/A | N/A | 50 | N/A | N/A | N/A |
| Is Project construction below <i>de minimis</i> level? | N/A | Yes | N/A | N/A | N/A | Yes | N/A | N/A | N/A |
| Weld County emissions inventory total | 61,565 | 30,096 | 350 | 29,364 | 5,885 | 95,465 | 9,855 | 5,081,942 | 5,081,942 |
| Proposed Action's operations emissions increase as percent of Weld County's emissions inventory total | < 0.01% | < 0.01% | < 0.01% | < 0.01% | < 0.01% | < 0.01% | < 0.01% | < 0.01% | < 0.01% |

Source: EPA (2020)

Note: CO_{2e} is listed in metric tons. SO_x = sulfur oxides; VOC = volatile organic compound

Emissions from operations and maintenance would increase Weld County’s annual emissions inventory by less than 0.01% for each pollutant. The substation facility and the inverters may contain some amounts of sulfur hexafluoride (SF₆), which would be determined upon final design of the Project. The estimated operation and maintenance emissions are well below *de minimis* levels so a conformity determination

would not be required. Impact on air quality from operation of the facility would be negligible and would not cause an exceedance of the NAAQs.

In 2010, the U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service (USFWS) collaborated on the publication of the *Federal Land Managers' Air Quality Related Values Work Group (FLAG) Report* (U.S. Forest Service et al. 2010), which offers guidance on the protection of visual resources and addresses assessments for sources proposed near Class I airsheds. Class I airsheds are defined as “all international parks, national wilderness areas and national memorial parks that exceed 5,000 acres, and of national parks that exceed 6,000 acres,” and were designated to preserve, protect and enhance air quality.

Specifically, if Q (tpy)/ d (km) < 10, no further analysis is required, where Q is the combined emissions increase from a source of SO₂, oxides of nitrogen (NO_x), PM₁₀, and sulfuric acid mist (H₂SO₄) in tons per year (tpy) based on 24-hour maximum allowable emissions (which are annualized) and d is the nearest distance to a Class I area in kilometers from the source. Based on the proximity of the closest Class I area (Rocky Mountain National Park, approximately 33.6 miles (57 km) west of the Project site), the Q/d screening approach demonstrates no further analysis would be required.

Operation of the Project would also result in GHG emissions. Internal combustion engines associated with Project construction vehicles and equipment would emit GHGs. GHG emissions from operation and maintenance would result in a maximum of 52 metric tons of CO_{2e} being emitted each year. This is equivalent to 11 gasoline-powered passenger vehicles driven for 1 year (EPA 2023). In Weld County, the Project operational GHG emissions would be less than 0.01% of Weld County's total emission inventory for CO_{2e}, representing a negligible increase.

The use of the sun to generate electricity offsets the need to generate electricity from traditional fossil fuel-powered plants that produce GHG emissions. The estimated emissions offset by generating electricity via the Project instead of traditional fossil fuel-powered plants were calculated using the EPA's AVERT Excel Edition, Version 3.2 for the Rocky Mountains region based on EPA's 2019 regional data file. Regional data for 2020 and 2021 are available; however, because of temporary declines in electricity demands, particularly from March through May 2020 (likely caused by the pandemic), the EPA recommends using the 2019 regional data file when assessing annual, near-term future avoided emissions. The EPA's AVERT is not a long-term projection tool and is not intended to analyze avoided emissions for more than 5 years from baseline. The estimated annual and 5-year long-term total avoided emissions are based on the design capacity of the Project (150 MW). To provide a rough estimate of the long-term avoided emissions of the Project, the annual avoided emissions estimated by AVERT were multiplied by 5 years. As presented in Table 3-5, the Project would annually displace CO₂, NO_x, SO₂, PM_{2.5}, VOC, and ammonia (NH₃) produced by the Colorado electric grid and decrease the creation of air pollutant emissions in the atmosphere from traditional fossil fuel-fired power plants. This annual displacement is equivalent to avoiding the use of 56,426 gasoline-powered passenger vehicles driven for 1 year (EPA 2023). Any GHG emissions associated with the Project would be less than significant and would help meet federal climate action goals by reducing the amount of GHGs emitted than if the same amount of electricity was generated by traditional fossil-fuel combustion.

Table 3-5. Estimated Annual and 5-Year Avoided Emissions for the Operation of the Project (tons)

| Term | CO ₂ | NO _x | SO _x | PM _{2.5} | VOC | NH ₃ |
|--|-----------------|-----------------|-----------------|-------------------|-------|-----------------|
| Annual avoided emissions 150-MW solar facility | 279,510 | 154.20 | 84.59 | 6.69 | 3.76 | 4.50 |
| 5-year avoided emissions 150-MW solar facility | 1,397,550 | 770.98 | 422.93 | 33.45 | 18.80 | 22.48 |

Source: EPA (2022d)

Decommissioning would not involve any more time or equipment than construction; therefore, impacts to air quality from decommissioning the Proposed Action would be minor, short term, and less than significant.

3.1.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, the solar facility would not be developed. No surface disturbance would occur, and air resources would not be affected. Climate change would continue as defined by current trends and air quality conditions would continue as described in Section 3.1.1 Existing Conditions. Although there would not be any GHG emissions generated, there also would not be any GHG emissions avoided by using the sun to generate energy rather than traditional fossil-fuel combustion energy generation.

3.2 CULTURAL RESOURCES

Cultural resources are objects or locations of human activity, occupation, or use, identifiable through field inventory, historical documentation, or oral evidence. These activities represent human social interaction and/or interaction with the natural or built environment. The term encompasses archaeological sites, historic buildings, structures, objects, and districts considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes, as well as specific areas of the landscape that are important to Native American tribes or other culturally recognizable groups (traditional cultural properties). Cultural resources are recognized as fragile and irreplaceable materials, places, and things with potential public and scientific uses. Historic properties represent a subset of cultural resources defined as those cultural resources that are eligible for or listed on the National Register of Historic Places (NRHP).

Federal agencies must consider the effects of their actions on cultural resources under NEPA and under Section 106 (54 United States Code [USC] 306108) of the NHPA (54 USC 300101 et seq.). Specifically, Section 106 of the NHPA directs federal agencies to consider the effects of their actions on historic properties and provide the Advisory Council on Historic Preservation with a reasonable opportunity to comment. The Section 106 process is separate from, but often conducted parallel with, the preparation of an EA. Other federal legislation applicable to cultural resources for the Project includes the following:

- American Antiquities Act of 1906 (54 USC 320301, et seq.)
- Archaeological Resources Protection Act of 1979 (16 USC 470aa, et seq.)
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001, et seq.)
- Executive Order 13007, Indian Sacred Sites

- Executive Order 11593, Protection and Enhancement of the Cultural Environment
- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

The Colorado State Historic Preservation Office (SHPO) is responsible for ensuring that effects from the proposed Project on lands under the jurisdiction of the state are considered under applicable state laws and that state cultural resources and historic properties laws are followed. State of Colorado statutes and guidelines applicable to cultural resources in the proposed Project include the following:

- Colorado Historical, Prehistorical, and Archaeological Resources Act of 1973 (Colorado Revised Statutes [CRS] 24-80-401 to 410) is intended to protect archaeological sites listed in the State Register of Historic Places (i.e., NRHP properties within the state) or on property or minerals owned or under the control of the State of Colorado or any of its political subdivisions. Therefore, projects taking place on state-owned or state-managed land must consult with the state land agency managing the land regarding its archaeological and historic resource management. The agency may further consult the Colorado SHPO to advise regarding work related to archaeological and historical resources.
- Colorado Unmarked Human Graves Law (CRS 24-80-13, Sections 1301–1305) protects human burials in the state. If human burials are encountered in the assessment area and the remains are determined to be Native American, they will be handled in accordance with procedures established through coordination with the state archaeologist, and work in the affected area could only resume per authorization from the state archaeologist.

Federal undertakings may take place on lands under the jurisdiction of the state. In accordance with Section 101(b)(3) of the NHPA, the Colorado SHPO is also responsible for advising and assisting federal agencies in carrying out their Section 106 responsibilities and for cooperating with agencies, local governments and organizations and individuals to ensure that historic properties are taken into consideration at all levels of planning and development (36 CFR 800.2(c)(1)(i)).

3.2.1 Existing Conditions

The analysis area for cultural resources consists of approximately 1,500 acres on which the Project, as described in Chapter 2, would be constructed. The analysis area also includes an additional 1-mile area surrounding the Project for consideration of potential visual, auditory, and atmospheric effects to historic properties where setting and feeling are considered character-defining aspects of significance and resources of Native American cultural and religious significance within that area. The analysis area coincides with the Project's area of potential effect (APE).

In October 2021, SWCA completed a Class I file search and literature review of the analysis area to identify previously recorded cultural resources, including potential resources of Native American cultural and religious significance. SWCA updated the file search and literature review in April 2022 and again in June 2022. This review identified 13 previously recorded resources within the analysis area. These resources include five precontact archaeological sites (two open camps, one fire-altered rock concentration and lithic scatter, one lithic scatter, and one stone circle site with hearths and an associated lithic scatter); two precontact isolated finds; and six historic-age sites (one habitation site, the Ault Substation, the Cheyenne to Richard Lake Transmission Line, one segment of the Laramie-Poudre Canal, the Pierce Lateral Canal, and one mining site). Two sites have not been evaluated for eligibility to the NRHP, with one precontact open camp identified as needing more data before an NRHP evaluation can be made and one stone circle site identified as unevaluated; these sites are treated as eligible for the purposes of this evaluation. The remaining 10 resources have been determined or recommended not eligible for the NRHP.

Between October 2021 and June 2022, SWCA performed a Class III intensive pedestrian survey of 1,708 acres that comprises the APE and the Project area as depicted on Figure 1-1. In addition, SWCA cultural resource specialists also supported survey of the Project APE by tribal cultural specialist surveyors from the Rosebud Sioux Tribe, the Sisseton Wahpeton Oyate of the Lake Traverse Reservation, the Standing Rock Sioux Tribe, and the Yankton Sioux Tribe in October and November 2022. This tribal resource survey covered the APE and Project area as depicted in Figure 1-1 but excluded the gen-tie alignment.

The Class III cultural resources and tribal resources surveys resulted in the recordation of 12 archaeological sites, five segments of the historic Laramie-Poudre Canal, two segments of the historic Cheyenne to Richard Lake Transmission Line, the Ault Substation, and 73 isolated finds (SWCA 2022b). The archaeological sites include four precontact lithic scatters, two precontact open camps, two historic habitation sites, one ranching-related site with a pumphouse, one historic artifact scatter, one multicomponent site consisting of a precontact lithic scatter and rock feature with a historic isolated find, and one multicomponent site consisting of a precontact lithic scatter and a historic homestead. Sixty-seven of the isolated finds consist of precontact non-diagnostic flaked stone tools and debitage and ground stone artifacts, and six of the isolated finds are historic in age and consist of a concrete foundation for an oil well, structural rubble, farm machinery (n = 2), a well, and bottle glass fragments. One of the recorded resources, the Cheyenne to Richard Lake Transmission Line, has been determined eligible for the NRHP under Criterion A for its association with broad events that are nationally significant. The two segments of the transmission line recorded during survey do not support the eligibility of the overall resource. The Laramie-Poudre Canal requires additional data before an eligibility assessment can be made; for the purposes of this assessment, this site is considered eligible. However, the five segments of the Laramie-Poudre Canal recorded during survey do not support the eligibility of the overall resource. The remaining resources consisting of 12 archaeological sites, the historic Ault Substation, and the 73 isolated finds are not eligible for the NRHP.

Based on the results of the Class I review and Class III survey, SWCA recommended a finding of no adverse effect to historic properties for the undertaking. Consultation between WAPA and the SHPO regarding this recommendation is ongoing.

Consultation between WAPA and tribal entities (Section 1.3.3) as part of this NEPA process is ongoing. Cultural resources were identified during the survey, and it was requested that some be avoided. Maps showing these avoidance areas will be provided to Weld Solar and construction crews.

3.2.2 Environmental Impacts: Proposed Action

3.2.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to cultural resources from the Proposed Action:

- By design and per request by tribal entities, the Project would avoid physical impacts to six cultural resources consisting of four precontact archaeological sites and two precontact isolated finds. 5WL75, 5WL9356, 5WL9500, 5WL9502, 5WL9536, and 5WL9566 will be avoided by a minimum of 50 feet and 5WL9398 will be avoided by a minimum of 100 feet. Weld Solar would use micrositing prior to construction to avoid physical impacts to these cultural resources requested for avoidance by tribes.
- By design, the Project would avoid physical impacts to supporting segments of the Cheyenne to Richard Lake Transmission Line (5WL3167).

- Weld Solar has established and implemented unanticipated find provisions so that all site personnel are aware of and understand procedures for unanticipated finds. This includes work stoppage and notification requirements. If a discovery occurs and is determined eligible for the NRHP, Weld Solar would consult with WAPA, the Colorado SHPO, and applicable consulting parties on the need for further testing and/or data recovery.
- Erosion-related and visual resource–related environmental commitments would be implemented as discussed in Section 3.3.2.1, Section 3.5.2.1, and Section 3.8.2.1, respectively.

3.2.2.2 Direct and Indirect Impacts

In compliance with Section 106 of the NHPA, WAPA has completed its obligations to take into account potential effects on historic properties as a result of this proposed undertaking.

The Proposed Action has the potential to directly and indirectly impact cultural resources in the analysis area where direct impacts refer to impacts that result from the Proposed Action at the same time and place with no intervening cause, and indirect impacts refer to those impacts that occur at a later point in time or are farther removed in distance but are still reasonably foreseeable as a result of the Proposed Action (Advisory Council on Historic Preservation 2019).

The Project could directly impact known and unknown archaeological historic properties through ground-disturbing activities associated with the construction, operation, maintenance, and/or decommissioning and reclamation of the Project elements as described in Section 2.3 and Table 2-1. Direct impacts could also include visual impacts to the setting and feeling of historic properties. Indirect impacts could include increased road sedimentation due to higher levels of traffic where the road is itself or passes through or immediately adjacent to a historic property, visual impacts to the setting and feeling of historic properties, and increased potential for illegal collecting of cultural material because of increased access during Project development and implementation. It is assumed that development of the Project would not increase human access to areas outside the Project with potential for surface cultural material because the entire Project area is close to existing improved roads (less than 0.25 mile). Implementation of environmental commitments (see Section 3.2.2.1) would reduce potential impacts to such historic properties if encountered.

Twelve archaeological sites, five segments of the historic Laramie-Poudre Canal, two segments of the historic Cheyenne to Richard Lake Transmission Line, the Ault Substation, and 73 isolated finds are present within the Project. No traditional cultural properties were identified via government-to-government consultation between WAPA, the Colorado SHPO, and tribal entities.

Physical effects to 5WL75 and 5WL3167, the two historic properties that are within the Project, will be avoided by Project design (Table 3-6). In addition, tribal entities have requested physical avoidance of some cultural resources present in the analysis area. Weld Solar, by design, will avoid these resources by a minimum of 50 feet. No historic properties where setting and feeling are considered character-defining aspects of significance or traditional cultural properties are present in the analysis area. Therefore, no direct or indirect impacts to traditional cultural properties are expected.

Table 3-6. Cultural Resource Management Recommendations

| Smithsonian Number | Resource Name | Resource Description | NRHP Eligibility | Project Effect | Management Recommendation |
|--------------------|--|--|--|-------------------------------|-----------------------------------|
| 5WL75 | – | Precontact open camp and lithic scatter | Needs data under Criterion D | No adverse effect | Avoidance, minimum 50-foot buffer |
| 5WL2602 | – | Historic habitation | Not eligible | No historic property affected | No further work |
| 5WL2958 | Laramie-Poudre Canal | Historic irrigation ditch | Eligible, non-supporting segments | No adverse effect | No further work |
| 5WL3157 | Ault Substation | Historic substation | Not eligible | No historic property affected | No further work |
| 5WL3167 | Cheyenne to Richard Lake Transmission Line | Historic transmission line | Eligible, supporting and non-supporting segments | No adverse effect | Avoidance of supporting segments |
| 5WL9356 | – | Precontact open camp | Not eligible | No historic property affected | Avoidance, minimum 50-foot buffer |
| 5WL9357 | – | Historic homestead | Not eligible | No historic property affected | No further work |
| 5WL9358 | – | Precontact lithic scatter and historic homestead | Not eligible | No historic property affected | No further work |
| 5WL9359 | – | Historic artifact scatter | Not eligible | No historic property affected | No further work |
| 5WL9360 | – | Historic isolated find | Not eligible | No historic property affected | No further work |
| 5WL9361 | – | Historic isolated find | Not eligible | No historic property affected | No further work |
| 5WL9362 | – | Historic isolated find | Not eligible | No historic property affected | No further work |
| 5WL9363 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9365 | – | Historic isolated find | Not eligible | No historic property affected | No further work |
| 5WL9366 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9397 | – | Historic isolated find | Not eligible | No historic property affected | No further work |

| Smithsonian Number | Resource Name | Resource Description | NRHP Eligibility | Project Effect | Management Recommendation |
|--------------------|---------------|---|------------------|-------------------------------|------------------------------------|
| 5WL9398 | – | Precontact lithic scatter and rock feature and historic isolated find | Not eligible | No historic property affected | Avoidance, minimum 100-foot buffer |
| 5WL9399 | – | Historic pumphouse | Not eligible | No historic property affected | No further work |
| 5WL9499 | – | Historic artifact scatter | Not eligible | No historic property affected | No further work |
| 5WL9500 | – | Precontact open camp | Not eligible | No historic property affected | Avoidance, minimum 50-foot buffer |
| 5WL9501 | – | Precontact lithic scatter | Not eligible | No historic property affected | No further work |
| 5WL9502 | – | Precontact lithic scatter | Not eligible | No historic property affected | Avoidance, minimum 50-foot buffer |
| 5WL9503 | – | Precontact lithic scatter | Not eligible | No historic property affected | No further work |
| 5WL9504 | – | Precontact lithic scatter | Not eligible | No historic property affected | No further work |
| 5WL9505 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9506 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9507 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9508 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9509 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9510 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9511 | – | Historic isolated find | Not eligible | No historic property affected | No further work |
| 5WL9512 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9513 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9514 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |

| Smithsonian Number | Resource Name | Resource Description | NRHP Eligibility | Project Effect | Management Recommendation |
|--------------------|---------------|--------------------------|------------------|-------------------------------|---------------------------|
| 5WL9515 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9516 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9517 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9518 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9519 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9520 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9521 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9522 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9523 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9524 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9525 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9526 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9527 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9528 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9529 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9530 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9531 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9532 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9533 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |

| Smithsonian Number | Resource Name | Resource Description | NRHP Eligibility | Project Effect | Management Recommendation |
|--------------------|---------------|--------------------------|------------------|-------------------------------|-----------------------------------|
| 5WL9534 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9535 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9536 | – | Precontact isolated find | Not eligible | No historic property affected | Avoidance, minimum 50-foot buffer |
| 5WL9537 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9538 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9539 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9540 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9541 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9542 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9543 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9544 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9545 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9546 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9547 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9548 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9549 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9550 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9551 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9552 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |

| Smithsonian Number | Resource Name | Resource Description | NRHP Eligibility | Project Effect | Management Recommendation |
|--------------------|---------------|--------------------------|------------------|-------------------------------|-----------------------------------|
| 5WL9553 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9554 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9555 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9556 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9557 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9558 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9559 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9560 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9561 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9562 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9563 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9564 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9565 | – | Historic isolated find | Not eligible | No historic property affected | No further work |
| 5WL9566 | – | Precontact isolated find | Not eligible | No historic property affected | Avoidance, minimum 50-foot buffer |
| 5WL9567 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9568 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9569 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9570 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |
| 5WL9571 | – | Precontact isolated find | Not eligible | No historic property affected | No further work |

3.2.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, the Project cultural resources within the analysis area and as described in Section 3.2.1 would not be at risk of direct or indirect impacts by Project activities. Existing conditions for cultural resources within the analysis area would continue as described in Section 3.2.1.

3.3 FARMLAND

This section describes the existing conditions related to farmland within the Project area and the effects the Proposed Action could have on farmland within the Project area.

3.3.1 Existing Conditions

Current land use within the Project area and surrounding area consists primarily of dryland farming and cattle grazing (SWCA 2022c). The Project area is crossed by multiple transmission lines running generally northwest to southeast through the western portion of the Project area. Additionally, multiple transmission lines run north to south on the adjacent property east of the Project area. The Ault Substation lies immediately south of the Project area across CR 86. The Project area is flanked by CR 90 to the north. The Project area includes both state and private land. State land within the Project area is leased by the Colorado State Land Board (SLB) for multiple uses, including agricultural use. SLB land is often leased for multiple uses under separate and distinct leases (SLB 2022). For example, a holder of a grazing lease cannot use the land for crop production (SLB 2022). The existing leases on SLB land within the Project area are for grazing and renewable energy development.

The analysis area for impacts to farmland consists of the Project area. This analysis area captures the extent to which potential impacts from the Project could occur and considers secondary effects to farmlands from the potential spread of noxious weeds during ground disturbing activities associated with installation of Project infrastructure. Although disturbance is not anticipated to occur throughout the entire Project area, the entire Project area was chosen for analysis to provide flexibility in the Project's siting and design. The farmland impact indicators used in this analysis are acres of arable Farmland of Statewide Importance and acres of arable land considered Prime Farmland within the Project area. For this analysis, it was assumed that all existing acres of Farmland of Statewide Importance and Prime Farmland in the Project area are arable.

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) defines Prime Farmland as "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, Prime Farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime Farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding" (NRCS 2000). Prime and important farmlands are protected under the Farmland Protection Act, which discourages federal activities that would result in the conversion of farmland to nonagricultural purposes. According to NRCS data, there are approximately 167 acres considered Prime

Farmland, if irrigated, within the Project area, which accounts for 11.2% of the total land within the Project area.

Farmland of Statewide Importance is defined by criteria determined by the Colorado State Experiment Station, the Colorado State Department of Agriculture, and the Colorado State Soil Conservation Board. Farmland of Statewide Importance generally includes land for which the soils almost meet the requirements for Prime Farmland and that yield high crop production when acceptable farming methods are used (NRCS 2022a). There are approximately 1,041 acres of Farmland of Statewide Importance within the Project area, which accounts for 69.4% of the land within the Project area.

3.3.2 Environmental Impacts: Proposed Action

3.3.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to farmland from the Project (SWCA 2022a):

- During construction and operations, vehicle movement outside the Project area and existing land authorizations will be restricted to pre-designated access, contractor-acquired access, or public roads.
- Topsoil will be salvaged separate from subsoil/spoil and stored to the outer extent of the surface-disturbance work area for immediate use in reclamation (i.e., within one growing season of construction activities). The Project preference will be to respread topsoil as soon as possible following construction activities and to support stabilization and reclamation activities. However, if long-term topsoil stockpiles (defined as storage of topsoil for greater than two growing seasons) are required, stockpiles will be stored no more than 4 feet deep for long-term storage and will be identified as long-term topsoil stockpiles with the appropriate flagging and/or signage for long-term storage.
- In construction areas where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches, as applicable.
- If watering facilities (tanks, developed springs, water lines, wells, etc.) are damaged or destroyed by construction activities, they will be repaired or replaced to their pre-disturbed condition.
- The Project area will be maintained free of construction-related non-biodegradable debris. Slash will be left in place or disposed of in accordance with the requirements of the landowner or land management agency.
- Hazardous materials will not be drained onto the ground or into streams or drainage areas and will be handled in accordance with industry standard best practices. Totally enclosed containment will be provided for trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be removed to a disposal facility authorized to accept such materials.
- Prior to construction, a noxious weed management plan will be developed in accordance with agency standards. Stipulations regarding construction, restoration, and operations (prevention and control measures, use of weed-free materials, washing of equipment, etc.) will be included in the noxious weed management plan.

3.3.2.2 Direct and Indirect Impacts

Construction of the Project would require grading activities on Project access roads, with lesser quantities associated with the Project substation and the associated foundations. Grading would require the excavation and compaction of earth to meet design requirements. Grading activities, specifically the compaction of earth, may change the soil quality and moisture supply, which could result in the displacement of Prime Farmland and Farmland of Statewide Importance within the Project area.

Construction of Project infrastructure (i.e., the solar energy generation system; on-site substation and operations and maintenance building; gen-tie line; interconnection switchyard; BESS; and ancillary facilities, including Project access roads) has the potential to convert approximately 1,041 acres of Farmland of Statewide Importance within the Project area to nonagricultural purposes, rendering it no longer arable during the life of the Project. Additionally, there would be approximately 167 acres of Prime Farmland, if irrigated, converted to nonagricultural purposes within the Project area during the life of the Project. As discussed, it is not anticipated that the Project would be developed across the entire Project area, so the acreage of impacted Farmland of Statewide Importance and Prime Farmland is anticipated to be lower than what is reported here. Additionally, considering that there are approximately 675,343 acres of Farmland of Statewide Importance in Weld County, where the Project occurs, the impacts to Farmland of Statewide Importance from the Project could represent impacts to 0.2% of the total acres of Farmland of Statewide Importance in Weld County. As there are approximately 496,050 acres of Prime Farmland, if irrigated, in Weld County, Project impacts to Prime Farmland, if irrigated, could represent impacts to less than 0.1% of the total acres of Prime Farmland, if irrigated, in Weld County. The Farmland Class data layer that derives Prime Farmland, if irrigated, and Farmland of Statewide Importance is maintained by the NRCS and is based on the Soil Survey Geographic Database (SSURGO). SSURGO contains information about soils across the United States as collected by the National Cooperative Soil Survey over the course of a century; this information was gathered by pedestrian surveys, and many soil samples were analyzed in laboratories (NRCS 2022b). However, SSURGO does not reflect current land use. Therefore, the available farmland removed by the Project relative to the available farmland within Weld County as assessed by the NRCS Farmland Class data layer may be of a greater magnitude than what is reported here due to the ongoing conversion of agricultural lands to other land uses. After the decommissioning of the Project, which is anticipated to occur after approximately 40 years of operation, and resultant reclamation, the land could be returned to agricultural use, and as such this conversion of land use is temporary in nature. When the Project's potential impacts to farmlands are viewed temporally and in the context of the total impact to farmlands in Weld County, they would not be significant.

Construction disturbance impacts to Farmland of Statewide Importance and Prime Farmland resulting from the installation of Project infrastructure would last for the life of the Project. Ground disturbances resulting from construction activities could impact arable areas outside the footprint of Project infrastructure through the potential for erosion and spread of noxious weeds. Operations and maintenance activities would not require any new surface disturbance in previously undisturbed areas, and all access would be on existing roads with no overland travel permitted. Decommissioning of the Project would include the removal of the Project components and the restoration of the Project area to pre-development conditions through revegetation and reclamation implementation. Assuming all reclamation goals are achieved, all acres of Farmland of Statewide Importance and Prime Farmland that would be displaced during the construction and operation of the Project would be restored following decommissioning of the Project.

3.3.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, land use in the Project area would likely continue as primarily dryland farming and cattle grazing as described in Section 3.3.1 and there would be no impacts to farmland from the Project.

3.4 LIVESTOCK GRAZING

This section describes the existing conditions related to livestock grazing within the Project area and the effects the Proposed Action could have on livestock grazing within the Project area.

3.4.1 Existing Conditions

The primary land uses within the Project area and surrounding area are livestock grazing (i.e., cattle grazing) and dryland farming (SWCA 2022c). State land within the Project area is leased by the SLB for multiple uses, including livestock grazing. Section 3.3.1 further describes the terms of the existing SLB agricultural lease in the Project area. Weld Solar has negotiated with those holding current grazing leases on SLB land adjacent to the Project area to avoid Project impacts to grazing operations to the extent practicable.

The analysis area for the Project's potential impacts to livestock grazing consists of the Project area. This analysis area was selected as impacts to livestock grazing operations are not anticipated outside the Project area. The analysis area also considers secondary effects to livestock grazing from the potential spread of noxious weeds during ground-disturbing activities associated with installation of Project infrastructure. Additionally, although disturbance is not anticipated to occur throughout the Project area, disturbance impacts were analyzed for the entire Project area to provide flexibility in the Project's siting. The impact indicator for livestock grazing used in this analysis is acres of forage available for grazing within the Project area. The Project area lies within the High Plains Level III ecoregion and Flat to Rolling Plains Level IV ecoregion (Chapman et al. 2006). The High Plains Level III ecoregion is characterized by smooth to slightly irregular, high, dry plains with a high percentage of cropland (Chapman et al. 2006). The potential natural vegetation in this region is gramma-buffalo grass (Chapman et al. 2006). The Flat to Rolling Plains Level IV ecoregion is characterized by extensive dryland farming with winter wheat (*Triticum aestivum*) being the main cash crop (Chapman et al. 2006). Dominant upland plant species observed within the grassland/herbaceous portions of the Project area during SWCA's field surveys conducted on August 3 and October 12, 2021, and July 6, 2022, include buffalograss (*Bouteloua dactyloides*), western wheatgrass (*Pascopyrum smithii*), spiny phlox (*Phlox hoodii*), little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), sideoats grama (*Bouteloua curtipendula*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), James' cryptantha (*Cryptantha cinerea* var. *jamesi*), purple threeawn (*Aristida purpurea*), and Lacy tansyaster (*Machaeranthera pinnatifida*) (SWCA 2022c).

Land cover types within the Project area include Cultivated Crops, which accounts for 1,010 acres or 67% of the total acreage within the Project area; Introduced Upland Vegetation – Perennial Grassland and Forbland, which accounts for 254 acres or 17% of the total acreage within the Project area; Western Great Plains Shortgrass Prairie, which accounts for 223 acres or 15% of the total acreage within the Project area; Developed, Open Space, which accounts for 13 acres or 1% of the total acreage within the Project area; and Western Great Plains Woodland and Shrubland, which account for less than 1 acre or less than

0.1% of the total acreage within the Project area (see Section 3.7). For this analysis, acres of Western Great Plains Shortgrass Prairie and Introduced Upland Vegetation – Perennial Grassland and Forbland were used as a proxy for acres of forage available for grazing within the Project area. There are 477 acres total of Western Great Plains Shortgrass Prairie and Introduced Upland Vegetation – Perennial Grassland and Forbland within the Project area. These land cover types account for 31.8% of the total land cover within the Project area.

3.4.2 Environmental Impacts: Proposed Action

3.4.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to livestock grazing from the Project (SWCA 2022a):

- In construction areas where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches, as applicable.
- If watering facilities (tanks, developed springs, water lines, wells, etc.) are damaged or destroyed by construction activities, they will be repaired or replaced to their pre-disturbed condition.
- If fences and gates are damaged or destroyed by construction activities, they will be repaired or replaced to their original pre-disturbed condition as required by the landowner or the land management agency. Temporary gates will be installed only with the permission of the landowner or the land management agency and permanent fences and gates will be restored to their original pre-disturbed condition following construction.
- Hazardous materials will not be drained onto the ground or into streams or drainage areas and will be handled in accordance with industry standard best practices. Totally enclosed containment will be provided for trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be removed to a disposal facility authorized to accept such materials.
- Prior to construction, a noxious weed management plan will be developed in accordance with agency standards. Stipulations regarding construction, restoration, and operations (prevention and control measures, use of weed-free materials, washing of equipment, etc.) will be included in the noxious weed management plan.

3.4.2.2 Direct and Indirect Impacts

Construction of the Project would require that development areas be cleared and grubbed of vegetation. Grading activities would occur on Project access roads, with lesser quantities associated with the Project substation and the associated foundations. Grading would require the excavation and compaction of earth to meet design requirements. Clearing, grubbing, and grading activities could temporarily remove available forage within the Project area. Additionally, noise from these activities, as well as noise from construction traffic, could indirectly affect livestock grazing and provide disruptions to calving areas and periods. Increased mortality and injuries to livestock could result from increased vehicle traffic within the Project area. Additionally, existing rangeland improvements within the Project area, such as fences, cattle guards, and stock tanks, could be directly removed or disturbed because of surface-disturbing activities associated with construction activities.

Construction of Project infrastructure would remove up to 477 acres of available forage within the Project area during the life of the Project. Construction disturbance impacts to available forage would last for the life of the Project. Fencing around Project infrastructure would preclude grazing within that area. Ground disturbances resulting from construction activities could impact areas outside the footprint of Project infrastructure through the potential for erosion and spread of noxious weeds, potentially reducing the quality of forage in nearby areas. However, areas outside the footprint of Project infrastructure would be reclaimed following construction, using approved seed mixes to restore the areas to preconstruction conditions. Operations and maintenance activities would not require any new surface disturbance in previously undisturbed areas and all access would be on existing roads with no overland travel permitted. Decommissioning of the Project would include the removal of the Project components and the restoration of the Project area to pre-development conditions through revegetation and reclamation implementation. These steps would work to restore the Project area to preconstruction vegetative conditions and, assuming that all reclamation goals are achieved, would restore the available forage removed from the construction and operation of the Project. Therefore, the Project's impacts to livestock grazing would be temporary and would not be significant.

3.4.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, land use within the Project area would likely continue as primarily dryland farming and cattle grazing as described in Section 3.4.1, and there would be no impacts to existing or potential future livestock grazing operations from the Project.

3.5 PALEONTOLOGY

Paleontological resources are any fossilized remains, traces, or imprints of organisms preserved in or on the Earth's crust that are of paleontological interest and that provide information about the history of life on Earth. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources are considered nonrenewable resources because the organisms they represent no longer exist, and such resources, if destroyed, cannot be replaced.

Potential Fossil Yield Classification (PFYC) rankings (1–5 or unknown [U]) are assigned to each geologic unit (formation, member, or other distinguishable unit) based on the taxonomic diversity and abundance of previously recorded scientifically significant paleontological resources associated with the unit and the potential for future discoveries, with a higher-class number indicating higher paleontological resource potential (Bureau of Land Management [BLM] 2022). The PFYC system provides baseline guidance for predicting, assessing, and mitigating paleontological resources in areas of development.

3.5.1 Existing Conditions

The analysis area for impacts to paleontological resources consists of the Project area. This section describes the existing conditions for paleontological resources in the analysis area. Data reviewed include geologic maps, literature, aerial imagery, and previously recorded locality data. Paleontological fieldwork was not conducted as part of this Project analysis.

The analysis area is located on rolling terrain east of the Rocky Mountains. The Cretaceous units underlying the northeastern portion of Colorado preserve the final regression of the Cretaceous Interior

Seaway and the end of marine deposition in Colorado. With the onset of the Laramide Orogeny the modern Rocky Mountains began to uplift approximately 72 mega annum (Ma) and stopped approximately 40 million years ago. As sediments eroded from the uplifted mountains, they were redeposited in the lower lying areas to the east, including the analysis area. This deposition and subsequent erosion during the Pleistocene through Holocene formed the modern topography of the analysis area. BLM PFYC values and published geologic mapping (Colton 1978; Tweto 1979) indicate that the analysis area crosses two mapped PFYC 2 geologic units (Piney Creek Alluvium and Quaternary eolium), one PFYC 3 geologic unit (Fox Hills Sandstone), one PFYC 5 geologic unit (Laramie Formation), and two PFYC U geologic units (Verdos Alluvium and Quaternary gravel). In the analysis area, Coalbank Creek has cut down through the younger Holocene and Pleistocene surficial deposits and exposed the late Cretaceous Fox Hills Sandstone and Laramie Formations. Table 3.7 summarizes the geologic units in the analysis area.

Table 3-7. Geologic Units in the Analysis Area

| Geologic Unit | Age | Typical Fossils | PFYC | Acres |
|---|-------------------------|--|------|-------|
| Piney Creek Alluvium (Qpc) | Holocene | Holocene-age deposits contain the unfossilized remains of modern taxa and are too young to contain fossils. | 2 | 1 |
| Eolium (Qe), windblown clay, silt, sand, and granules | Pleistocene to Holocene | Holocene-age deposits typically contain the unfossilized remains of modern taxa. Sparse mammal fossils (e.g., mammoth, camel, bison, horse, badger, rodents) are known from sand and loess deposits in eastern Colorado. | 2 | 726 |
| Verdos Alluvium (Qv) | Pleistocene | Sparse vertebrate fossils include horse and large camel. | U* | 129 |
| Older gravels and alluviums (Qgo) | Pleistocene | Sparse vertebrate fossils known from Pleistocene gravels include large and small mammals. | U* | 295 |
| Laramie (or Lance) Formation (Kl) | Upper Cretaceous | Locally abundant plants (especially leaves); sparse but scientifically important reptiles (including dinosaurs) and mammals. | 5 | 313 |
| Fox Hills Sandstone (Kfh, Kf) | Upper Cretaceous | Moderately abundant invertebrate (mostly molluscan) trace fossils; less abundant and typically poorly preserved plant fossils and invertebrate body fossils; sparse vertebrate fossils. | 3 | 36 |

* Currently these units do not have formal informed PFYC assignments (=PFYC Unknown), based on information gathered and previous studies (e.g., Murphey et al. 2015) in eastern Colorado. These units are considered to have moderate paleontological potential (PFYC 3).

The Fox Hills Sandstone and Laramie Formation each have a long history of geological and paleontological research in northeastern Colorado and surrounding regions (Murphey et al. 2015). Locally, the Fox Hills Sandstone contains thin coal beds and is often exposed as sandstone ridges in areas of steeply dipping beds along the mountain front (Tweto 1979). Within northeastern Colorado, the Fox Hills Sandstone contains mostly invertebrate ichnofossils (trace fossils) and poorly preserved plants, whereas the Laramie Formation contains locally abundant plant fossils and reptiles, including dinosaurs and late Cretaceous mammals (Murphey et al. 2015). Quaternary deposits, such as those mapped in the analysis area, contain sparse mammal fossils including large mammals (e.g., a horse and large camel) and smaller taxa (e.g., badger and rodents) that were previously documented in eastern Colorado, including within the older layers of eolian, gravels, and the Verdos Alluvium as noted on local geologic maps by G.R. Scott in the 1960s and 1970s (Murphey et al. 2015). Aerial images of the Project show that much of the area is covered by younger sediments and vegetation, including agricultural fields. The older Cretaceous-age geologic units are restricted to the slopes along Coalbank Creek, but natural vegetation and younger sediment cover reduce the area of Cretaceous-age exposures within the Project area. Readily visible exposures are located to the north and south of the analysis area.

One previously recorded locality (USGS 5714) is possibly crossed by the analysis area, and at least one (informally named Northwest of Ault) is within 1 mile of the analysis area (Kennedy et al. 1996; Landman and Cobban 2003). Both localities are within the Fox Hills Sandstone and were documented in the early 1900s with the collection of the ammonites *Sphenodiscus pleurisepta* (specimen USNM 519506) and *Coahuilites sheltoni* (specimen USNM 76260) (Atwater 2022; Florence 2022; Kennedy et al. 1996; Landman and Cobban 2003). Based on the literature review, review of Colorado Office of Archaeology and Historic Preservation and the PaleoBiology Database locality data, and results of previous locality search requests received from the University of Colorado Museum of Paleontology and the Denver Museum of Nature and Science, no other previously documented localities are known from the other geologic units within the analysis area, or from within 1 mile of the Project in the same geologic units (MacKenzie 2022; Van Veldhuizen 2022).

The results of the geologic map, literature, and aerial image review, along with the previously recorded locality search results, indicate that there is moderate to high potential for buried significant paleontological resources in sediments of the Laramie Formation and Fox Hills Sandstone, as well as low to moderate potential for buried fossils in the eolian, Verdos Alluvium, and older gravels sediments. Visible surface fossils are less likely as a result of Holocene sediment and modern vegetation cover.

3.5.2 Environmental Impacts: Proposed Action

Paleontological resources can be affected directly by disturbance, crushing, breaking, or complete destruction of buried, in-situ fossils because of ground-disturbing activities, including grading, trenching, and excavation for improvement of existing access roads, construction of new access roads, the substation, transmission line route, energy storage locations, interconnection switchyard, operations and maintenance facility and parking area, and temporary laydown areas. Indirect impacts on paleontological resources from construction and operations include loss of a paleontological resource due to increased erosion and increased potential for illegal collecting of fossils because of increased access during Project development and implementation. It is assumed that development of the Project would not increase human access to areas outside the Project area with potential for surface fossils because the entire analysis area and adjacent bedrock exposures are close to existing improved roads (less than 0.25 mile).

3.5.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to paleontological resources from the Project (SWCA 2022a):

- Prior to entering the Project site, construction and operations personnel will be instructed on the protection of cultural, paleontological, and ecological resources. To assist in this effort, the construction contract will address 1) federal and state laws regarding antiquities and sensitive plants and wildlife, including collection and removal; and 2) the importance of these resources and the purpose and necessity of protecting them.
- During construction and operations, vehicle movement outside the Project area and existing land authorizations will be restricted to pre-designated access, contractor-acquired access, or public roads.
- In construction areas where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches, as applicable.

Following these measures would minimize or alleviate effects to paleontological resources such as manual and erosional disturbance, and crushing, breaking, or complete destruction of buried, in-situ fossils. Thus, impacts from the Proposed Action would be less than significant.

3.5.2.2 Direct and Indirect Impacts

Although previous collection of the significant paleontological resource on the surface occurred at the one previously recorded locality (USGS 5714) possibly crossed by the Project, there still exists the potential for paleontological resources to be uncovered during construction activities. To allow for flexibility in siting Project features, the entire analysis area was analyzed, though disturbance and development would not occur throughout the entire analysis area. During construction, up to 313 acres of the Laramie Formation (PFYC 5), up to 36 acres of the Fox Hills Sandstone (PFYC 3), and up to 224 acres of Pleistocene alluvium and gravel (informally PFYC 3) would potentially be directly disturbed by grading, trenching, and excavation for improvement of existing access roads, construction of new access roads, the substation, transmission line route, energy storage locations, interconnection switchyard, operations and maintenance facility and parking area, and temporary laydown areas. Project operations and maintenance, as well as decommissioning activities, including removal of Project components and restoration, would have similar impacts to construction if they occur within previously undisturbed areas. Additional impacts are not anticipated if they are limited to previously disturbed sediments.

While the observed significant fossil was previously collected, newly exposed paleontological resources could be impacted by increased human activity during Project construction or operations and maintenance activities within areas of exposed geologic units with potential to contain fossils (PFYC 3 and 5). Training of Project staff would further elevate the potential for these indirect impacts.

Given the limited acres of these geologic units within the Project and the Project environmental commitments, impacts to paleontological resources from the Proposed Action would not be significant.

3.5.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, no new ground disturbance or increase in human activity would be created from the Project; therefore, potential paleontological resources within the Project area as described in Section 3.5.1 would not be at risk of exposure and disturbance from Project activities.

3.6 SOCIOECONOMICS

This section describes the existing socioeconomic conditions and the effects the Proposed Action could have on the socioeconomic conditions in the analysis area. Employment opportunities and housing for employees are the socioeconomic conditions identified for analysis.

3.6.1 Existing Conditions

The Project is located approximately 4 miles northwest of Ault in Weld County, Colorado. Because socioeconomic data are typically available at the county level and it is assumed that Project workers would spend money and/or find housing in the surrounding counties during the life of the Project, the analysis area for socioeconomic conditions includes Weld and Larimer Counties.

Economic development measures related to employment and housing in Weld and Larimer Counties and the state of Colorado are listed in Table 3-8. As shown in Table 3-8, the unemployment rate in Weld County in August 2022 was slightly higher than that for the state of Colorado, and the unemployment rate in Larimer County was lower than both the unemployment rates for Weld County and the state of Colorado (U.S. Bureau of Labor Statistics 2022). The number of vacant housing units for rent in 2021 was higher in Weld County than in Larimer County (U.S. Census Bureau 2022) (see Table 3-8). From 2016 to 2020, the civilian labor force, as a total percentage of population age 16 years or older, was slightly larger in Weld County than in Larimer County, but both were similar to that of the state of Colorado (U.S. Census Bureau 2021) (see Table 3-8).

Table 3-8. Employment and Housing Economic Development Measures

| Economic Development Measures | Weld County | Larimer County | Colorado |
|--|-----------------------------|-----------------------------|--------------------------------|
| Total employment (2020) | 96,024 [*] | 133,524 [*] | 2,510,726 [*] |
| Unemployment rate (August 2022) | 3.6% [†] | 2.8% [†] | 3.4% [†] |
| In civilian labor force, total percent of population age 16 years+, 2016 to 2020 | 68.0% [*] | 67.3% [*] | 67.4% [*] |
| Median household income (in 2020 dollars), 2016 to 2020 | \$74,332 [*] | \$76,366 [*] | \$75,231 [*] |
| Vacant housing units for rent (2021) | 2,175 (+/-842) [‡] | 1,354 (+/-726) [‡] | 46,426 (+/-3,393) [‡] |
| Housing units (July 1, 2021) | 124,909 [*] | 162,052 [*] | 2,540,822 [*] |
| Total accommodation and food services sales, 2017 | \$405,976 [*] | \$1,087,395 [*] | \$19,455,751 [*] |
| Population (Census, April 2020) | 328,981 [*] | 359,066 [*] | 5,773,714 [*] |

^{*}U.S. Census Bureau (2021)

[†]U.S. Bureau of Labor Statistics (2022)

[‡]U.S. Census Bureau (2022)

3.6.2 Environmental Impacts: Proposed Action

3.6.2.1 Environmental Commitments

There are no socioeconomic-specific environmental commitments for the Project (SWCA 2022a).

3.6.2.2 Direct and Indirect Impacts

Construction of the Project is expected to take 12 months. The Project would likely cause an increase in jobs and income for the local communities and would employ approximately 250 to 300 workers during the construction phase. Many workers would likely originate from the local communities in the analysis area, and as a result, Weld and Larimer Counties would see a short-term benefit from increased employment. Businesses, such as restaurants, stores, gas stations, and hotels, especially in the communities nearest to the Project, would benefit indirectly from the Project workforce's expenditures. While additional demands could be placed on public services, such as police, emergency, and health services, as a result of the influx of transient labor workforces, the magnitude of increase is anticipated to be negligible given the overall size of the local economies. It is expected that some workers would seek temporary housing near the Project, and, as a result, there would be a short-term benefit to the local short-term housing economies. With the predicted temporary employment numbers provided for the Project, it is assumed that a maximum 300 short-term housing units could be needed to house those workers. Assuming that the number of vacant housing units for rent in Weld and Larimer Counties is the same during the construction phase of the Project as during 2021, the demand created by the Project would

require a fraction of the available inventory (8.5%). However, it is not likely that all of the potential transitory workers for the Project would procure vacant housing units during the construction phase of the Project. Some of these transitory workers may seek other temporary accommodations such as hotels or RV parks. Furthermore, considering that a proportion of the workforce required for the Project may originate from the local communities in the analysis area and will not require short-term housing, the required units for the Project is likely to be less than the 300 short-term housing unit maximum assessed here, and ultimately less than 8.5% of the available inventory discussed above. Therefore, it is expected that the Project would not have a significant impact on the number of units of short-term housing in Weld and Larimer Counties. Additionally, the populations of Weld and Larimer Counties are not expected to significantly change as a result of the Project.

Once the Project is constructed, it is expected to operate for up to 40 years. Up to three full-time employees would be needed for operations and maintenance activities on the Project during its life span. It is expected that these employees would have operations and maintenance-related expenditures, such as automotive repair, tires, gas, and general office supplies; however, due to the small number of employees, there would likely only be a nominal effect on local businesses, including temporary housing businesses. Additionally, contractors would be needed to perform routine maintenance activities. This would be temporary work but would be a new source of business for those contractors.

Landowners whose land is leased for the Project would see the benefit of annual lease payments. Those landowners would lose their current land use (e.g., farming, grazing), but the lease payments they would receive are anticipated to be greater than the income generated by their current land use. Overall, the Project is expected to have a positive socioeconomic impact on the local communities by boosting the local economy with the creation of jobs for temporary and permanent Project workers and increasing sales when the associated workforce spends money at local businesses.

3.6.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, no new temporary employment opportunities or needs for temporary housing would be created from the Project; therefore, there would be no additional demands on public services, landowners associated with the Project would not benefit from annual lease payments, and housing and employment trends for Weld and Larimer Counties would continue as described in Section 3.6.1.

3.7 SPECIAL-STATUS SPECIES

This section describes the existing conditions and the effects that the Proposed Action could have on special-status species, which are defined here as federally and state-listed threatened and endangered species and state-listed species of concern (SOC).

3.7.1 Existing Conditions

The analysis area for special-status species extends approximately 1 mile beyond the Project area. This analysis area provides a baseline of existing habitat conditions within and around the Project area and accounts for connecting habitat located between dispersed facilities that could be used by special-status species.

The special-status species analysis area lies within the High Plains Level III and Flat to Rolling Plains Level IV ecoregions. The elevation within the analysis area ranges from 5,020 to 5,320 feet above mean sea level. Land cover types for the analysis area and the Project area are provided in Table 3-9 and Figure 3-1. Land cover types were derived from the GAP/LANDFIRE National Terrestrial Ecosystems data set, which includes detailed vegetation and land cover patterns for the continental United States. For the purpose of this analysis, it is assumed that the Western Great Plains Shortgrass Prairie, Introduced Upland Vegetation – Perennial Grassland and Forbland, Western Great Plains Foothill and Piedmont Grassland, Introduced Upland Vegetation – Annual Grassland, and the Disturbed/Successional – Grass/Forb Regeneration land cover types represent available general grassland habitat for special-status species in the analysis area. While Project disturbance is assessed within the entirety of the Project area to allow for flexibility in Project siting and design, it is not anticipated that the entire Project area would be developed.

Table 3-9. GAP/LANDFIRE Land Cover Classes in the Analysis Area and Project Area

| Land Cover Class | Acres in Project Area | Percent (%) of Project Area | Acres in Analysis Area | Percent (%) of Analysis Area |
|---|-----------------------|-----------------------------|------------------------|------------------------------|
| Cultivated Cropland | 1,010 | 67 | 6,876 | 65 |
| Western Great Plains Shortgrass Prairie | 223 | 15 | 1,871 | 18 |
| Introduced Upland Vegetation – Perennial Grassland and Forbland | 254 | 17 | 1,304 | 12 |
| Pasture/Hay | – | – | 223 | 2 |
| Developed, Open Space | 13 | 1 | 226 | 2 |
| Western Great Plains Woodland and Shrubland | <1 | <1 | 33 | <1 |
| Western Great Plains Sandhill Steppe | – | – | 19 | <1 |
| Open Water (Fresh) | – | – | 25 | <1 |
| Western Great Plains Floodplain | – | – | 14 | <1 |
| Inter-Mountain Basins Semi-Desert Shrub Steppe | – | – | 4 | <1 |
| Western Great Plains Foothill and Piedmont Grassland | – | – | 4 | <1 |
| Introduced Upland Vegetation - Annual Grassland | – | – | 3 | <1 |
| Disturbed/Successional – Grass/Forb Regeneration | – | – | 3 | <1 |
| Introduced Upland Vegetation – Shrub | – | – | 1 | <1 |
| Disturbed/Successional – Shrub Regeneration | – | – | 1 | <1 |
| Developed, Low Intensity | – | – | 1 | <1 |
| Total | 1,500 | 100 | 10,608 | 100 |

Note: Sum of totals may not be exact due to rounding error.

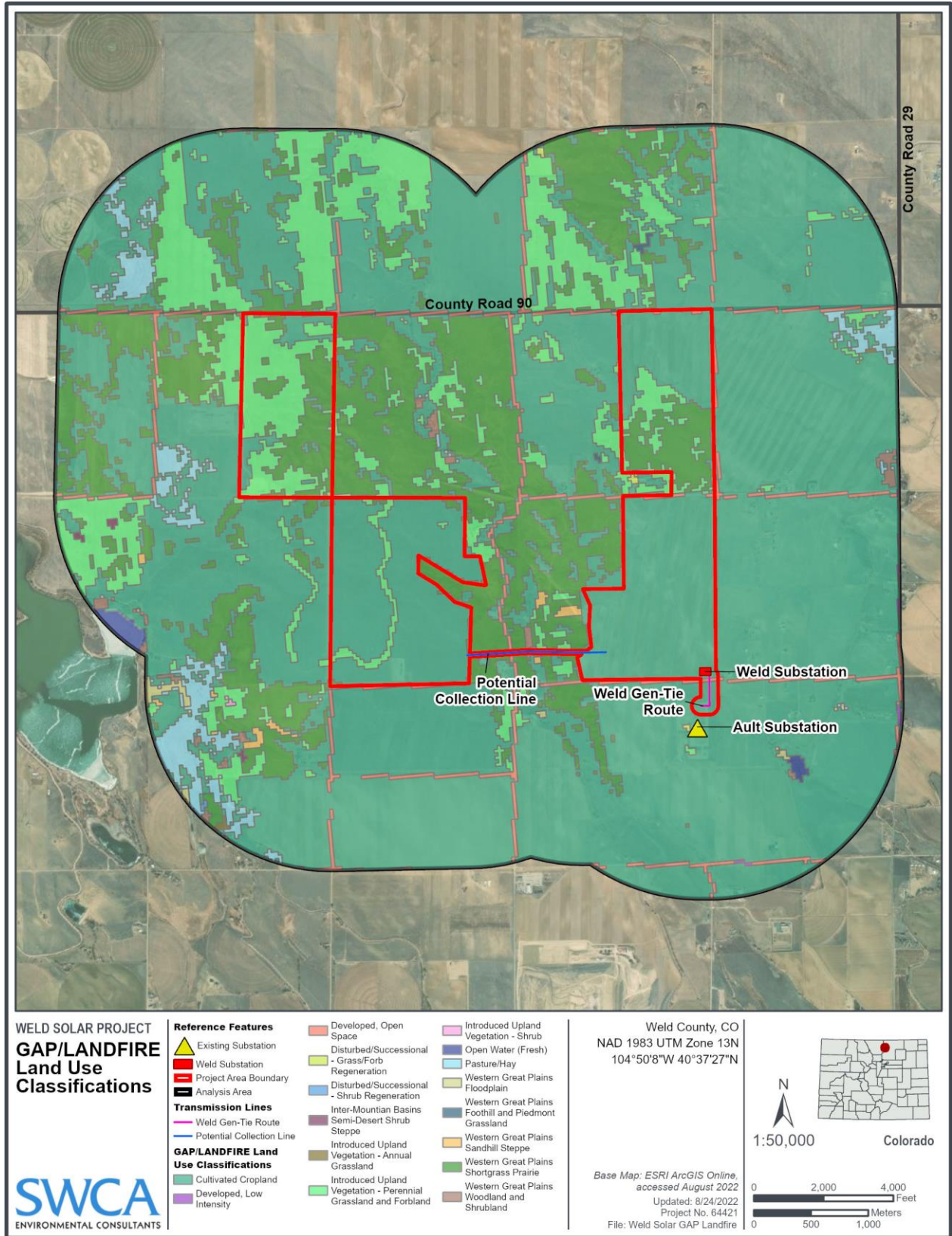


Figure 3-1. GAP/LANDFIRE land cover classes in the analysis area.

Species that are federally listed as threatened or endangered are protected by the Endangered Species Act (ESA) of 1973 as amended (ESA, 16 USC 1531, et seq.). In accordance with the ESA, projects with a federal action that have a potential effect on federally listed species or their habitats require consultation under Section 7 of the ESA with the USFWS. There are no ESA requirements for candidate species and effects to candidate species are not required to undergo a Section 7 consultation unless the species becomes listed during Project planning and construction.

Colorado state law (CRS Annotated [Ann.] §§ 33-2-102-106), requires that the state maintain a list of species that have been determined to be endangered or threatened within the state. Colorado State Statute 33 authorizes the CPW to regulate and protect the state's listed wildlife species. In addition, species of special concern are those that are listed by CPW due to a decline in population or habitat but are not listed as threatened or endangered.

The Bald and Golden Eagle Protection Act (BGEPA) is a federal statute that prohibits the “take” of an eagle without a permit, and further protects their feathers and parts, nests, nest trees, and winter/nighttime roosts. The BGEPA also addresses impacts that result from anthropogenic disturbance or alterations around an eagle nest site that may disrupt normal breeding, feeding, or sheltering habits, and cause injury, death, or nest abandonment to an eagle.

SWCA generated a special-status species list for the Project through the USFWS's Information for Planning and Conservation (IPaC) tool in May 2022 (USFWS 2022a). SWCA also reviewed the CPW state species list (CPW 2022a) and Colorado Natural Heritage Program (CNHP) species tracking lists (CNHP 2022) to determine if state-listed special-status species may occur in the Project area.

The potential for threatened and endangered species occurrence is based on existing information on distribution and on qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the Project area. The potential for occurrence is summarized according to the categories listed below:

- *Known to occur:* The species was documented either during or prior to the field survey by a reliable observer.
- *May occur:* The Project is within the species' currently known range, and vegetation communities, soils, and water quality conditions, etc., resemble those known to be used by the species.
- *Unlikely to occur:* The Project is within the species' currently known range, but vegetation communities, soils, and water quality conditions, etc., do not resemble those known to be used by the species.
- *None:* The Project is clearly outside the species' currently known range, and vegetation communities, soils, and water quality conditions, etc., do not resemble those known to be used by the species.

The special-status species for Weld County and their potential to occur in the Project area are listed in Table 3-10 and summarized in the following sections.

Table 3-10. Special-Status Species for Weld County, Colorado

| Species (scientific name) | Status* | Range or Habitat Requirement | Potential for Occurrence in Proposed Project Area |
|---|---------------|--|---|
| Birds | | | |
| Bald eagle (<i>Haliaeetus leucocephalus</i>) | SOC, BGEPA | The species is a year-round resident in Colorado (CPW 2020a). Feeds on fish and carrion and typically roosts in large trees near a water source. In Colorado, this species is often found near rivers and reservoirs, especially in areas with abundant fish (CPW 2020a). In winter, it may also occur in semi-deserts and grasslands, especially near prairie dog colonies. | May occur due to the presence of prey bases within the Project area (SWCA 2022c). In addition, the species is known to occur at the Black Hollow Reservoir (1 mile west of the Project area) and may transit over the Project area. |
| Burrowing owl (<i>Athene cunicularia</i>) | State T | This species occurs as a summer resident in Colorado’s eastern plains (Colorado Division of Wildlife 2003). The species typically arrives in the state in late March or early April for the breeding season and leaves in September and October (CPW 2021). It occupies flat, open areas with low, sparse vegetation, including shortgrass prairie and grazed fields, primarily associated with prairie dog (<i>Cynomys</i> sp.) colonies (Colorado Division of Wildlife 2003). | Known to occur. A burrowing owl was observed at an inactive prairie dog colony within the Project area during an October 2021 biological field survey (SWCA 2022c). |
| Eastern black rail (<i>Laterallus jamaicensis</i> ssp. <i>jamaicensis</i>) | USFWS T | In Colorado, this species is known to occur in Bent, Lincoln, Otero, Prowers, and Pueblo Counties (CPW 2020b). Occupies salt, brackish, and freshwater wetlands. Requires dense overhead cover and saturated soils adjacent to very shallow water (USFWS 2019). | None. The Project area is outside the species’ expected range (USFWS 2019) and lacks suitable wetlands; therefore, this species is not anticipated to occur. |
| Ferruginous hawk (<i>Buteo regalis</i>) | SOC | Occurs in eastern Colorado as a year-round resident (Colorado Division of Wildlife 2003). Prefers open scrublands and semi-desert grasslands with low hills or scattered trees for perching. Nests on the ground, clay or rock pinnacles, small buttes, and short cliffs. Strongly associated with prairie dog colonies as a prey base year-round (Colorado Division of Wildlife 2003). | May occur due to the presence of suitable habitat within the Project area and an active prairie dog colony (SWCA 2022c). |
| Long-billed curlew (<i>Numenius americanus</i>) | SOC | Breeding species throughout eastern Colorado (CPW 2020c). Breeds in shortgrass or mixed-grass prairie habitats with flat to rolling topography. Nests can generally be found in shallow depressions on the ground. In Colorado, it is typically found in association with water, including ponds, reservoirs, playas, and wet meadows April through September (CPW 2020c). | Unlikely to occur. While the Project area is within the species’ expected range, there are no suitable water features for the species within the Project area. Therefore, this species is not anticipated to occur. |
| Mountain plover (<i>Charadrius montanus</i>) | SOC | Breeding species in Colorado, primarily in the eastern plains (Colorado Division of Wildlife 2003); typically arrives in the northern portion of the state in early April and leaves in July. Nests in flat, open areas with low, sparse vegetation including shortgrass prairies and pastures grazed by livestock (Colorado Division of Wildlife 2003). Also associated with prairie dog colonies. | May occur due to the presence of suitable habitat. In addition, an active prairie dog colony was observed within the Project area during the October 2021 biological field survey (SWCA 2022c). |

| Species (scientific name) | Status* | Range or Habitat Requirement | Potential for Occurrence in Proposed Project Area |
|--|---------------------|---|---|
| Piping plover [†] (<i>Charadrius melodus</i>) | USFWS T | Breeding species in Kiowa and Bent Counties, Colorado (CPW 2020d). Nests along sparsely vegetated and sandy shores of reservoirs (CPW 2020d). These birds usually arrive at breeding grounds around mid-March and depart in August. Depletions to the Platte River system may affect downstream populations of this species. | None. Outside the species' expected breeding range and no suitable habitat within the Project area. Additionally, no water depletions to the Platte River system are expected as a result of the Proposed Action. |
| Whooping crane [†] (<i>Grus americana</i>) | USFWS E, State E | This species may occur as an infrequent migrant in north central Colorado (USFWS 2022b). Habitat used during migration includes coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields. Preferred migration stopover sites are wetland mosaics in level to moderately rolling terrain (USFWS 2022b). Depletions to the Platte River system may affect downstream populations of this species. | None. Lack of suitable habitat and outside the species' 95 percentile migration corridor. Additionally, no water depletions to the Platte River system are expected as a result of the Proposed Action. |
| Fish and Mollusks | | | |
| Cylindrical papershell [‡] (<i>Anodontoidea ferussacianus</i>) | SOC | Freshwater mussel found in small streams that requires a fish host. In Colorado, this species' range is limited to the South Platte River drainage (NatureServe 2022a). | None. Lack of suitable habitat. |
| Iowa darter [‡] (<i>Etheostoma exile</i>) | SOC | Found in clear sluggish vegetated headwaters, creeks, and small to medium rivers; weedy portions of glacial lakes, marshes, ponds; over substrates of sand, peat, and/or organic debris (NatureServe 2022b). | None. Lack of suitable habitat. |
| Pallid sturgeon [†] (<i>Scaphirhynchus albus</i>) | USFWS E | Occupies large, turbid, free-flowing riverine habitat; it occurs in strong current over firm gravelly sandy substrate and sometimes occurs in reservoirs (USFWS 2022c). Depletions to the Platte River system may affect downstream populations of this species. | None. Lack of suitable habitat. In addition, no water depletions to the Platte River system are expected as a result of the Proposed Action and the species does not occur in Colorado. |
| Northern redbelly dace [‡] (<i>Phoxinus eos</i>) | State E | Occupies freshwater aquatic habitats, including lakes, ponds, bogs, and small streams (Stasiak 2006). Occurs over silt and often near vegetation. | None. Lack of suitable habitat. |
| Amphibians | | | |
| Northern leopard frog (<i>Lithobates pipiens</i>) | SOC | Occurs throughout Colorado except in the southeast corner of the state (CPW 2020e). A variety of habitats can be used to meet the requirements of all life stages, including habitat with deep water that does not freeze solid, semi-permanent ponds, riparian areas, wet meadows, as well as grassland and other upland habitat types. However, they are most closely associated with wet environments (CPW 2020e). | Unlikely to occur. While the Project area is within the species' expected range, there are no suitable water features for the species within the Project area. Additionally, species activity mapping data maintained by CPW does not show the species in or adjacent to the Project area. Therefore, this species is not anticipated to occur. |
| Insects | | | |

| Species (scientific name) | Status* | Range or Habitat Requirement | Potential for Occurrence in Proposed Project Area |
|---|---------------------|--|--|
| Monarch butterfly (<i>Danaus plexippus</i>) | USFWS C | Adult monarch butterflies require a diversity of blooming nectar resources that they feed on throughout their migration routes and breeding grounds from spring to fall (USFWS 2020). Monarchs require milkweed embedded within diverse nectaring habitat for egg laying and larval feeding (USFWS 2020). | May occur. Transient individuals of the species may move through the Project area as a passing migrant. Suitable breeding habitat was not observed within the Project area during biological field surveys (SWCA 2022c). |
| Mammals | | | |
| Black-footed ferret (<i>Mustela nigripes</i>) | USFWS E, State E | The species has been reintroduced in a number of locations across Colorado but is not known to occur in Weld County (CPW 2019). Limited to open grassland, steppe, and shrub steppe habitats and closely associated with prairie dogs. | None. While suitable habitat is present within the Project area, this species is not anticipated to occur as the Project area is outside the reintroduction areas. In addition, habitat is fragmented and may not provide adequate foraging for the black-footed ferret. |
| Black-tailed prairie dog (<i>Cynomys ludovicianus</i>) | SOC | Occurs east of the foothills in shortgrass or mixed-grass prairie in Colorado (CPW 2022b). Lives in towns or colonies consisting of territorial family groups (Colorado Division of Wildlife 2003). Their burrows can provide habitat for other sensitive species, including black-footed ferret, mountain plover, and burrowing owl. | Known to occur. One active prairie dog colony and five inactive prairie dog colonies were observed within the Project area during the October 2021 biological field survey (SWCA 2022c). |
| Gray wolf (<i>Canis lupus</i>) | USFWS E | In Colorado, isolated sightings of a pack and of scattered individuals have occurred in the northwestern part of the state (CPW 2022c). Associated with a variety of habitat types that include temperate forests, mountains, tundra, taiga, and grasslands (USFWS 2022d). Likely selects habitat based on availability of ungulate prey (Snyder 1991). | None. Outside the species extant range in Colorado. |
| Preble's meadow jumping mouse (<i>Zapus hudsonius preblei</i>) | USFWS T, State T | Occurs in Colorado along the Front Range from the Wyoming border through El Paso County (CPW 2016). Species is closely associated with heavily vegetated, shrub-dominated riparian habitats along perennial streams and their tributaries. Species may use intact grasslands within 100 m adjacent to the 100-year floodplain for foraging and hibernation (USFWS 2018). | Unlikely to occur. While riparian habitat is present in the Project area, the biological field survey did not find heavily vegetated riparian habitat that would be required by the species (SWCA 2022c). |
| Swift fox (<i>Vulpes velox</i>) | SOC | This species occurs across the grasslands and prairies of eastern Colorado (USFWS 2022e). Native to the shortgrass and mid-grass prairie ecosystems of the Great Plains and is often associated with prairie dog colonies (Colorado Division of Wildlife 2003). | May occur due to the presence of suitable grassland habitat within the Project area. An active prairie dog colony was also observed within the Project area during the October 2021 biological field survey (SWCA 2022c). |
| Plants | | | |
| Ute ladies'-tresses (<i>Spiranthes diluvialis</i>) | USFWS T | Known to occur in central to north-central and northwestern Colorado (USFWS 2022f). This species is adapted to early- to mid-seral, moist to wet conditions. Typical habitats may include moist, wet meadows, river floodplains, and alluvial banks (USFWS 2017). | None. No suitable habitat is present within the Project area and the Project area is outside the species mapped range (USFWS 2022f). |



| Species (scientific name) | Status* | Range or Habitat Requirement | Potential for Occurrence in Proposed Project Area |
|---|---------|---|--|
| Western prairie fringed orchid [†] (<i>Platanthera praeclara</i>) | USFWS T | Most often found on unplowed, calcareous prairies and sedge meadows (USFWS 2022g). Depletions to the Platte River system may affect this species. | None. This species is not expected to occur within the Project area as it does not occur in Colorado. Additionally, no water depletions are expected as a result of the Proposed Action. |

Sources: CPW (2022a); SWCA (2022c); USFWS (2022a).

*BGEPA = Bald and Golden Eagle Protection Act; USFWS E = federally endangered; USFWS T = federally threatened; USFWS C = federal candidate species; State E = state endangered; State T = state threatened, SOC = State Species of Concern.

[†]Pallid sturgeon (*Scaphirhynchus albus*), western prairie fringed orchid (*Platanthera praeclara*), whooping crane (*Grus americana*), and piping plover (*Charadrius melodus*) are listed as threatened or endangered in Weld County because water depletions may affect the species and/or critical habitat in downstream, out-of-state reaches of the Platte River. No water depletions to the Platte River are expected as a result of the Proposed Action.

[‡]Aquatic species with range that overlaps the Project area were not considered as having any potential to occur in the Project area due to the lack of aquatic habitat in the Project area able to support movement or habitat for the species.

After evaluating habitat characteristics in the analysis area, it was determined that one candidate species for federal listing, one state-listed threatened species and five state-listed species of concern have reasonable potential to occur or are known in the Project area. These include the bald eagle (*Haliaeetus leucocephalus*; SOC, BGEPA), burrowing owl (*Athene cunicularia*, state threatened), ferruginous hawk (*Buteo regalis*, SOC), mountain plover (*Charadrius montanus*, SOC), monarch butterfly (*Danaus plexippus*, USFWS candidate species), black-tailed prairie dog (*Cynomys ludovicianus*, SOC), and swift fox (*Vulpes velox*, SOC). These species and their habitats are described in more detail below.

3.7.1.1 Bald Eagle (*Haliaeetus leucocephalus*)

Bald eagles feed on fish and carrion and typically roost in large trees near a water source. In Colorado, they are often found near rivers and reservoirs, especially in areas of abundant fish (CPW 2020a). In winter, they may also occur in semi-deserts and grasslands, especially near prairie dog colonies. No active bald eagle nests or roosting areas were identified within or immediately adjacent to the Project area during the biological field surveys (SWCA 2022c); however, CPW-mapped bald eagle roosting sites and winter concentration areas occur within the analysis area and CPW-mapped bald eagle nest sites occur at the Black Hollow Reservoir approximately 1 mile west of the Project area. Bald eagles may occasionally fly over and forage within and adjacent to the Project area. Approximately 47 acres of suitable foraging habitat for bald eagle in the form of an active prairie dog colony is mapped within the Project area.

3.7.1.2 Burrowing Owl (*Athene cunicularia*)

Burrowing owls commonly nest within prairie dog burrows in Colorado. The species can be found summering in much of the eastern shortgrass prairies across the state (CPW 2021). The 2021 field survey detected one burrowing owl in October 2021 at an inactive prairie dog colony within the Project area. The burrowing owl observation occurred outside the nesting season, and while this does not preclude the potential for nest sites within the Project area, it is unlikely that this burrowing owl was using the prairie dog burrow as a nest site at the time of observation. One active prairie dog colony and five inactive prairie dog colonies were identified within the Project area during biological field surveys for the Project that may provide nesting opportunities for burrowing owl (SWCA 2022c). Accordingly, approximately 53 acres of suitable habitat for burrowing owl was observed within the Project area.

3.7.1.3 Ferruginous Hawk (*Buteo regalis*)

Ferruginous hawks inhabit open grasslands and shrub steppe communities, nesting in isolated trees, on elevated rock outcrops, or on the ground. Wintering and migrating hawks prefer grasslands where ground squirrels (*Sciuridae* spp.) and prairie dogs are present (Colorado Division of Wildlife 2003). The black-tailed prairie dog is an important prey species for the hawk in Colorado, and ferruginous hawk occurrence is positively correlated with proximity to prairie dog colonies (Colorado Division of Wildlife 2003). Approximately 3,185 acres of potentially suitable grassland habitat for ferruginous hawk is mapped within the analysis area (see Table 3-10). Additionally, one active prairie dog colony was identified within the Project area during the 2021 field survey, and suitable grassland habitat for the species was observed within the Project area (SWCA 2022c).

3.7.1.4 Mountain Plover (*Charadrius montanus*)

Mountain plovers nest in flat, open areas with low, sparse vegetation including shortgrass prairies and grazed fields. In shortgrass prairies, they tend to use active prairie dog colonies where the surrounding vegetation has been browsed or fields grazed by livestock (Colorado Division of Wildlife 2003). For the

purpose of this analysis, the Western Great Plains Shortgrass Prairie and Pasture/Hay land cover types represent potentially suitable breeding habitat for mountain plover in the analysis area. Approximately 2,094 acres of potentially suitable breeding habitat for mountain plover is mapped within the analysis area (see Table 3-10). Additionally, one active prairie dog colony was identified within the Project area during the 2021 field survey and grazed pasture and open grasslands that would provide suitable habitat for mountain plovers during the breeding season were observed within the Project area (SWCA 2022c).

3.7.1.5 Monarch Butterfly (*Danaus plexippus*)

Adult monarch butterflies (monarchs) require a diversity of blooming nectar resources that they feed on throughout their migration routes and breeding grounds from spring to fall (USFWS 2020). The analysis area is within the summer breeding areas for monarchs. Monarchs require milkweed embedded within diverse nectaring habitat for egg laying and larval feeding (USFWS 2020). Individuals of the species may occur in the Project area as a passing migrant, but suitable breeding habitat was not observed within the Project area during biological surveys (SWCA 2022c).

3.7.1.6 Black-Tailed Prairie Dog (*Cynomys ludovicianus*)

In Colorado, black-tailed prairie dogs occur east of the foothills in shortgrass or mixed-grass prairie (CPW 2022b). These burrowing mammals live in towns or colonies consisting of territorial family groups (Colorado Division of Wildlife 2003). Prairie dog colonies can provide habitat for other sensitive species, including black-footed ferret (*Mustela nigripes*), mountain plover, and burrowing owl, and provide foraging opportunities for many mammal and raptor species. One active black-tailed prairie dog colony and five inactive black-tailed prairie dog colonies were identified within the Project area during biological survey work for the Project (SWCA 2022c) (Figure 3-2). Accordingly, approximately 53 acres of known black-tailed prairie dog habitat was observed within the Project area with 47 of those acres containing occupied habitat.

3.7.1.7 Swift Fox (*Vulpes velox*)

The swift fox is native to the shortgrass and mid-grass prairie ecosystems of the Great Plains but will also use cropland habitats for denning and foraging (Colorado Division of Wildlife 2003). The species is further associated with prairie dog colonies as a denning and foraging resource. This species could potentially use grasslands and agricultural areas throughout the analysis area for denning and foraging; however, this habitat is considered marginal for the species because swift fox populations decline as habitat patch size declines, and the Project exists in a fragmented landscape (Stratman 2017). For the purpose of this analysis, it is assumed that the Cultivated Cropland and grassland land cover types (Western Great Plains Shortgrass Prairie, Introduced Upland Vegetation – Perennial Grassland and Forbland, Western Great Plains Foothill and Piedmont Grassland, Introduced Upland Vegetation – Annual Grassland, and the Disturbed/Successional – Grass/Forb Regeneration) represent potentially suitable habitat for swift fox. Accordingly, approximately 4,195 acres of potentially suitable habitat for swift fox is mapped within the analysis area (see Table 3-10). One active prairie dog colony, a potential foraging resource for swift fox, was identified within the Project area during the 2021 biological field survey (SWCA 2022c).

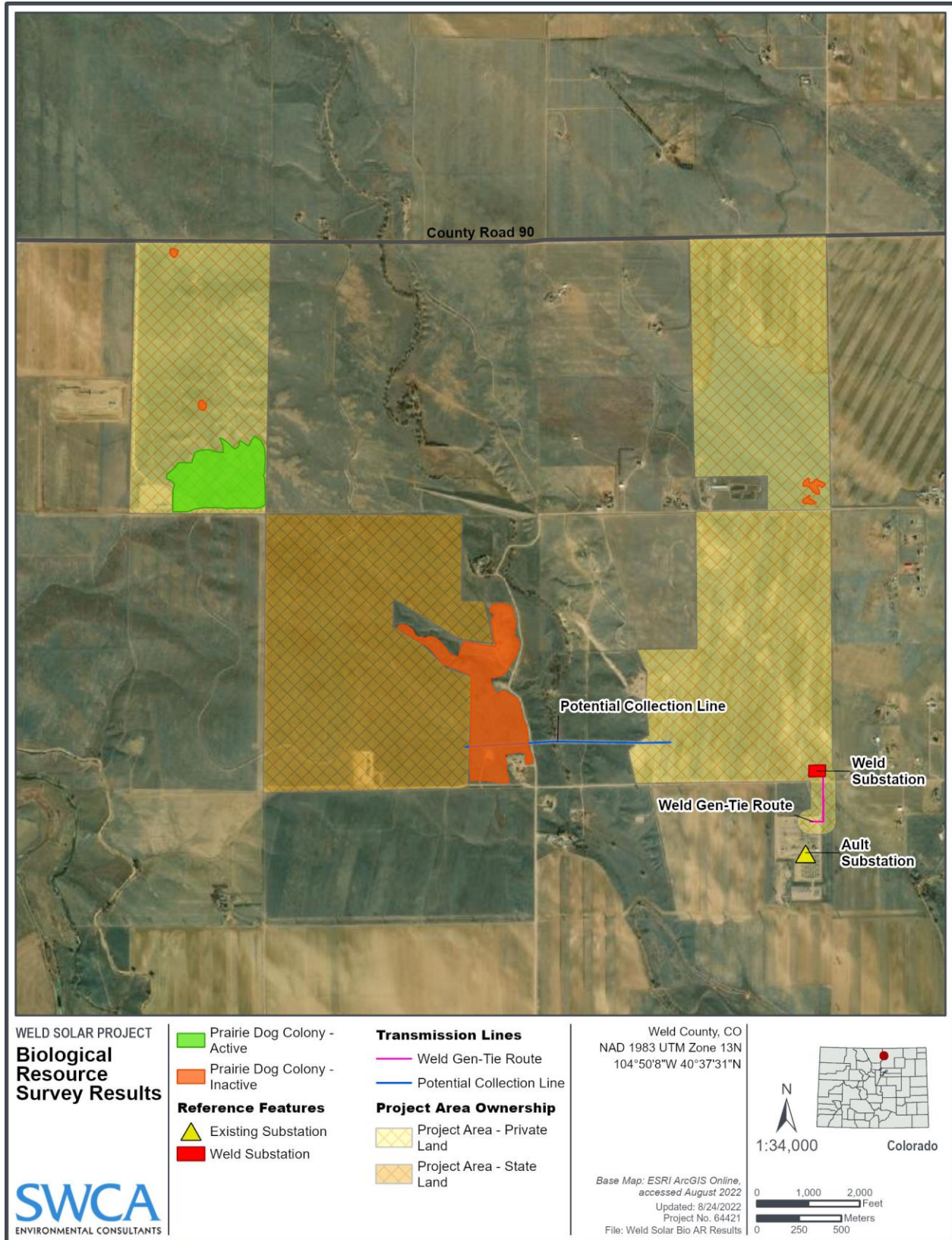


Figure 3-2. Observed black-tailed prairie dog colonies within the Project area.

3.7.2 Environmental Impacts: Proposed Action

3.7.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to special-status species from the Project (SWCA 2022a):

- Prior to construction, Weld Solar will complete a natural resources field survey of the approximately 1,500-acre Project area as currently designed to assess for potential natural resources constraints, such as protected aquatic resources, threatened and endangered species, and migratory birds (including raptors) and nests that may be present in areas planned for Project construction.
- During construction and operations, vehicle movement outside the Project area and existing land authorizations will be restricted to pre-designated access, contractor-acquired access, or public roads.
- The areal limits of construction activities will be predetermined, with construction activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. The environmentally sensitive areas will be flagged and described to alert construction personnel that those areas should be avoided.
- In construction areas where recontouring is not required, vegetation will be left in place wherever possible and drive-and-crush practices will be maximized to avoid excessive root damage and allow for re-sprouting.
- In construction areas where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will consist of returning disturbed areas back to their natural contour, reseeded (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches, as applicable.
- If watering facilities (tanks, developed springs, water lines, wells, etc.) are damaged or destroyed by construction activities, they will be repaired or replaced to their pre-disturbed condition.
- Special-status species or other species of particular concern will be considered during Project implementation in accordance with management policies set forth by the USFWS and appropriate land management agencies. This may entail conducting surveys for plant and wildlife species of concern, and monitoring for these species as agreed upon by the agency with jurisdiction during construction. In cases where such species are identified, appropriate action will be taken to avoid or minimize adverse impacts on the species and its habitat.
- Mitigation measures that may be developed in conjunction with CPW will be adhered to.
- The Project would be designed in consideration of Avian Power Line Interaction Committee guidance to avoid and minimize impacts to avian species.

Additionally, the following species-specific measures would be implemented:

- *Bald eagle*: CPW recommends no surface occupancy within 0.25 mile of active nests and roosts (CPW 2020f). If active, nests should be avoided by 0.5 mile from December 1 through July 31, and roosts should be avoided by 0.5 mile from November 15 through March 15.

- *Burrowing owl*: For larger disturbances such as solar facility construction, CPW recommends no permitted, authorized, or human encroachment activities within 0.25 mile (1,320 feet) of active nest sites during the nesting season from March 15 through August 31 (CPW 2020f). Due to the presence of prairie dog colonies within the Project area, burrowing owl surveys would be conducted according to CPW protocol when owls may be present (March 15–October 31) prior to the start of construction activities to confirm absence during the construction phase of the Project. Burrowing owl surveys will not be required during the operational phase of the Project.

3.7.2.2 Direct and Indirect Impacts

Due to the lack of suitable habitat and/or range within the proposed Project area, there are no effects anticipated from construction and operations of the Project for the eastern black rail, long-billed curlew, piping plover, whooping crane, cylindrical papershell, Iowa darter, pallid sturgeon, redbelly dace, northern leopard frog, black-footed ferret, gray wolf, Preble’s meadow jumping mouse, Ute ladies’-tresses, and western prairie fringed orchid (see Table 3-10). Potential impacts to bald eagle, burrowing owl, ferruginous hawk, mountain plover, monarch butterfly, black-tailed prairie dog, swift fox, and their habitats are discussed below.

3.7.2.2.1 BALD EAGLE (*HALIAEETUS LEUCOCEPHALUS*)

While no known nest sites for the bald eagle occur within the analysis area, transient individuals could be impacted by the Proposed Action due to CPW-mapped bald eagle roosting sites and winter concentration areas in the analysis area and the presence of prey bases for bald eagle in the Project area. Direct impacts from the construction and operations of the Project in the form of fatalities to bald eagle individuals could occur as a result of collisions with the gen-tie line, though risks are minimal due to the short length of the gen-tie line and a lack of suitable habitat or prey bases in the immediate vicinity of the gen-tie line. Potential vehicle collisions during construction and operations activities also represent a risk of direct mortality. Indirect impacts could occur as a result of behavioral avoidance of the area by the species and degradation or removal of existing prey bases. The proposed Project would pose a low risk to bald eagle due to lack of suitable nesting habitat in the Project area and nesting eagles within the analysis area. Additionally, implementation of design features and preconstruction surveys would help mitigate the potential impacts of the Project on bald eagle.

3.7.2.2.2 BURROWING OWL (*ATHENE CUNICULARIA*)

The proposed Project would occur within known burrowing owl habitat and could result in the removal of 53 acres of known burrowing owl habitat in the Project area. Direct impacts from the Project include potential fatalities of burrowing owl individuals or the loss of their nests during ground-disturbing activities associated with construction and the potential for vehicle collisions during construction and operations activities. Indirect impacts could occur as a result of degradation or removal of existing habitat or avoidance of the Project area by the species or its prey. However, the proposed Project would pose a low risk to burrowing owl due to the implementation of design features and preconstruction surveys that would mitigate the potential impacts of the Project on the burrowing owl (see Section 3.7.2.1).

3.7.2.2.3 FERRUGINOUS HAWK (*BUTEO REGALIS*)

The proposed Project would occur within suitable ferruginous hawk habitat and could result in 477 acres of surface disturbance within grassland habitat. Direct impacts from the construction and operations of the Project in the form of fatalities to ferruginous hawk individuals could occur as a result of collisions with the gen-tie line, though risks are minimal due to the short length of the gen-tie line and a lack of suitable habitat or prey bases in the immediate vicinity of the gen-tie line. Potential vehicle collisions during

construction and operations activities also represent a risk of direct mortality. Indirect impacts on ferruginous hawk could result from degradation of existing habitat, loss of known prey bases in the Project area, or avoidance of the Project area by the species or its prey. However, the proposed Project would pose a low risk to ferruginous hawk considering that at its maximum, the Proposed Action would remove approximately 15% of the suitable grassland habitat in the analysis area. Additionally, implementation of design features, including adherence to the Avian Power Line Interaction Committee guidance and preconstruction surveys for migratory birds (including raptors) and their nests, would mitigate the potential impacts of the Project on ferruginous hawk (see Section 3.7.2.1).

3.7.2.2.4 MOUNTAIN PLOVER (*CHARADRIUS MONTANUS*)

The proposed Project would occur within suitable mountain plover breeding habitat. The proposed Project could result in 223 acres of surface disturbance within mountain plover habitat. Direct impacts from the Project include potential fatalities of mountain plover individuals or the loss of their nests during ground-disturbing activities associated with construction and the potential for vehicle collisions during construction and operations activities. Indirect impacts could occur as a result of degradation or removal of existing habitat or avoidance of the Project area by the species. However, the proposed Project would pose a low risk to mountain plover considering that at its maximum, the Proposed Action would remove approximately 11% of the suitable mountain plover habitat in the analysis area. Additionally, the implementation of design features, including adherence to the Avian Power Line Interaction Committee guidance and preconstruction surveys for migratory birds and their nests, would mitigate the potential impacts of the Project on mountain plover (see Section 3.7.2.1).

3.7.2.2.5 MONARCH BUTTERFLY (*DANAUS PLEXIPPUS*)

The Project area does not contain suitable breeding habitat for the monarch butterfly, but individuals may pass through the Project area during migration. Potential vehicle collisions during construction and operations activities represent a risk of direct mortality. These events would be stochastic in nature. A noxious weed management plan will be developed in accordance with agency standards and stipulations that includes direction on the use of chemical control methods for weed management. Use of herbicides for weed control and management could indirectly impact monarch butterfly in the analysis area if such control methods remove milkweed, and thus habitat for the species, from the area. Due to the lack of milkweed and other foraging species for monarchs within the Project area, the Project would pose a negligible risk to monarch butterfly.

3.7.2.2.6 BLACK-TAILED PRAIRIE DOG (*CYNOMYS LUDOVICIANUS*)

A maximum of 53 acres of known black-tailed prairie dog habitat, of which 47 acres contain occupied habitat, could be disturbed due to vegetation removal and construction activities, as well as the installation of Project infrastructure. Impacts to the black-tailed prairie dog could occur as a result of degradation or removal of existing habitat or avoidance of the Project area by the species. Although grass and forb cover beneath solar panels is anticipated to reestablish following construction, the presence of the panels would reduce the productivity of the habitat and fragment habitat for the species. Direct impacts from the Project include potential fatalities of individuals during ground-disturbing activities associated with construction and the potential for vehicle collisions during construction and operations activities. However, the Project would pose a low risk to black-tailed prairie dog due to the availability of nearby grassland habitat in the analysis area (see Table 3-10 and Figure 3-2), as well as the apparently stable population of black-tailed prairie dog on the eastern plains of Colorado (CPW 2020g).

3.7.2.2.7 SWIFT FOX (*VULPES VELOX*)

Construction of the Project could potentially disturb 1,487 acres of grassland and agricultural habitat that could be used by swift foxes due to vegetation removal and other construction activities. Collisions with vehicles associated with increased traffic from construction and operations activities could result in direct mortality of individuals of the species if swift fox are in the area. Indirect effects could occur as a result of degradation of existing habitat, loss of known prey bases in the Project area, or avoidance of the Project area by the species or its prey. However, the proposed Project would occur within marginal habitat for the swift fox due to the existing habitat fragmentation of a human-altered landscape (Stratman 2017). The Proposed Action would, at maximum, disturb approximately 35% of the available swift fox habitat in the analysis area. Furthermore, CPW-mapped range for swift fox does not include the Project area, and the nearest CPW-mapped range for the species is approximately 10 miles from the Project area.

Implementation of design features, including the use of designated access roads outside the Project area, minimization of vegetation removal where practicable, and preconstruction surveys, would mitigate the potential impacts of the Project on swift fox (see Section 3.7.2.1). Therefore, the Project would pose a low risk to swift fox.

3.7.2.2.8 SUMMARY

The impacts of the Proposed Action to special-status species would be low or negligible. Disturbance is not anticipated to occur throughout the entire Project area, but the entire area was analyzed to provide flexibility for siting and design. Therefore, the impacts disclosed in this EA likely overestimate the potential impacts that would result from development of the Project. Additionally, disturbance would be restricted to predefined areas for construction and vehicular access, which would also contribute to mitigating potential impacts to species and their habitat. As such, impacts to special-status species from the construction and operations of the Project are not anticipated to be significant.

3.7.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, there would be no impacts to special-status species or their habitat from the Project, and existing conditions for special-status species in the analysis area would continue as described in Section 3.7.1.

3.8 VISUAL RESOURCES

The term *visual resources* refers to the composite of basic terrain, geologic and hydrologic features, vegetative patterns, and human-built features that influence the visual appeal of a landscape. This section describes the existing context of the visual environment and assesses the potential impacts from the construction and operations of the Project.

Data used to characterize the baseline and analyze the impacts to visual resources from the Project include the following sources:

- EPA: Level IV ecoregions of Colorado
- BLM: visual resource inventory – Colorado, Royal Gorge Field Office
- Bare earth digital elevation model
- Google Earth aerial imagery

Further analysis, research, and data used in the following analysis can be found within the *Weld County Solar Project Visual Impact Assessment Technical Report* (SWCA 2022d).

The analysis area for visual resources is defined as a 3-mile radius from the perimeter of the proposed solar arrays, collection line, and gen-tie line (Figure 3-3). An analysis area of 3 miles was determined based on proposed Project elements and the existing landscape characteristics and represents the area in the surrounding landscape where potential visual effects from the Project could be discerned by the casual observer.

Within the 3-mile analysis area, three distance zones were established: immediate foreground (0–0.25 mile), foreground (0.25–1 mile), and middle ground (1–3-miles). The analysis identified where Project components would be visible based on topographic variability and if there is any vegetation or structures to screen a viewer from the components. This analysis, based on “bare earth” visibility, reflected the conservative scenario, or highest expected level of visibility, in determining sensitive viewing locations and potential visual impacts.

To determine the potential for significant glint or glare from solar panels and other built-project components to residents, travelers, recreation users, and aircraft, SWCA will apply the Sandia National Laboratory’s online Solar Glare Hazard Analysis Tools by Forge Solar (Forge Solar 2022). Using simple parameters provided by Weld Solar, a glare report will indicate a quantified assessment of when and where glare would occur throughout the year for a prescribed solar installation and the potential effects on the human eye at locations where glare occur.

The source of potential glint and glare for the Project is the proposed PV panels. However, PV panel surfaces are designed specifically not to reflect light, thus reducing the potential for glint and glare.

For the purposes of this EA, *glint* is defined as a bright, momentary flash of light; *glare* is defined as a more continuous and sustained presence of light that may appear to “sparkle” from public viewing locations. Other assumptions for conducting a glint and glare analysis are listed below: The proposed solar Project would operate 365 days per year during daylight hours.

- “Green” glare is glare with low potential to cause an afterimage (flash blindness) when observed prior to a typical blink response time.
- “Yellow” glare is glare with potential to cause an afterimage (flash blindness) when observed prior to a typical blink response time.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover, and geographic obstructions.

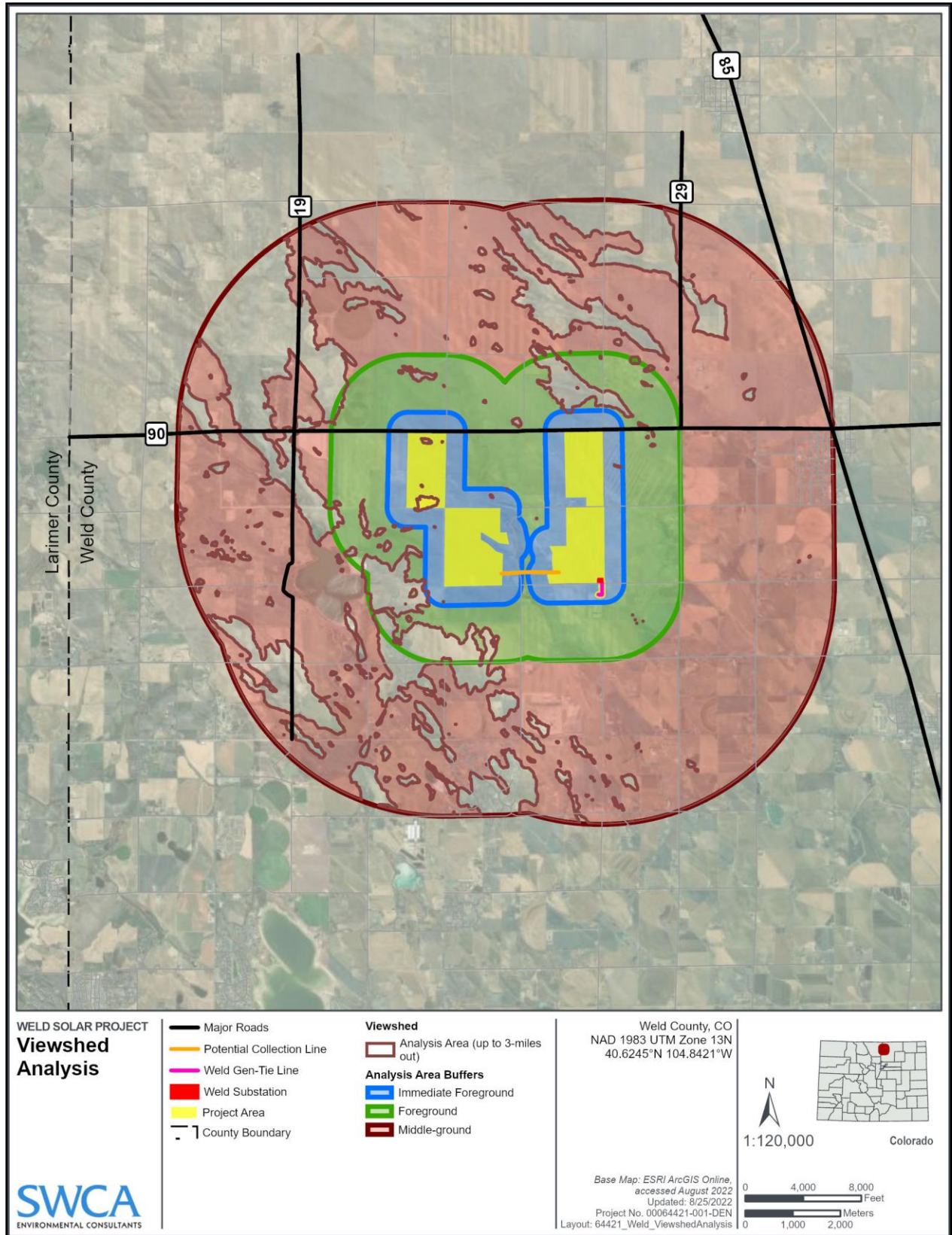


Figure 3-3. Visual resources viewshed analysis area.

3.8.1 Existing Conditions

The following provides a description of the information used to establish existing visual conditions and evaluate potential impacts from the Project. The impacts to visual resources from the construction and operations of the Project follow two primary steps: 1) establishing existing visual character and inherent scenic quality and identifying locations where people commonly view the landscape, and 2) assessing the change to the landscape and the effects on views within the three established distance zones.

3.8.1.1 Landscape Character and Scenic Quality

EPA Level IV ecoregions of Colorado were used to develop a description of the existing landscape character within the analysis area. Ecoregions are derived based on elements similar to physiographic provinces that are used by the BLM's visual resource inventory process for comparatively assessing scenic quality. The visual analysis area is encompassed by the South Central Semi-Arid Prairies. The Project resides within flat to rolling plains in a highly developed agricultural area with isolated residential areas (EPA 2022e; Google Earth 2022). Vegetation communities consist of cultivated crops and sprawling grasslands with pockets of deciduous trees and shrubs. Approximately 1 mile to the west resides Black Hollow Reservoir, a privately owned and maintained recreation area (Black Hollow Leisure 2022). The Fort Collins metropolitan area and major throughfares reside farther to the southwest outside the analysis area. This area includes Interstate 25 to the west and U.S. Highway 85 to the east of the Project area. Within the 3-mile analysis area, there are approximately 250 single-family homes that fall into one of the three distance zones. In the immediate foreground, there are approximately 16 single-family homes that consist of small community development and farm homes. Within the foreground, there are approximately 37 residences. The largest concentration of homes in the analysis area is located in the town of Pierce, Colorado, and the Belmont Farms community. These communities are located within the middle ground.

Scenic or visual quality is the inherent visual appeal of a landscape. The landscape is measured in terms of its distinctiveness (or memorability), scarcity, and variety of the landform, vegetation, water, color, adjacent scenery, and human-made features and how well these features fit together (BLM 1986). The inherent scenic quality of the analysis area was established by applying existing BLM visual resource inventories to non-BLM-managed lands in northern Colorado (Figure 3-4).

Scenic quality rating units (SQRUs) are areas exhibiting the similar landscape. SQRUs are evaluated on a point scale in seven categories: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications. The more diverse the landscape, the higher the unit is evaluated then rated from A to C. An A unit has highly diverse landscape characteristics, and a C unit has very little landscape characteristics.

The Project resides within two SQRUs (see Figure 3-4). Approximately 38 acres (0.2%) of the Project occurs within a Class B SQRU. This unit extends south to the Denver Metro area with various landforms and vegetation communities. Notably, the southeast corner of the Project area that contains a Class B SQRU is also where the existing Ault Substation is located. Approximately 1,462 acres (98.0%) is characterized as Class C SQRU, which includes expansive flat-to-rolling landforms with limited vegetation variety and sprawling views.

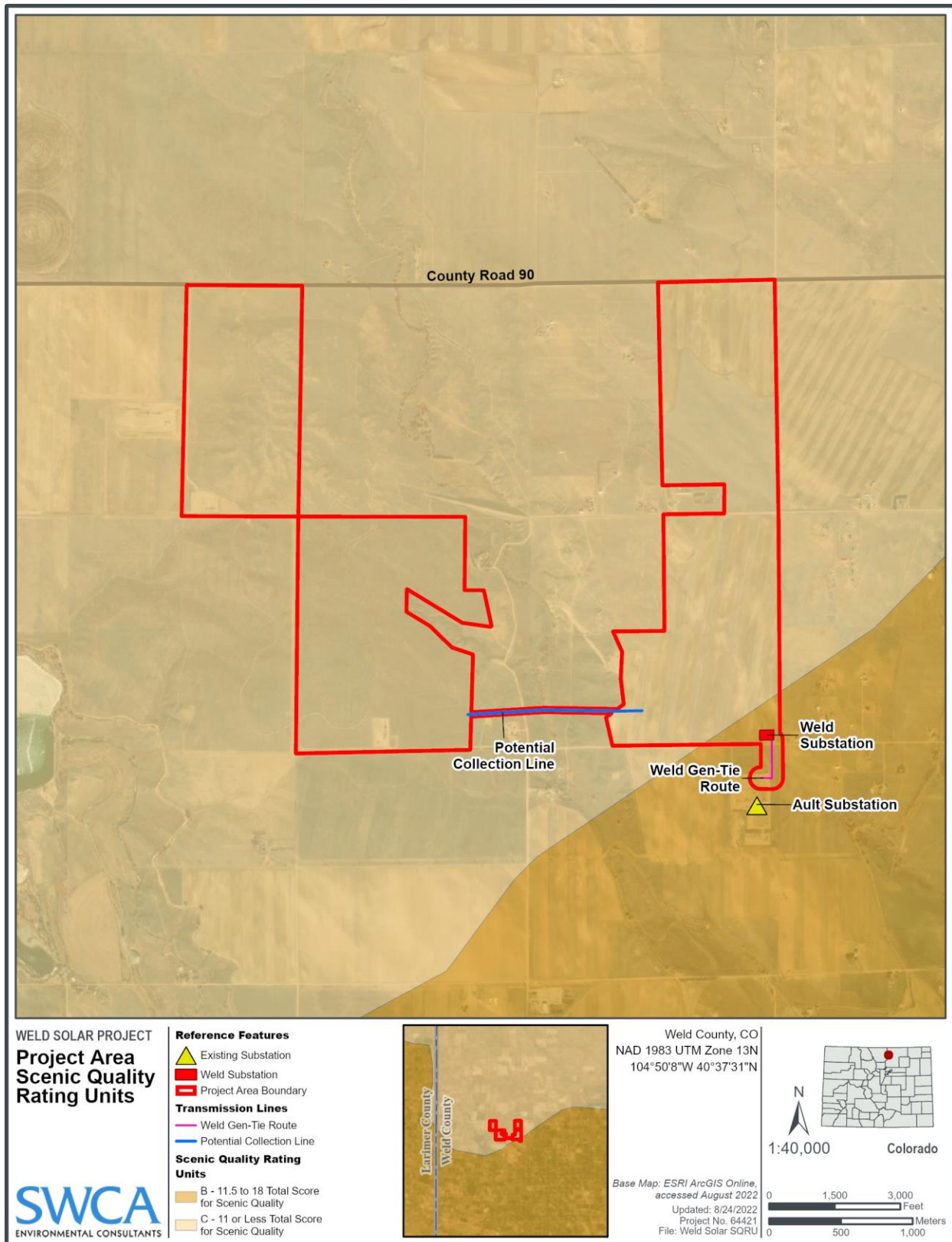


Figure 3-4. Analysis area scenic quality rating units.

3.8.1.2 Visual Sensitivity and Sensitive Viewer Groups

Visual sensitivity reflects attitudes and perceptions held by people regarding the landscape and, in general, reflects the public's level of sensitivity for noticeable visible change within the landscape.

Sensitive viewer groups identified within the analysis area have been categorized based on their expected sensitivity to visual change within the characteristic landscape, as well as activity type and potential duration of time they would be expected to remain within the analysis area. These viewer groups, which could overlap or have dual representation based on location and or use, are used to determine from where in the analysis area the Project could be viewed from a representative public.

Sensitive viewer groups are categorized by the following:

- **Travelers** – origin/destination travelers that use roadways from which the landscape is viewed.
- **Recreational users** – local residents engaged in recreational activities.
- **Residents** – people who live and work within the visual analysis area. Generally, they view the landscape from their properties and homes and often from places of employment while engaged in daily activities.

3.8.2 Environmental Impacts: Proposed Action

The construction, operations, and maintenance of the proposed Project would result in effects on visual resources. An analysis of visual dominance, scale, continuity, and contrast was used in determining to what degree the Project would attract attention and to assess the relative change in character and scenic quality as compared to the existing characteristic landscape.

The existing visual character of the analysis area (area of visibility up to 3 miles from the Project area) would be affected during the period of construction by the generation of fugitive dust; movement of equipment and vehicles in and out of the Project area; and the presence and operation of construction cranes and other heavy equipment, transmission line stringing, and material stockpiles. The construction activities would introduce forms, lines, colors, textures, and motion not common in the landscape that would temporarily demand attention and create strong contrast with the existing setting. Removal of vegetation would expose lighter-color soils in the cleared areas for laydown/staging, the solar array electrical collection system, distribution lines, and solar array tracker foundations. Visual effects during Project operations would result from the visibility of the aboveground components associated with the Project, and the magnitude of change to the landscape character would be altered. Project decommissioning would be largely similar to Project construction with the removal of Project components, construction crews and equipment. The Project would likely become less visible over time because of vegetation reestablishment.

3.8.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to visual resources from the proposed Project:

- All surface disturbances would be kept to the minimum necessary to accomplish construction of Project components.
- Reclamation of all temporary surface disturbances would be initiated upon completion of activities, to the extent practicable. Reclamation of disturbed areas shall, to the extent practicable, include contouring disturbances to blend with the surrounding terrain, replacing topsoil,

smoothing and blending the original surface colors to minimize impacts to aesthetics and scenery resources, and seeding the disturbed areas with native seeds.

- Construction activities would primarily be limited to daytime hours. If night work is required during construction, lighting would be the minimum necessary for safety, and lighting would not be left on when not in use.
- Low-elevation motion controlled lighting would be installed at primary access gates, substation, and entrance to energy storage facility. These security lights would be shielded to protect dark skies and only used in areas where it is required for safety.
- Vegetation clearing would be minimized to the extent practicable. Drive-and-crush practices would be maximized to avoid excessive root damage and allow for resprouting.

3.8.2.2 Direct and Indirect Impacts

For the purposes of this analysis, an impact to visual resources could result if degrees of visual change for casual observers exceed moderate levels. Because individual viewers have different perspectives about what they value visually on the landscape, the Project was evaluated based on design elements and compared to the existing landscape. Table 3-11 defines the degrees of visual change for casual observers within the analysis area and contrasted with the existing landscape’s character and inherent scenic quality and are referenced in the following impact summaries.

Table 3-11. Criteria for Assessing Level of Impacts to Visual Resources

| Degrees of Visual Change | Contrast Perceived by Viewers | Magnitude of Change to Landscape Character/Scenic Quality |
|--------------------------|---|---|
| None | Project components would repeat elements/patterns common in the landscape. Project components would not be visually evident. | Landscape would appear to be intact and not attract attention. Project components would repeat form, line, color, texture, or scale common in the landscape and would not be visually evident (no contrast). |
| Weak | Project components would introduce elements/patterns common in the landscape that would be visually subordinate. Project components would create weak contrast compared with other features in the landscape. | Landscape would be noticeably altered and would begin to attract attention. Project components would introduce form, line, color, texture, or scale common in the landscape and would be visually subordinate (weak contrast). |
| Moderate | Project components would introduce elements/patterns not common in the landscape. Project components would be visually prominent in the landscape and would create moderate contrast, compared with other features in the landscape. | Landscape would appear to be substantially altered. Project components would introduce form, line, color, texture, or scale not common in the landscape and would be visually prominent in the landscape (moderate contrast). Project components would attract attention. Project components would begin to dominate the visual setting. |
| Strong | Project components would introduce elements/patterns that would be visually dominant and create strong contrast, compared with other features in the landscape. | Landscape would appear to be severely altered. Project components would introduce form, line, color, texture, or scale not common in the landscape and would be visually dominant in the landscape (strong contrast). Project components would demand attention. Project components would dominate in the visual setting. |

Source: BLM (1986)

During the construction phase, the assembly of arrays, movement of construction equipment, and potential fugitive dust from construction activities would be visually dominant and would be the primary focus of attention for viewers due to the introduction of new visual elements. Residences in the immediate foreground (0–0.25 mile) would experience strong visual impacts to the landscape character from construction activities. Residences and travelers on local county roads that occur in the foreground (0.25–1 mile) could potentially experience strong to moderate visual impacts depending on topography, vegetative barriers, and other visual hindrances that exist within the landscape. Black Hollow Reservoir recreation users, residences, and travelers that reside in the middle ground (1–3 miles) are expected to have weak visual contrast with the existing landscape character from construction activities at this distance.

Once the facility has been constructed, horizontal, dark-colored solar arrays would demand attention, create a strong magnitude of change to the existing landscape character, and result in a strong visual contrast when viewed within the immediate foreground. The intactness, unity, and vividness of the agrarian landscapes in the analysis area would be impacted because the change from agricultural lands to PV panels, an operations and maintenance building, and other novel energy infrastructure to the landscape would encroach on and begin to diminish the overall visual composition of the landscape's existing character. As viewers transition into the foreground and middle ground, perceivable visual contrast would begin to decrease the farther the viewer is from Project components. There are multiple transmission lines within the analysis area. The gen-tie line would introduce elements common in the landscape and would be visually neutral. It is expected that gen-tie form, line, and color would be absorbed into the existing landscape character.

At the end of the Project life, removal of Project infrastructure would create an immediate reversion and influence the degrees of visual change to preconstruction characteristics in a shorter duration of time as a result. But there would be an unknown duration of time for the Project footprint to be no longer visible and for the vegetation within the Project area to return to its preconstruction state. The Project and the magnitude of change to the existing landscape character and scenic quality would vary depending on the distance, scale, and intervening terrain and/or vegetation.

Overall, it is expected that there would be strong visual impacts in the immediate foreground, moderate to strong visual impacts in the foreground, and weak visual impacts in the middle ground for all phases of the Project. Based on the low numbers of affected persons and the process for review of this type of development through the Weld County Zoning Code Chapter 23, the impact to visual character is not significant.

A glint and glare analysis was conducted using the Sandia National Laboratory's Solar Glare Hazard Analysis Tools by Forge Solar to assess potential glare impacts resulting from the Project. Specifically, this analysis focused on potential glare on aircraft approaching the Northern Colorado Regional Airport, the Greeley-Weld County Airport, the Bellmore Farms Airfield, and the Yankee Airfield. This analysis identified no predicted glare occurrences for approaches for any runways associated with the Northern Colorado Regional Airport, the Greeley-Weld County Airport, the Bellmore Farms Airfield, or the Yankee Airfield (Forge Solar 2022). However, approximately 13 homes that are located in and around the proposed Project are expected to have varying durations of green glare throughout the year. One house located south of KOP 1 on Road 88 is expected to have yellow glare in the late afternoon during June and July. This receptor is expected to have approximately 1 minute of yellow glare and a yearly cumulative total of 49 minutes. More information can be found in the *Weld County Solar Project Visual Impact Assessment Technical Report* (SWCA 2022d).

3.8.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. The existing character of the landscape as described in Section 3.8.1 would remain unchanged, and sensitive viewer groups and the scenic or visual quality and character in the analysis area would not be impacted by installation of Project features.

3.9 WILDLIFE RESOURCES

This section describes the existing conditions and the effects that the Proposed Action could have on wildlife resources, specifically big game and migratory birds.

3.9.1 Existing Conditions

The analysis area for big game species includes CPW game management unit (GMU) 87. The analysis area for migratory birds extends approximately 1 mile beyond the Project area. These analysis areas were selected as they provide a baseline of existing habitat conditions within and around the Project area, and in the case of big game, account for state-designated big game management boundaries. The analysis areas contain suitable habitat for an array of wildlife species including birds, fish, and mammals. Land cover types for the migratory bird analysis area and the Project area are provided in Table 3-9 (also see Section 3.7). The primary land cover types in the analysis area include Cultivated Cropland (65% of the analysis area), Western Great Plains Shortgrass Prairie (18% of the analysis area) and Introduced Upland Vegetation - Perennial Grassland and Forbland (12% of the analysis area). These areas may provide wildlife habitat (feeding, breeding, and sheltering areas) for big game and migratory birds. For the purpose of this analysis, it is assumed that the Western Great Plains Shortgrass Prairie, Introduced Upland Vegetation – Perennial Grassland and Forbland, Western Great Plains Foothill and Piedmont Grassland, Introduced Upland Vegetation – Annual Grassland, and the Disturbed/Successional – Grass/Forb Regeneration land cover types represent available grassland habitat for special-status species in the analysis area. Some of the land cover types in the analysis area are associated with anthropogenic disturbances, such as Cultivated Cropland; however, they could still provide wildlife habitat for some species. While Project disturbance is assessed within the entirety of the Project area to allow for flexibility in Project siting and design, it is not anticipated that the entire Project area would be developed.

The U.S. Department of Interior directs federal land managers to work with states to protect big game species and their habitat under two secretarial orders regulating big game migration corridors and conservation. The Colorado Legislature enacted the Colorado Habitat Connectivity Senate Joint Resolution (21-021) in 2019 to advance wildlife corridor conservation and habitat connectivity, including big game migration corridors.

The USFWS protects most avian species under the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale any migratory bird or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued by the USFWS. The BGEPA prohibits anyone without a permit from “taking” eagles, their parts, eggs, or nests as described in Section 3.7.

3.9.1.1 Big Game

Big game species that could use the grassland habitat found in the analysis area based on CPW-mapped overall range include pronghorn antelope (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*Odocoileus virginianus*). In addition to general range, CPW-mapped mule deer, concentration area, winter range, winter concentration area, and severe winter range; white-tailed deer winter range and concentration area; and pronghorn winter range, winter concentration area, and severe winter range all overlap the Project area, as well. Winter concentration areas are parts of a species' winter range where densities are at least 200% greater than the surrounding winter range density (CPW 2020h). Severe winter range is part of the species' winter range where 90% of the individual animals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in two worst winters out of 10 (CPW 2020h). Winter range quality and quantity is one of the primary limiting factors for big game population performance; CPW has observed multiple severe winter events that have had significant impacts on big game populations (CPW 2020h). No big game species were observed during biological survey work for the Project (SWCA 2022c).

The CPW-mapped overall and seasonal ranges within the analysis area for big game species are reported in Table 3-12.

Table 3-12. Big Game Ranges and Acreage in the Project Area and Game Management Unit 87

| Common Name | Scientific Name | Range | Acres in Project Area | Acres in GMU 87 |
|--------------------|-------------------------------|---------------------------|-----------------------|-----------------|
| Mule deer | <i>Odocoileus hemionus</i> | Overall range | 1,500 | 714,249 |
| | | Concentration area | 1,500 | 353,576 |
| | | Winter range | 1,500 | 486,335 |
| | | Winter concentration area | 53 | 143,890 |
| | | Severe winter range | 1,500 | 445,451 |
| | | Overall range | 1,500 | 683,803 |
| Pronghorn antelope | <i>Antilocapra americana</i> | Concentration area | – | – |
| | | Winter range | 1,500 | 400,820 |
| | | Winter concentration area | 638 | 421,279 |
| | | Severe winter range | 1,500 | 649,401 |
| White-tailed deer | <i>Odocoileus virginianus</i> | Overall range | 1,500 | 259,882 |
| | | Concentration area | 1,500 | 157,665 |
| | | Winter range | 1,496 | 159,658 |
| | | Winter concentration area | N/A | N/A |
| | | Severe winter range | – | – |

Notes: N/A = not applicable; CPW does not have mapped winter concentration area for white-tailed deer.
 – = No mapped range for the species overlaps with the analysis area.

3.9.1.2 Migratory Birds

Bird species that could likely occur within the analysis area include raptors, such as Swainson’s hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), ferruginous hawk, prairie falcon (*Falco mexicanus*), American kestrel (*Falco sparverius*), northern harrier (*Circus hudsonius*), great horned owl (*Bubo virginianus*), and bald eagle; game birds such as pheasant (*Phasianus colchicus*) and quail (e.g., *Callipepla* spp.); and numerous species of migratory songbirds. Locally common passerine bird species associated with agricultural and open grasslands include horned lark (*Eremophila alpestris*), thick-billed longspur (*Rhynchophanes mccownii*), lark bunting (*Calamospiza melanocorys*), and vesper sparrow (*Poocetes gramineus*).

The passerine nesting season in Colorado is approximately from April 1 to August 31. The Project area contains potential nesting habitat for shortgrass bird species. In addition, the Black Hollow Reservoir, which is approximately 1 mile southwest of the Project area, is known to provide nesting and foraging habitat for osprey (*Pandion haliaetus*), great blue heron (*Ardea herodias*), and American white pelican (*Pelecanus erythrorhynchos*), though no nesting habitat for these species is present within the Project area. Species that use the Black Hollow Reservoir for nesting and foraging habitat may transit over the Project area. Canada goose (*Branta canadensis*) could also forage in agricultural fields within the Project area during migration and winter.

SWCA reviewed the USFWS IPaC report for birds of conservation concern that could potentially occur in the Project area (USFWS 2022a). Eight species of migratory birds of conservation concern have a low to moderate likelihood to occur in the Project area during spring and/or fall seasons (Table 3-13).

Table 3-13. Migratory Birds of Conservation Concern in the Project Area

| Common Name | Scientific Name | Breeding Season | Potential for Occurrence |
|----------------------------|-----------------------------------|---------------------|--------------------------|
| Bald eagle | <i>Haliaeetus leucocephalus</i> | October 15–July 31 | Moderate |
| Chestnut-collared longspur | <i>Calcarius ornatus</i> | May 1–August 10 | Low |
| Clark’s grebe | <i>Aechmophorus clarkii</i> | June 1–August 31 | Low |
| Ferruginous hawk | <i>Buteo regalis</i> | March 10–August 20 | Moderate |
| Lesser yellowlegs | <i>Tringa flavipes</i> | N/A | Low |
| Long-billed curlew | <i>Numenius americanus</i> | April 1–July 31 | Low |
| Long-eared owl | <i>Asio otus</i> | March 1–July 20 | Low |
| Red-headed woodpecker | <i>Melanerpes erythrocephalus</i> | May 10–September 15 | Low |

N/A = not applicable; breeding range does not include Weld County, Colorado

3.9.2 Environmental Impacts: Proposed Action

3.9.2.1 Environmental Commitments

The following environmental commitments would be implemented to reduce potential impacts to wildlife resources from the Project:

- Prior to construction, Weld Solar will complete a natural resources field survey of the approximately 1,500-acre Project area as currently designed to assess for potential natural

resources constraints, such as migratory birds (including raptors) and nests that could be present in areas planned for Project construction.

- Natural resource specialists will evaluate the Project area for migratory birds and nests (including raptors) protected under the MBTA and BGEPA prior to ground-disturbing activities and construction.
- During construction and operations, vehicle movement outside the Project area and existing land authorizations will be restricted to pre-designated access, contractor-acquired access, or public roads.
- The areal limits of construction activities will be predetermined, with construction activity restricted to and confined within those limits. No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate survey or construction activity limits. The environmentally sensitive areas will be flagged and described to alert construction personnel that those areas should be avoided.
- In construction areas where recontouring is not required, vegetation will be left in place wherever possible, and drive-and-crush practices will be maximized to avoid excessive root damage and allow for resprouting.
- In construction areas where ground disturbance is significant or where recontouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches, as applicable.
- If watering facilities (tanks, developed springs, water lines, wells, etc.) are damaged or destroyed by construction activities, they will be repaired or replaced to their pre-disturbed condition.
- The Project area will be maintained free of construction-related non-biodegradable debris. Slash will be left in place or disposed of in accordance with the requirements of the landowner or land management agency.
- Surface-disturbing activities will be timed to not interfere with any active raptor nesting activities. Avoidance buffer distances and temporal restrictions will follow CPW's recommendations.
- If construction is anticipated during the migratory bird nesting season, preconstruction clearance surveys are recommended within suitable grassland habitat.
- The Project will be designed in consideration of Avian Power Line Interaction Committee guidance to avoid and minimize impacts to avian species.

3.9.2.2 *Direct and Indirect Impacts*

3.9.2.2.1 **BIG GAME**

Mule deer, pronghorn, and white-tailed deer that could use the Project area could be indirectly impacted by the removal of vegetation and by disturbance from human activity. Vegetation removal and ground disturbance during construction and the presence of operations and maintenance-related infrastructure would reduce habitat for big game within the Project area, including foraging habitat. Accordingly, habitat removal would contribute to increasing habitat fragmentation within big game species ranges. Big game species would be further affected by Project construction and operations through the loss of important seasonal range habitat and by the timing of construction activities. Project construction and operations activities would have the potential to cause stress or displace big game from parts of their

winter ranges as well as overall range for the duration of the activity. The intensity of big game avoidance would depend on the scale of the activity, proximity to big game use areas, and the seasonal timing of construction activities. As discussed, seasonal winter range quality and quantity is one of the primary limiting factors for big game population performance. In total, the Project would remove 1,500 acres of winter range and severe winter range (0.3% of the winter range and severe winter range in the analysis area) and 53 acres of winter concentration area (0.04% of the winter concentration area in the analysis area) for mule deer. The Project would remove 1,500 acres of winter range (0.4% of the winter range in the analysis area), 1,500 acres of severe winter range (0.2% of severe winter range in the analysis area), and 638 acres of winter concentration area (0.2% of winter concentration area in the analysis area) for pronghorn. Finally, the Project would remove 1,496 acres of winter range (1% of the winter range in the analysis area) for white-tailed deer. Throughout the life of the Project, big game individuals would be able to effectively cross Project roads during times of Project inactivity, reducing potential impacts to big game species; however, in areas where fencing is installed, movement would be restricted. Big game species could be directly impacted by the Project through the potential for collision with vehicles during construction and operations activities.

The response of big game to habitat removal, human activity, and vehicle collision would be variable and depend on the individual, species, distance, and the type, intensity, and duration of the disturbance. Disturbance would be restricted to pre-defined areas for construction and vehicular access, which would contribute to mitigating potential impacts to big game individuals and their habitat (Section 3.9.2.1). Considering the relatively minimal impacts to big game habitat, including seasonal ranges (1% or less of the respective CPW-mapped range in the analysis area [see Table 3-12]), impacts from the construction and operations of the Project on big game species are not anticipated to be significant.

3.9.2.2 MIGRATORY BIRDS

Indirect impacts to migratory birds from Project construction and operations include loss of habitat and the potential for displacement and disturbance. Migratory bird habitat is present within the Project area and surrounding landscape and could be impacted by the removal of vegetation, as well as human activity disturbances. Activities associated with Project development, such as increased vehicle traffic and human disturbance, affect the quality of the habitat in the vicinity by creating disturbance and fragmentation effects, potentially resulting in behavioral avoidance of the Project area. For species that occur within the Project area and are adapted to the predominately fragmented agricultural and grassland landscape, displacement or avoidance behaviors are anticipated to be, at most, temporary, as species become adapted to the new operational environment. For species that occur within the Project area and are dependent upon contiguous blocks of undisturbed native habitat, impacts could include displacement from previously occupied habitat that would be fragmented by the proposed Project.

Surface-disturbing activities within the Project area would remove breeding habitat for ground-nesting species and foraging habitat for other species. During construction, bird species that previously occupied or used the Project area would likely be displaced. Although grass and forb cover would recover in some areas after construction, the quality of habitat would be diminished due to the presence of the solar panels. Small ground-dwelling migratory bird species (e.g., passerine species) might continue to use the habitat available under and adjacent to the panels, but larger species (e.g., raptors) would likely avoid the Project area due to the challenges of hunting around the panels and removal of prey bases. As a result of diminished habitat quality and quantity, species diversity and abundance locally could decline.

Migratory birds could also be impacted directly through potential collisions with the gen-tie line, solar panels, and other proposed Project infrastructure or with Project-related vehicles. The risk of collision is highest during times of poor visibility and near areas where large flocks of birds either take off or land,

such as roost sites or concentrated food sources. Some individuals that are unable to avoid construction equipment could be harmed or killed through collision, but such impacts are expected to be minimal because most individuals are likely to avoid such equipment. Additionally, the Project area does not have habitat features such as aquatic resources or high-quality intact native grasslands that might attract high numbers of birds. Disturbance would be restricted to predefined areas for construction and vehicular access, which would contribute to mitigating potential impacts to migratory bird individuals and their habitat (Section 3.9.2.1).

In total, the proposed Project could result in 477 acres of surface disturbance within grassland habitat and 1,010 acres of surface disturbance within agricultural (Cultivated Cropland land cover type) habitat that could contain suitable nesting and foraging habitat for migratory bird species likely to use the Project area (see Table 3-9, see Section 3.7). Considering that this is approximately 15% of the suitable grassland and agricultural habitat, respectively, in the analysis area for migratory birds, impacts to migratory bird species are not anticipated to be significant as there is suitable habitat adjacent to the Project that individuals could use if disturbed or displaced from the Project area.

3.9.3 Environmental Impacts: No Action Alternative

Under the No Action Alternative, WAPA would deny the request for interconnection, and Weld Solar would evaluate other interconnection options for the Project in the region. If no suitable interconnection alternative can be identified, Weld Solar would not construct, operate, maintain, or decommission the Project. In this scenario, there would be no impacts to wildlife or their habitat from the Project, and existing conditions for wildlife in the analysis areas would continue as described in Section 3.9.1.

3.10 CUMULATIVE IMPACTS

Cumulative impacts can be defined as an effect on the environment that results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions (RFFAs), regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts analysis has been considered by resource, where the cumulative impact analysis areas coincide with the different analysis areas considered for the direct and indirect Project impacts to each specific resource. Past and present actions within the analysis areas for the Project include a diverse array of actions that cannot be individually listed. These actions generally consist of grazing and ranching activities; crop production; private recreational opportunities; utility development such as other solar-energy conversion projects, high-voltage transmission lines, electrical distribution lines, telephone lines, communication towers, and oil and gas operations; transportation infrastructure; and residential and commercial/retail developments.

In addition to the ongoing activities described above, the number of energy and transmission projects operating, under construction, and/or under development is trending toward growth in the United States, and this trend is anticipated in this area, as well. Table 3-14 summarizes the known details about RFFAs identified within the analysis areas considered. For an RFFA to be considered in the cumulative effects analysis, the effects of the action must occur in the same place and at the same time as similar effects from the Project, and the action must have started official approval/permitting process(es). The Project has an estimated maximum 40-year life, therefore, RFFAs have been assessed temporally within this time frame. Due to the breadth of the analysis area that the socioeconomic discussion covers (Weld and Larimer Counties), RFFAs and cumulative impacts analysis are discussed as trends on the landscape described above rather than individual actions.

Based on the best available, publicly available information, RFFA impacts to land cover and habitat types are quantified in Table 3-15. Acres of disturbance for each RFFA were estimated using Weld County planning data and parcel information (Weld County, Colorado 2022) and the GAP/LANDFIRE National Terrestrial Ecosystems data set, which includes detailed vegetation and land cover patterns for the continental United States. Analysis areas used throughout this report have been included in the below land cover quantification. These include additional 1-mile and 3-mile cumulative impacts analysis areas surrounding the Project for consideration. No RFFAs directly overlap the Project area.



Table 3-14. Reasonably Foreseeable Future Actions Included in Cumulative Impacts Analysis

| Project Name or Number | Landownership | Estimated Project Size (when known) | Project Location | Planning Status | Project Description | Anticipated Project Schedule |
|---|---------------------------------|--|--|--|--|--|
| Transmission | | | | | | |
| Tri-State Generation and Transmission Association Transmission Line | Private | 1.5-mile transmission line | Weld County, Colorado (Parcels 055320000006, 055320400004) | Approved in 2019 | 1.5-mile-long 115-kV electrical transmission line, all parcels to remain agricultural (A) zoned | Unknown |
| Xcel Energy Transmission Line (A) | Private | 16-mile transmission line (relevant segment on 136-acre parcel) | Weld County, Colorado (Parcels 070705000040, 070705000038, 070705000019) | In development, BOCC hearing January 5, 2022 | Electric transmission line extending a total of 16 miles in 3 segments. A segment within the analysis area proposes an overhead 115/230-kV transmission line extending from the Collins Street Substation to Cloverly Tap Point. | Operations expected late 2022 and 2023 |
| Xcel Energy Transmission Line (B) | Federal (Bureau of Reclamation) | 10.4-mile-long transmission line and one new substation (62 acres) | Weld County, Colorado (Parcel 070704000034) | Approved in 2019 | 10.4-mile-long 230-kV transmission line, a new substation (Graham Creek), and upgrades to an existing substation (WAPA) | Unknown |
| Oil and Gas | | | | | | |
| Natural Gas Pipeline | Private | 30-mile pipeline | Weld County, Colorado (Parcels 055329000011, 055332100019) | Approved in 2018 | 12-inch high-pressure natural gas pipeline approximately 30 miles long (two 20-inch natural gas pipelines) that runs from the Town of Windsor to the Town of Pierce | Unknown |
| Solar | | | | | | |
| Black Hollow Sun | Private | 1,400 acres | Weld County, Colorado | In development | 250-MW solar photovoltaic facility located in the vicinity of the Project area | Operations expected to begin in 2023 |
| Atlas Renewable Power Battery Storage | Private | Unknown (131-acre parcel) | Weld County, Colorado (Parcel 070706100014) | In development | Utility-scale battery storage facility | Approved July 9, 2022, operations expected in 2023 |

Sources: Platte River Power Authority (2022); Solar Energy Industries Association (2022); Weld County, Colorado (2022)

Table 3-15. GAP/LANDFIRE Land Cover Classes in the Cumulative Impacts Analysis Areas by Reasonably Foreseeable Future Actions, Including the Proposed Action

| Land Cover Class | Estimated Acres of Disturbance* by Land Cover Class | | | | | | | | | | | |
|---|---|------------------------|----------------------|-----------------------------|-----------------------------------|-----------------------------------|--|------------------------|----------------------|-----------------------------|-----------------------------------|-----------------------------------|
| | 1-Mile Buffer (special-status species and wildlife analysis area) | | | | | | 3-Mile Buffer (visual resources analysis area) | | | | | |
| | Weld Solar | Black Hollow Sun Solar | Natural Gas Pipeline | Tri-State Transmission Line | Xcel Energy Transmission Line (A) | Xcel Energy Transmission Line (B) | Weld Solar | Black Hollow Sun Solar | Natural Gas Pipeline | Tri-State Transmission Line | Xcel Energy Transmission Line (A) | Xcel Energy Transmission Line (B) |
| Cultivated Cropland | 1,009 | 781 | 626 | 272 | 131 | <1 | 1,009 | 932 | 629 | 282 | 357 | 69 |
| Western Great Plains Shortgrass Prairie | 223 | 242 | - | 1 | - | - | 223 | 376 | - | - | - | - |
| Introduced Upland Vegetation - Perennial Grassland and Forbland | 254 | 32 | 8 | 5 | - | - | 254 | 33 | 8 | 8 | - | - |
| Pasture/Hay | - | 54 | 29 | - | - | <1 | - | 54 | 30 | - | - | 40 |
| Developed, Open Space | 13 | 7 | 19 | 5 | 4 | 1 | 13 | 12 | 21 | 6 | 7 | 4 |
| Western Great Plains Woodland and Shrubland | <1 | 2 | 8 | - | <1 | - | <1 | 2 | 8 | - | 3 | 4 |
| Western Great Plains Sandhill Steppe | - | - | - | <1 | - | - | - | - | - | <1 | - | <1 |
| Open Water (Fresh) | - | - | - | - | 3 | - | - | - | - | - | 3 | - |
| Western Great Plains Floodplain | - | 1 | - | - | - | - | - | 1 | - | - | - | 4 |
| Introduced Upland Vegetation - Annual Grassland | - | - | <1 | - | - | - | - | <1 | <1 | - | - | - |
| Developed, Low Intensity | - | - | <1 | - | <1 | <1 | - | <1 | <1 | - | 3 | - |
| Total | 1,500 | 1,119 | 690 | 284 | 326 | 3 | 1,500 | 1,412 | 696 | 297 | 372 | 125 |

Note: Sum of totals may not be exact due to rounding error.

*Acres of disturbance are conservatively inclusive of entire parcels where RFFAs are sited due to lack of Project-specific details.

3.10.1 Cumulative Impacts by Resource

3.10.1.1 Air Quality and Emissions

During construction, RFFAs would create short-term air pollutant emissions from equipment exhaust, vehicle exhaust from travel to and from Project sites, and fugitive dust from soil disturbance. Although construction would generate emissions of criteria pollutants, given the temporary nature of emissions, scope of construction activities, and remote location of the analysis area, it is unlikely that emissions would exceed NAAQS. RFFAs' construction impacts to air quality could overlap with impacts from this Project, particularly the Black Hollow Sun solar project, if the proposed projects have similar construction timelines. Considering the mitigation measures and best practices for this Project discussed in Section 3.1, and an assumption that the RFFAs would follow similar measures, cumulative construction impacts to air quality would be minimized. The Project would still add GHGs to the atmosphere, but it would emit less than if the equivalent amount of electricity was generated by fossil-fuel combustion. The Project could contribute to a long-term, cumulative net decrease in emissions by substituting some existing fossil fuel sources with a renewable source.

3.10.1.2 Cultural Resources

The Project and RFFAs located within the 1-mile buffer included in the analysis area could cumulatively impact cultural resources. Direct impacts to known and unknown archaeological historic properties could occur through ground-disturbing activities associated with the construction, operations, maintenance, and/or decommissioning and reclamation of the Project elements, as well as visual impacts to the setting and feeling of historic properties. Indirect impacts could include increased road sedimentation due to higher levels of traffic where the road is itself or passes through or immediately adjacent to a historic property, visual impacts to the setting and feeling of historic properties, and increased potential for illegal collecting of cultural material. Implementation of environmental commitments would reduce potential cumulative impacts to historic properties, if encountered.

3.10.1.3 Farmland

Past and present actions within the analysis area for farmland were accounted for in the Existing Conditions section (Section 3.3.1) for this resource. No RFFAs fall within the analysis area.

3.10.1.4 Livestock Grazing

Past and present actions within the analysis area for livestock grazing were accounted for in the Existing Conditions section (Section 3.4.1) for this resource. No RFFAs fall within the analysis area.

3.10.1.5 Paleontology

Past and present actions within the analysis area for paleontological resources were accounted for in the Existing Conditions section (Section 3.5.1) for this resource. No RFFAs fall within the analysis area.

3.10.1.6 Socioeconomics

The socioeconomic impacts analysis area is Weld and Larimer County, which encompasses all listed RFFAs. Cumulative impacts to socioeconomic conditions can be expected with the level of development and proposed RFFAs occurring adjacent to the Project. Overall, Weld and Larimer Counties would see short-term benefits from increased employment and longer-term benefits from increased taxes. Cumulative increased demands would be placed on public services, including emergency services.

Similar to the discussion of the Project impacts, the cumulative impacts to public service providers would be negligible given the relatively small size of cumulative construction crews compared to the local populations and economies, and construction industry best practices of coordination with local service providers would minimize the effects.

3.10.1.7 Special-Status Species

The RFFAs would contribute to habitat loss, including some habitat used by special-status species. For the analysis area for special-status species, Western Great Plains Shortgrass Prairie, Introduced Upland Vegetation – Perennial Grassland and Forbland, Western Great Plains Foothill and Piedmont Grassland, Introduced Upland Vegetation – Annual Grassland, and the Disturbed/Successional – Grass/Forb Regeneration land cover types represent available general grassland habitat for special-status species. These land cover types account for approximately 765 acres associated with RFFAs within the 1-mile buffer. Impacts to special-status species could overlap with RFFAs, particularly if large, continuous land cover is altered. Mitigation measures discussed in Section 3.7 should be implemented to lessen the cumulative impacts to special-status species.

3.10.1.8 Visual Resources

The Project would convert approximately 1,041 acres of agricultural lands to PV panels and gen-tie infrastructure, which would generate visual contrast in the analysis area. Cultivated Cropland land cover accounts for approximately 3,278 acres of RFFAs located within the visual resources analysis area that have the potential to contribute to the cumulative impacts for visual resources. Project construction and components would be noticeable and begin to attract attention in the setting. However, existing transmission lines occur within the landscape, as well as other structures associated with renewable energy generation, which have introduced form, line, color, and texture similar to the Project.

3.10.1.9 Wildlife Resources

Impacts from RFFAs would contribute to the conversion of wildlife habitat and disturbance from increased human activity. Big game, including mule deer, pronghorn deer, and white-tailed deer, and migratory birds could be cumulatively impacted. The main land cover types that would be affected by the Project and RFFAs include Cultivated Cropland and Western Great Plains Shortgrass Prairie, as well as minor components of several other land cover types that are used by wildlife (see Table 3-15). Coordination with CPW and implementation of environmental commitments would lessen the cumulative impacts to wildlife resources.

3.11 RESOURCES DISMISSED FROM DETAILED ANALYSIS

At the initiation of the EA process, resources with potential to be impacted by the Project were assessed relative to anticipated Project impacts to inform the need for detailed analysis in the EA or the potential for dismissal from detailed analysis. Resources that were dismissed from detailed analysis in the EA due to the implementation of mitigation measures and design features are discussed below.

3.11.1 Environmental Justice

Federal agencies are required to address disproportionate environmental impacts on minority and low-income populations (i.e., environmental justice). As such, the Project area was screened for the presence of minority and/or low-income communities using U.S. Census data organized at the block group level. The entire Project area is located in Weld County, Colorado, in census block group 08123002303. This

block group is not an environmental justice community nor is it likely that language barriers would adversely and disproportionately affect the ability of residents to participate in the permitting process (U.S. Census Bureau 2023a). The proportion of the population identified as a minority group within census block group 08123002303 (18%) was lower than in Weld County (36%) and Colorado (33%) more generally (U.S. Census Bureau 2023b). Additionally, the proportion of the population within census block group 08123002303 below the poverty line (2.1%) was also lower than in Weld County (9%) and Colorado (10%) more generally (U.S. Census Bureau 2023c). Noting that most adverse environmental effects associated with solar facility construction (e.g., noise, dust, and air emissions) would be most acutely felt near the Project and diminish rapidly over the course of several hundred yards, and further noting that viewshed alternations (the only adverse impact likely to persist after construction and to be noticeable at a distance) are not expected to disproportionately impact low-income or minority communities, environmental justice was dismissed from detailed analysis.

3.11.2 Human Health and Safety

Electromagnetic fields (EMF) are often a consideration related to human health and safety and electrical generation or transmission. All electric devices produce EMFs, which are categorized by their frequency as either nonionizing, which includes low-level radiation generally perceived as harmless to humans (e.g., radios and televisions), or ionizing, which includes high-level radiation with the potential for cellular and deoxyribonucleic acid (DNA) damage (e.g., sunlight, X-rays, etc.). Alternating current voltage on any wire that acts as a conductor produces an electric field, the intensity of which is proportional to the voltage of the transmission line. The flow of electrical current on a wire produces a magnetic field, the intensity of which is proportional to the current flow through the conductors. As a result, the strength of EMFs decreases dramatically with increasing distance from the source. EMFs from transmission lines would be similar to typical background levels at a distance of 300 feet (National Institute of Environmental Health Sciences 2002).

Hazardous materials from construction and operations activities will not be drained onto the ground or into streams or drainage areas and will be handled in accordance with industry standard best practices. Totally enclosed containment will be provided for trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be collected/contained and removed to a disposal facility authorized to accept such materials. No hazardous materials are expected to be produced or stored on the Project site. Wildfires could occur in the area and fire intensity could be moderate based on fuels. However, the fuels are largely fine (grass), and the area is accessible by several roads, so fire response would be relatively fast, and the road network and fire type (surface fires with low flame lengths) make rapid containment more likely. According to the Colorado Forest Atlas data, the overall risk to values at risk is also low. Additionally, a fire protection and emergency response plan will be developed for the Project.

Therefore, due to the lack of anticipated impacts from EMF beyond 300 feet, and implementation of the proposed mitigation measures for hazardous materials and fires in the Project area, detailed analysis of impacts to human health and safety from the Project are not warranted.

3.11.3 Noise

Noise would be generated from the construction and maintenance of the Project. Construction noise would occur from use of construction equipment and would be temporary across the Project area, occurring during active construction and ending after construction concludes. Maintenance noise would occur at discrete locations where maintenance activities would occur and for discrete time frames.

Minimal and infrequent increased noise levels would be anticipated from operation of the Project. Weld County regulations do not include limits on noise from construction.

Noise is typically measured via the A-weighted decibels (dBA) scale, which is a logarithmic scale where a 10-dBA increase corresponds to a doubling of perceived sound. References show that noise from a point source such as a construction site will decrease by 6 dBA with every doubling of the distance away from the source (Truax 1999). The typical assumed ambient noise level for a rural setting is 40 dBA.

The temporary construction and maintenance activities would be expected to generate noise during normal working hours from diesel engines and similar equipment. The noise level would be up to approximately 88 dBA at a distance of 50 feet. This noise level would be attenuated to approximately 58 dBA at a distance of 1,600 feet (similar to the noise of light automobile traffic at 50 feet), and attenuated to the assumed ambient level (no additional noise above the existing level) at approximately 12,800 feet (2.4 miles). Based on this initial analysis, detailed analysis of impacts from noise generated by the Project are not warranted.

3.11.4 Soils and Geology

Surface disturbance associated with construction of the Project would result in impacts to soil resources, including loss of soils, compaction of soils, and an increase in the potential for erosion. In construction areas where re-contouring is not required, vegetation would be left in place wherever possible and drive-and-crush practices would be maximized to avoid excessive root damage and allow for re-sprouting. Salvaged topsoil would be segregated to minimize horizon mixing and loss of topsoil integrity. The Project preference will be to respread topsoil as soon as possible following construction activities and to support stabilization activities. However, if long-term topsoil stockpiles (defined as storage of topsoil for greater than two growing seasons) are required, stockpiles will be stored no more than 4 feet deep for long-term storage and will be identified as long-term topsoil stockpiles with the appropriate flagging and/or signage for long-term storage. The geologic units are stable and there are no known landslides. While there are clay, sand, and gravel pits in the surrounding area, there are no known pits, or mines for other resources, in the Project area. Therefore, due to the implementation of the proposed mitigation measures for soils and the stability of geological resources in the Project area, detailed analysis of impacts to soil or geological resources from the Project are not warranted.

3.11.5 Transportation

Construction of the Project would result in temporary increases in traffic from construction personnel accessing the Project and equipment/materials deliveries. Though a temporary increase in traffic would occur, the existing roadways are rural in nature and designed to accommodate large agricultural equipment. Therefore, it is not anticipated that the increase in traffic resulting from Project construction would near or surpass the established capacities of the existing roadways. Weld Solar would complete road use agreements with Weld County as part of the county permitting process. Traffic increases during operations and maintenance would be negligible, with very few vehicles (approximately one or two) accessing the Project on any given day.

Because the Project would only include a small number of new transmission structures as the only tall infrastructure, and those structures would be adjacent to existing electrical transmission infrastructure (other transmission lines and the substation), no additional constraints on air traffic, specifically crop dusting, would be expected. Therefore, due to the negligible level of impact anticipated, detailed analysis of impacts to transportation from the Project is not warranted.

3.11.6 Vegetation

During construction of the Project, vegetation would be removed or disturbed. In construction areas where re-contouring is not required, vegetation would be left in place wherever possible and drive-and-crush practices would be maximized to avoid excessive root damage and allow for re-sprouting. Vegetation is anticipated to establish underneath panels and in areas of temporary disturbance after construction activities are complete and during operations of the Project. Noxious weeds may be present within the Project area or Project area vicinity. Surface disturbance from construction and operations activities, as well as the development of new access roads, could increase the spread of weeds. To reduce the spread of weeds, prior to construction, a noxious weed management plan would be developed and would include stipulations for the control of weeds during construction and operations (prevention and control measures, use of weed-free materials, washing of equipment, etc.). Therefore, considering that vegetation would reestablish underneath panels and that weed management would occur during construction and operations, detailed analysis of impacts to vegetation resources from the Project are not warranted.

3.11.7 Water

During the July 2022 biological field survey conducted for the Project, an SWCA biologist assessed and delineated two wetland features that comprised a total of approximately 0.14 acre adjacent to, but outside of, the Project area (SWCA 2022c). No wetlands were observed within the Project area during this field effort. SWCA did not observe any non-wetland waters during field surveys conducted for the Project. Water consumption during construction would be used for dust suppression and earthwork over approximately 12 months. Weld Solar anticipates that between 50 and 75 acre-feet of water will be needed for the construction phase of the Project, primarily for dust abatement; 75 acre-feet is equivalent to the annual water use of approximately 150 households (Colorado State University 2014). Scheduled panel rinsing is not proposed for the Project, which further limits the need for water consumption. Therefore, considering the lack of water resources within the Project area and thus the potential for disturbance to water resources, as well as the use of water primarily during the construction phase (i.e., short-term water usage), detailed analysis of impacts to water resources from the Project are not warranted.

CHAPTER 4. LIST OF PREPARERS

4.1 WESTERN AREA POWER ADMINISTRATION

WAPA staff who have been involved in the preparation of this EA are listed in Table 4-1.

Table 4-1. Western Area Power Administration Environmental Assessment Team

| WAPA Staff | Role |
|-----------------|--------------------------------|
| Andrea Severson | EA Reviewer |
| James Wood | Regional Environmental Manager |
| Mark Suchy | Project Lead |
| William Ankele | Archaeological Lead |

4.2 SWCA ENVIRONMENTAL CONSULTANTS

SWCA staff who have been involved in the preparation of this EA are listed in Table 4-2. To the best of SWCA’s knowledge and belief, no facts exist relevant to any past, present, or currently planned interest or activity (financial, contractual, personal, organizational, or otherwise) that relate to the proposed Project development; and bear on whether SWCA has a possible conflict of interest with respect to being able to render impartial, technically sound, and objective assistance or advice.

Table 4-2. SWCA Environmental Consultants Environmental Assessment Team

| SWCA Staff | Role |
|------------------|--|
| Chris Bockey | Visual Resources Support |
| Clint King | Project Manager |
| David Fetter | Senior NEPA Advisor |
| Doug Faulkner | Natural Resources Lead |
| Eric Hendrickson | GIS Lead |
| Erik Hartung | Socioeconomics, Livestock Grazing, and Farmland; Administrative Record |
| Georgia Knauss | Paleontological Resources |
| Haley Monahan | Assistant Project Manager, Natural Resources Support |
| Joanna Guest | Air Quality and Emissions |
| Kerri Linehan | Technical Editor, Document Formatter, and Production Lead |
| Lili Perreault | Special-Status Species, Wildlife Resources |
| Melanie Medeiros | Cultural Resources |
| Paul Makarewicz | Visual Resources |
| Tara Wilkins | Cumulative Impacts |

CHAPTER 5. REFERENCES

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