DOCKETED	
Docket Number:	23-OPT-02
Project Title:	Darden Clean Energy Project
TN #:	260669
Document Title:	Updated Incidental Take Permit - Volume 1
Description:	Updated incidental take permit form to add in the burrowing owl
Filer:	Becky Moores
Organization:	Intersect Power
Submitter Role:	Applicant
Submission Date:	12/14/2024 11:26:22 AM
Docketed Date:	12/16/2024

Appendix U - Updated Volume 1

Updated Incidental Take Permit Form

Appendix U – Redline Version

Updated Incidental Take Permit Form

California Endangered Species Act Incidental Take Permit Application

Applicant Information

Permittee:	IP Darden I, LLC, IP Darden II, LLC, IP Darden III, LLC, IP Darden IV, LLC, IP Darden ~~BESS I~~V, LLC, IP Darden ~~BESS II~~VI, LLC, IP Darden ~~BESS III~~VII, LLC, IP Darden ~~BESS IV~~VIII, LLC, ~~IP Darden I H2, LLC, IP Darden II H2, LLC,~~ and IP Darden BAAH, LLC. Wholly owned subsidiaries of Intersect Power, LLC.
Principal Officer:	Simon Ross, Chief Commercial Officer of Intersect Power, LLC (the indirect Parent of the above listed entities)
Contact Person:	Becky Moores, Director, Environmental and Permitting
Mailing Address:	IP Darden I, LLC and Affiliates c/o Intersect Power, LLC 9450 SW Gemini Drive PMB #68743 Beaverton, Oregon 97008

Covered Species

Swainson's hawk (*Buteo swainsoni*) – California Endangered Species Act Threatened

Western burrowing owl (*Athene cunicularia hypugaea*) – California Endangered Species Act Candidate

Project Description

The Darden Clean Energy Project (Project) consists of the construction, operation, and eventual repowering or decommissioning of a 1,150 megawatt (MW) solar photovoltaic (PV) facility, an up-to 4,600 megawatt-hour (MWh) battery energy storage system (BESS), ~~an up to 1,150 MW green hydrogen facility,~~ a 34.5-500 kilovolt (kV) grid step-up substation, a 10 to 15-mile 500 kV generation intertie (gen-tie) line, a Pacific Gas and Electric Company (PG&E)-owned 500 kV utility switchyard along the Los Banos-Midway #2 500 kV transmission line, and appurtenances. A full Project description is provided in Attachment U.1, *Project Description*.

Project Location

The Project is located in unincorporated Fresno County south of the community of Cantua Creek, extending from South Butte Avenue to the east to the west side of Interstate 5 to the west. A detailed description of the Project location is provided in Section 1.2 of Attachment U.2, *Biological Resources Assessment*; Figures 1 and 2 show the regional and Project site location.

Impact Analysis

The Project may result in direct and indirect impacts to ~~Swainson's hawk~~Covered Species, including take. Direct and indirect Project impacts to nesting and foraging ~~Swainson's hawks~~Covered Species are discussed in Section 5.1.2 of Attachment U.2, *Biological Resources Assessment* ~~and~~, Section 5.4 of Attachment U.3, *Swainson's Hawk Conservation Strategy*, Attachment U.4, *Burrowing Owl Management Plan*, and Attachment U.5, *CEC Data Request Response Set #4*.

Jeopardy Analysis

Swainson's Hawk

The Swainson's hawk was historically ~~threated~~threatened by habitat loss (e.g., conversion of foraging and nesting habitat to unsuitable agricultural land use), residential and commercial development and

pesticide use; however, recent research has documented significant increases in population numbers in the Central Valley of California, particularly in the Sacramento region where nesting habitat is abundant. Refer to Section 3.2 of Attachment U.3, *Swainson's Hawk Conservation Strategy* for a discussion of Swainson's hawk population trends and known threats to the species. The Project would not result in a significant impact to the regional population of Swainson's hawk through loss of suitable foraging habitat at the project level, nor would it contribute to a significant cumulative impact in concert with other planned or reasonably foreseeable solar projects. Refer to Appendix Q-8, *Analysis of Project Impacts to Swainson's Hawk Foraging Habitat* of Attachment U.2, *Biological Resources Assessment* and Attachment U.5, *CEC Data Request Response Set #4* (specifically responses to Data Requests DR BIO-29, DR BIO-30, and DR BIO-35, for a discussion of reasonably foreseeable impacts on the species from other related projects and activities.

Western Burrowing Owl

There is evidence that the breeding range of the western burrowing owl in the United States has contracted at its northern, western, and eastern boundaries since 1967, including in California, while the southern boundary of their range has expanded southward into areas of northern Mexico that were formerly used only by wintering migrants (Macias-Duarte 2011, Macias-Duarte and Conway 2015). Factors contributing to the decline of burrowing owls seem to include development and related loss of habitat (including loss of grassland and agricultural habitats to urbanization [Trulio and Chromczak 2007]), conversion of lands to orchard and vineyard crops (Gervais et al. 2008), eradication of burrowing mammals that excavate burrows utilized by burrowing owl (Holroyd et al. 2001, Conway 2018), exposure to pesticides and other contaminants (Gervais and Anthony 2003), as well as climate change (Cruz-McDonnell and Wolf 2015).

Cultivated agriculture has transformed historically occurring southern Central Valley grasslands and saltbush scrub to row crops and orchards (California State University, Chico 2003), representing a conversion from high quality to lower quality burrowing owl habitat. However, burrowing owls can be found in various anthropogenic landscapes where ground squirrels create burrows and other artificial cover is present (e.g., culverts, debris piles, drainage pipes, etc.), including along fallow agricultural fields, adjacent to wastewater treatment plants, ruderal infill lots, airports, and other landscaped areas (Rosenberg et al. 1998; Wilkerson and Siegel 2011). In the agricultural areas of the San Joaquin Valley, including within the Project site, active burrowing owl burrows are often limited to the uncultivated margins of agricultural fields (Gervais et al. 2008). Burrowing owls exhibit a range of responses to human disturbances, and some populations have become well accustomed to human activity, while other, more remote populations may exhibit more caution in the presence of human activities. Burrowing owl have adapted to a variety of disturbed and developed sites (Klute et al. 2003), including those similar to the Project site. At the Project site, burrowing owls were documented nesting and foraging in a number of locations, predominantly along the margins of agricultural fields in existing berms/ditches, and–, in one case, on an elevated mound within a fallow agricultural field (refer to Attachment U.2, *Biological Resources Assessment*).

If no avoidance, minimization, mitigation or other action are taken, typical impacts expected to western burrowing owl from a Project of this type and size would include:

- Construction-related effects such as noise, dust, and increased human presence that could disturb breeding and foraging cycles of owls in and on the periphery of the Project site.
- Construction-related effects that could contribute to the mortality of individual adult and juvenile burrowing owls including grading, grubbing, and vegetation removal, use of heavy equipment throughout the site, and disturbance that would cause adults to abandon nests and therefore leave dependent juveniles without provisions.

- Loss of foraging and nesting habitat, increased risk of predation, direct mortality due to collisions with fencing, and ongoing disturbance to owls on site due to operations and maintenance activities (Smallwood 2022).

The above effects to burrowing owl would potentially contribute to the decline of the species if not mitigated appropriately. Burrowing owls have been known to utilize disturbed areas where they provide suitable foraging and cover resources. Studies to date, though not conclusive, mention that burrowing owls may continue to use solar sites for foraging at low densities, noting that developed solar facilities may provide little habitat value for nesting. Multiple measures will be implemented during Project construction and operations and maintenance activities to avoid and minimize potential impacts. Implementation of a conservation strategy and vegetation management designed to restore high-quality foraging habitat throughout the project site (detailed in Attachment U.3, *Swainson's Hawk Conservation Strategy*), would benefit burrowing owl by improving habitat to minimize long-term impacts and manage the site for no net loss of breeding and wintering burrowing owl populations. Refer to Section 3 of Attachment U.4, *Burrowing Owl Management Plan*, for a discussion of the strategy to minimize impacts to the western burrowing owl population during both construction and operations and maintenance activities. Refer to Attachment U.3, *Swainson's Hawk Conservation Strategy* for a discussion of the conservation strategy and vegetation management that will benefit the burrowing owl population at the Project site. Finally, refer to Section 5.1.2 of Attachment U 2, *Biological Resources Assessment* and Attachment U.5, *CEC Data Request Response Set #4* (specifically responses to Data Requests DR BIO-29, DR BIO-30, DR BIO-35, and DR BIO-37). Therefore, the Project would not result in a significant impact to the regional population of burrowing owl through loss of suitable foraging and nesting habitat at the project level, nor would it contribute to a significant cumulative impact in concert with other planned or reasonably foreseeable solar projects.

Proposed Mitigation Measures

Swainson's Hawk

Direct impacts to nesting Swainson's hawk would be avoided and minimized through implementation of ~~applicant proposed measure (APM) BIO-1/~~Mitigation Measure BIO-9 (Swainson's Hawk Conservation Strategy) and through implementation of Mitigation Measures BIO-1 (Construction Worker Environmental Awareness Training and Education Program), BIO-7 (Pre-construction Surveys for Nesting Birds and Common Raptors), ~~and~~ BIO-8 (Nest Buffers~~).~~), and BIO-12 (Operations and Maintenance Biological Resources Management Plan). Potential impacts to foraging habitat ~~are considered less than significant without mitigation. However, Intersect Power is proposing to implement~~would be avoided and minimized through implementation of Mitigation Measures BIO-9 and BIO-10 (Vegetation Management Plan). These measures include a habitat restoration and vegetation management approach designed to improve foraging habitat and prey base within the solar development areas of the Project to promote the long-term stability of Swainson's hawk populations in the context of future renewable energy projects that are anticipated for California's southern San Joaquin Valley, and will be essential to meet California's clean energy goals. Refer to Attachment U.~~1 *Project Description* and Attachment U.~~3, *Swainson's Hawk Conservation Strategy* ~~for the full text of APM BIO-1.~~. Refer to Section 5.1.2.2 of Attachment U.2 *Biological Resources Assessment* for the full text of Mitigation Measures BIO-1, BIO-7, and BIO-8. Refer to Attachment U.5 *CEC Data Request Response Set #4* for the full text of Mitigation Measures BIO-9, BIO-10, and BIO-~~9~~12.

The Swainson's Hawk Conservation Strategy (Attachment U.3) seeks to ensure that the direct and indirect impacts of the ~~project~~Project to Swainson's hawk are temporary, less than significant under the California Environmental Quality Act (CEQA), and fully mitigated to allow for issuance of an Incidental Take Permit.

Western Burrowing Owl

Direct impacts to western burrowing owl would be avoided and minimized through implementation of Mitigation Measures BIO-11 (Burrowing Owl Management Plan), BIO-1 (Construction Worker Environmental Awareness Training and Education Program), BIO-2 (Construction Best Management Practices), and BIO-3 (Preconstruction Surveys for Special-Status Species). Potential impacts to foraging habitat would be avoided and minimized through implementation of Mitigation Measures BIO-9 (Swainson's Hawk Conservation Strategy) and BIO-10 (Vegetation Management Plan). While these measures are designed to improve foraging habitat and prey base for Swainson's hawk within the solar development areas of the Project through a habitat restoration and vegetation management approach, they will simultaneously improve western burrowing owl habitat and promote the long-term stability of western burrowing owl population at the Project site in the context of future renewable energy projects that are anticipated for California's southern San Joaquin Valley, and will be essential to meet California's clean energy goals. Refer to Attachment U.3, *Swainson's Hawk Conservation Strategy* and Attachment U.4, *Burrowing Owl Management Plan*. Refer to Section 5.1.2.2 of Attachment U.2 *Biological Resources Assessment* for the full text of Mitigation Measures BIO-1, BIO-2, and BIO-3. Refer to Attachment U.5, *CEC Data Request Response Set #4* for the full text of Mitigation Measures BIO-9, BIO-10, and BIO-11.

The Swainson's Hawk Conservation Strategy (Attachment U.3) and Burrowing Owl Management Plan (Attachment U.4) seek to ensure that the direct and indirect impacts of the Project to western burrowing owl are temporary, less than significant under the CEQA, and fully mitigated to allow for issuance of an Incidental Take Permit.

Mitigation and Monitoring Plan

The Swainson's Hawk Conservation Strategy (Attachment U.3) includes a plan to monitor compliance with the minimization and mitigation measures (refer to Sections 6.2 and 6.3) and includes success criteria to evaluate the effectiveness of the measures (refer to Section 7). The Burrowing Owl Management Plan (Attachment U.4) describes the management strategy for the species that will be implemented at the Project site (refer to Section 3), a plan to monitor and report on compliance with the minimization and mitigation measures (refer to Sections 3.2, 4, and 5); and proposed mitigation (refer to Section 5).

Funding Sources and Availability

The Permittee would directly fund implementation of the Swainson's Hawk Conservation Strategy (Attachment U.3) and Burrowing Owl Management Plan (Attachment U.4), including funding an independent research program to be conducted by Cornell University, under Dr. Grodsky as Principal Investigator. Funding is intended to support two (2) years of preconstruction research and up to 10 years of post-construction research.

Documentation of CEQA Compliance

The Project's Opt-In Application analysis and process is CEQA equivalent. All requirements under CEQA are met with the analysis in the Project's Opt-In Application.

Attachments

Attachment U.1 Project Description

Attachment U.2 Biological Resources Assessment

Attachment U.3 Swainson's Hawk Conservation Strategy

Attachment U.4 Burrowing Owl Management Plan

References

California State University, Chico: Department of Geography and Planning and Geographic Information Center. 2003. The Central Valley Historic Mapping Project. April 2003.

Conway, C.J. 2018. Spatial and Temporal Patterns in Population Trends and Burrow Usage of Burrowing Owls in North America. Journal of Raptor Research 52: 129-142.

Cruz-McDonnell, K.K. and B.O. Wolf. 2015. Rapid warming and drought negatively impact population size and productive dynamics of an avian predator in the arid southwest. Global Change Biology 22: 237-253.

Gervais, J.A., and R.G. Anthony. 2003. Chronic organochlorine contaminants, environmental variability, and the demographics of a burrowing owl population. Ecological Applications 13: 1250-1262.

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Wilkerson, R.L. and R.B. Siegel. 2010. Assessing changes in the distribution and abundance of burrowing owls in California, 1993-2007. Bird Populations 10: 1-36.

Wilkerson, R.L. and R.B. Siegel. 2011. Distribution and Abundance of Western Burrowing Owls (*Athene cunicularia hypugaea*) in Southeastern California. The Southwestern Naturalist 56: 378–384.

Appendix U – Clean Version

Updated Incidental Take Permit Form

California Endangered Species Act Incidental Take Permit Application

Applicant Information

Permittee:	IP Darden I, LLC, IP Darden II, LLC, IP Darden III, LLC, IP Darden IV, LLC, IP Darden V, LLC, IP Darden VI, LLC, IP Darden VII, LLC, IP Darden VIII, LLC, and IP Darden BAAH, LLC. Wholly owned subsidiaries of Intersect Power, LLC.
Principal Officer:	Simon Ross, Chief Commercial Officer of Intersect Power, LLC (the indirect Parent of the above listed entities)
Contact Person:	Becky Moores, Director, Environmental and Permitting
Mailing Address:	IP Darden I, LLC and Affiliates c/o Intersect Power, LLC 9450 SW Gemini Drive PMB #68743 Beaverton, Oregon 97008

Covered Species

Swainson's hawk (*Buteo swainsoni*) – California Endangered Species Act Threatened

Western burrowing owl (*Athene cunicularia hypugaea*) – California Endangered Species Act Candidate

Project Description

The Darden Clean Energy Project (Project) consists of the construction, operation, and eventual repowering or decommissioning of a 1,150 megawatt (MW) solar photovoltaic (PV) facility, an up-to 4,600 megawatt-hour (MWh) battery energy storage system (BESS), a 34.5-500 kilovolt (kV) grid step-up substation, a 10 to 15-mile 500 kV generation intertie (gen-tie) line, a Pacific Gas and Electric Company (PG&E)-owned 500 kV utility switchyard along the Los Banos-Midway #2 500 kV transmission line, and appurtenances. A full Project description is provided in Attachment U.1, *Project Description*.

Project Location

The Project is located in unincorporated Fresno County south of the community of Cantua Creek, extending from South Butte Avenue to the east to the west side of Interstate 5 to the west. A detailed description of the Project location is provided in Section 1.2 of Attachment U.2, *Biological Resources Assessment*; Figures 1 and 2 show the regional and Project site location.

Impact Analysis

The Project may result in direct and indirect impacts to Covered Species, including take. Direct and indirect Project impacts to nesting and foraging Covered Species are discussed in Section 5.1.2 of Attachment U.2, *Biological Resources Assessment*, Section 5.4 of Attachment U.3, *Swainson's Hawk Conservation Strategy*, Attachment U.4, *Burrowing Owl Management Plan*, and Attachment U.5, *CEC Data Request Response Set #4*.

Jeopardy Analysis

Swainson's Hawk

The Swainson's hawk was historically threatened by habitat loss (e.g., conversion of foraging and nesting habitat to unsuitable agricultural land use), residential and commercial development and pesticide use; however, recent research has documented significant increases in population numbers

in the Central Valley of California, particularly in the Sacramento region where nesting habitat is abundant. Refer to Section 3.2 of Attachment U.3, *Swainson's Hawk Conservation Strategy* for a discussion of Swainson's hawk population trends and known threats to the species. The Project would not result in a significant impact to the regional population of Swainson's hawk through loss of suitable foraging habitat at the project level, nor would it contribute to a significant cumulative impact in concert with other planned or reasonably foreseeable solar projects. Refer to Appendix Q-8, *Analysis of Project Impacts to Swainson's Hawk Foraging Habitat* of Attachment U.2, *Biological Resources Assessment* and Attachment U.5, *CEC Data Request Response Set #4* (specifically responses to Data Requests DR BIO-29, DR BIO-30, and DR BIO-35, for a discussion of reasonably foreseeable impacts on the species from other related projects and activities.

Western Burrowing Owl

There is evidence that the breeding range of the western burrowing owl in the United States has contracted at its northern, western, and eastern boundaries since 1967, including in California, while the southern boundary of their range has expanded southward into areas of northern Mexico that were formerly used only by wintering migrants (Macias-Duarte 2011, Macias-Duarte and Conway 2015). Factors contributing to the decline of burrowing owls seem to include development and related loss of habitat (including loss of grassland and agricultural habitats to urbanization [Trulio and Chromczak 2007]), conversion of lands to orchard and vineyard crops (Gervais et al. 2008), eradication of burrowing mammals that excavate burrows utilized by burrowing owl (Holroyd et al. 2001, Conway 2018), exposure to pesticides and other contaminants (Gervais and Anthony 2003), as well as climate change (Cruz-McDonnell and Wolf 2015).

Cultivated agriculture has transformed historically occurring southern Central Valley grasslands and saltbush scrub to row crops and orchards (California State University, Chico 2003), representing a conversion from high quality to lower quality burrowing owl habitat. However, burrowing owls can be found in various anthropogenic landscapes where ground squirrels create burrows and other artificial cover is present (e.g., culverts, debris piles, drainage pipes, etc.), including along fallow agricultural fields, adjacent to wastewater treatment plants, ruderal infill lots, airports, and other landscaped areas (Rosenberg et al. 1998; Wilkerson and Siegel 2011). In the agricultural areas of the San Joaquin Valley, including within the Project site, active burrowing owl burrows are often limited to the uncultivated margins of agricultural fields (Gervais et al. 2008). Burrowing owls exhibit a range of responses to human disturbances, and some populations have become well accustomed to human activity, while other, more remote populations may exhibit more caution in the presence of human activities. Burrowing owl have adapted to a variety of disturbed and developed sites (Klute et al. 2003), including those similar to the Project site. At the Project site, burrowing owls were documented nesting and foraging in a number of locations, predominantly along the margins of agricultural fields in existing berms/ditches, and, in one case, on an elevated mound within a fallow agricultural field (refer to Attachment U.2, *Biological Resources Assessment*).

If no avoidance, minimization, mitigation or other action are taken, typical impacts expected to western burrowing owl from a Project of this type and size would include:

- Construction-related effects such as noise, dust, and increased human presence that could disturb breeding and foraging cycles of owls in and on the periphery of the Project site.
- Construction-related effects that could contribute to the mortality of individual adult and juvenile burrowing owls including grading, grubbing, and vegetation removal, use of heavy equipment throughout the site, and disturbance that would cause adults to abandon nests and therefore leave dependent juveniles without provisions.
- Loss of foraging and nesting habitat, increased risk of predation, direct mortality due to collisions with fencing, and ongoing disturbance to owls on site due to operations and maintenance activities (Smallwood 2022).

The above effects to burrowing owl would potentially contribute to the decline of the species if not mitigated appropriately. Burrowing owls have been known to utilize disturbed areas where they provide suitable foraging and cover resources. Studies to date, though not conclusive, mention that burrowing owls may continue to use solar sites for foraging at low densities, noting that developed solar facilities may provide little habitat value for nesting. Multiple measures will be implemented during Project construction and operations and maintenance activities to avoid and minimize potential impacts. Implementation of a conservation strategy and vegetation management designed to restore high-quality foraging habitat throughout the project site (detailed in Attachment U.3, *Swainson's Hawk Conservation Strategy*), would benefit burrowing owl by improving habitat to minimize long-term impacts and manage the site for no net loss of breeding and wintering burrowing owl populations. Refer to Section 3 of Attachment U.4, *Burrowing Owl Management Plan*, for a discussion of the strategy to minimize impacts to the western burrowing owl population during both construction and operations and maintenance activities. Refer to Attachment U.3, *Swainson's Hawk Conservation Strategy* for a discussion of the conservation strategy and vegetation management that will benefit the burrowing owl population at the Project site. Finally, refer to Section 5.1.2 of Attachment U 2, *Biological Resources Assessment* and Attachment U.5, *CEC Data Request Response Set #4* (specifically responses to Data Requests DR BIO-29, DR BIO-30, DR BIO-35, and DR BIO-37). Therefore, the Project would not result in a significant impact to the regional population of burrowing owl through loss of suitable foraging and nesting habitat at the project level, nor would it contribute to a significant cumulative impact in concert with other planned or reasonably foreseeable solar projects.

Proposed Mitigation Measures

Swainson's Hawk

Direct impacts to nesting Swainson's hawk would be avoided and minimized through implementation of Mitigation Measure BIO-9 (Swainson's Hawk Conservation Strategy) and through implementation of Mitigation Measures BIO-1 (Construction Worker Environmental Awareness Training and Education Program), BIO-7 (Pre-construction Surveys for Nesting Birds and Common Raptors), BIO-8 (Nest Buffers), and BIO-12 (Operations and Maintenance Biological Resources Management Plan). Potential impacts to foraging habitat would be avoided and minimized through implementation of Mitigation Measures BIO-9 and BIO-10 (Vegetation Management Plan). These measures include a habitat restoration and vegetation management approach designed to improve foraging habitat and prey base within the solar development areas of the Project to promote the long-term stability of Swainson's hawk populations in the context of future renewable energy projects that are anticipated for California's southern San Joaquin Valley, and will be essential to meet California's clean energy goals. Refer to Attachment U.3, *Swainson's Hawk Conservation Strategy*. Refer to Section 5.1.2.2 of Attachment U.2 *Biological Resources Assessment* for the full text of Mitigation Measures BIO-1, BIO-7, and BIO-8. Refer to Attachment U.5 *CEC Data Request Response Set #4* for the full text of Mitigation Measures BIO-9, BIO-10, and BIO-12.

The Swainson's Hawk Conservation Strategy (Attachment U.3) seeks to ensure that the direct and indirect impacts of the Project to Swainson's hawk are temporary, less than significant under the California Environmental Quality Act (CEQA), and fully mitigated to allow for issuance of an Incidental Take Permit.

Western Burrowing Owl

Direct impacts to western burrowing owl would be avoided and minimized through implementation of Mitigation Measures BIO-11 (Burrowing Owl Management Plan), BIO-1 (Construction Worker Environmental Awareness Training and Education Program), BIO-2 (Construction Best Management Practices), and BIO-3 (Preconstruction Surveys for Special-Status Species). Potential impacts to

foraging habitat would be avoided and minimized through implementation of Mitigation Measures BIO-9 (Swainson's Hawk Conservation Strategy) and BIO-10 (Vegetation Management Plan). While these measures are designed to improve foraging habitat and prey base for Swainson's hawk within the solar development areas of the Project through a habitat restoration and vegetation management approach, they will simultaneously improve western burrowing owl habitat and promote the long-term stability of western burrowing owl population at the Project site in the context of future renewable energy projects that are anticipated for California's southern San Joaquin Valley, and will be essential to meet California's clean energy goals. Refer to Attachment U.3, *Swainson's Hawk Conservation Strategy* and Attachment U.4, *Burrowing Owl Management Plan*. Refer to Section 5.1.2.2 of Attachment U.2 *Biological Resources Assessment* for the full text of Mitigation Measures BIO-1, BIO-2, and BIO-3. Refer to Attachment U.5, *CEC Data Request Response Set #4* for the full text of Mitigation Measures BIO-9, BIO-10, and BIO-11.

The Swainson's Hawk Conservation Strategy (Attachment U.3) and Burrowing Owl Management Plan (Attachment U.4) seek to ensure that the direct and indirect impacts of the Project to western burrowing owl are temporary, less than significant under the CEQA, and fully mitigated to allow for issuance of an Incidental Take Permit.

Mitigation and Monitoring Plan

The Swainson's Hawk Conservation Strategy (Attachment U.3) includes a plan to monitor compliance with the minimization and mitigation measures (refer to Sections 6.2 and 6.3) and includes success criteria to evaluate the effectiveness of the measures (refer to Section 7). The Burrowing Owl Management Plan (Attachment U.4) describes the management strategy for the species that will be implemented at the Project site (refer to Section 3), a plan to monitor and report on compliance with the minimization and mitigation measures (refer to Sections 3.2, 4, and 5); and proposed mitigation (refer to Section 5).

Funding Sources and Availability

The Permittee would directly fund implementation of the Swainson's Hawk Conservation Strategy (Attachment U.3) and Burrowing Owl Management Plan (Attachment U.4), including funding an independent research program to be conducted by Cornell University, under Dr. Grodsky as Principal Investigator. Funding is intended to support two (2) years of preconstruction research and up to 10 years of post-construction research.

Documentation of CEQA Compliance

The Project's Opt-In Application analysis and process is CEQA equivalent. All requirements under CEQA are met with the analysis in the Project's Opt-In Application.

Attachments

Attachment U.1 Project Description
Attachment U.2 Biological Resources Assessment
Attachment U.3 Swainson's Hawk Conservation Strategy
Attachment U.4 Burrowing Owl Management Plan
Attachment U.5 CEC Data Request Response Set #4

References

California State University, Chico: Department of Geography and Planning and Geographic Information Center. 2003. The Central Valley Historic Mapping Project. April 2003.

Conway, C.J. 2018. Spatial and Temporal Patterns in Population Trends and Burrow Usage of Burrowing Owls in North America. Journal of Raptor Research 52: 129-142.

Cruz-McDonnell, K.K. and B.O. Wolf. 2015. Rapid warming and drought negatively impact population size and productive dynamics of an avian predator in the arid southwest. Global Change Biology 22: 237-253.

Gervais, J.A., and R.G. Anthony. 2003. Chronic organochlorine contaminants, environmental variability, and the demographics of a burrowing owl population. Ecological Applications 13: 1250-1262.

Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. Burrowing owl (*Athene cunicularia*). Pages 218-226 in California bird species of special concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California (W.D. Shuford and T. Gardali, editors). Western Field Ornithologists and California Department of Fish and Game, Studies of Western Birds 1: 1-450.

Holroyd, G.L., R. Rodgriguez-Estrella, and S.R. Sheffield. 2001. Conservation of the burrowing owl in western North America: issues, challenges, and recommendations. Journal of Raptor Research 35: 399-407.

Klute, D.S., L.W. Ayers, M.T. Green, W.H. Howe, S.L. Jones, J.A. Shaffer, S.R. Sheffield, and T.S. Zimmerman. 2003. Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. Biological Technical Publication FWS/BTP-R6001-2003. USDI Fish and Wildlife Service, Washington, D.C., USA.

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Attachment U.1

Updated Project Description

2 Project Description

IP Darden I, LLC and Affiliates[1] (Applicant), wholly owned subsidiaries of Intersect Power, LLC, propose to construct, operate, and eventually repower or decommission the Darden Clean Energy Project (Project) on approximately 9,500 acres in western Fresno County (Figure 2-1 and Figure 2-2). The Project would operate 7 days a week, 365 days a year, with an up to 35-year[2] anticipated lifespan. The primary Project components are:

- 1,150 megawatt (MW) solar photovoltaic (PV) facility (solar facility)
- Up to 4,600 MW-hour battery energy storage system (BESS)
- 34.5-500 kilovolt (kV) grid step-up substation (step-up substation)
- 15-mile 500 kV generation intertie (gen-tie) line
- Pacific Gas and Electric Company (PG&E)-owned 500 kV utility switchyard along the Los Banos-Midway #2 500 kV transmission line

The Project site and related facilities were selected taking into consideration the Project objectives, engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, and electric transmission constraints, among other factors. A detailed discussion of site selection is provided in Chapter 6, *Alternatives*.

2.1 Generating Facility Description, Design, and Operation

The generating facility includes a 1,150 MWac (1,610 MWdc) solar facility with appurtenant facilities including an up to 4,600 MW-hour BESS. Section 2.1.2 summarizes the general site arrangement and layout of the Project while Sections 2.1.3 and 2.1.4 provide a description of each of the generating facility components.

2.1.1 Project Location

The Project site is located in an agricultural area of unincorporated Fresno County south of the community of Cantua Creek. The solar facility, BESS, and substation would be located on approximately 9,100 acres of land currently owned by Westlands Water District, between South Sonoma Avenue to the west and South Butte Avenue to the east. The Project's approximately 15-mile gen-tie line would span west from the intersection of South Sonoma Avenue and West Harlan Avenue to immediately west of Interstate 5, where it would connect to the new utility switchyard along PG&E's Los Banos-Midway #2 500 kV transmission line. Figure 2-1 shows the regional location of the Project.

[1] "Affiliates" means IP Darden II, LLC, IP Darden III, LLC, IP Darden IV, LLC, IP DardenV, LLC, IP Darden VI, LLC, IP Darden VII, LLC, IP Darden VIII, LLC, and IP Darden BAAH, LLC. IP Darden I, LLC and Affiliates are indirect subsidiaries of Intersect Power, LLC.
[2] After 35 years, the Project would be repowered or decommissioned.

2.1.2 Site Arrangement and Layout

Figure 2-2 shows the Project site plan and location of the solar facility BESS, step-up substation, gen-tie line, and utility switchyard, which are discussed in Section 2.2.[3] The gen-tie line would extend from the solar facility west to the proposed utility switchyard along PG&E's Los Banos-Midway #2 500 kV transmission line. The Executive Summary includes a mapbook that shows the Project parcels, section, township, and range, as well as the proposed locations of the Project components. Appendix A contains a list of property owners. Section 5.5, *Visual Resources*, includes photo simulations of the Project. In addition, Appendix F contains scale plan and elevation drawings depicting the relative size and location of all facilities that were used to create Project visual simulations.

[3] Two options were initially considered for the location of the BESS, O&M facilities, and step-up substation (Option 1 and Option 2). As of December 2024, Option 1 was confirmed to be the selected location for these Project components and Option 2 is no longer being considered. Discussion of Option 2 has been removed from this Project Description. However, for ease of reference across the Opt-In Application materials, the figures still reference the confirmed location of the components as Option 1.

Figure 2-1 Regional Location

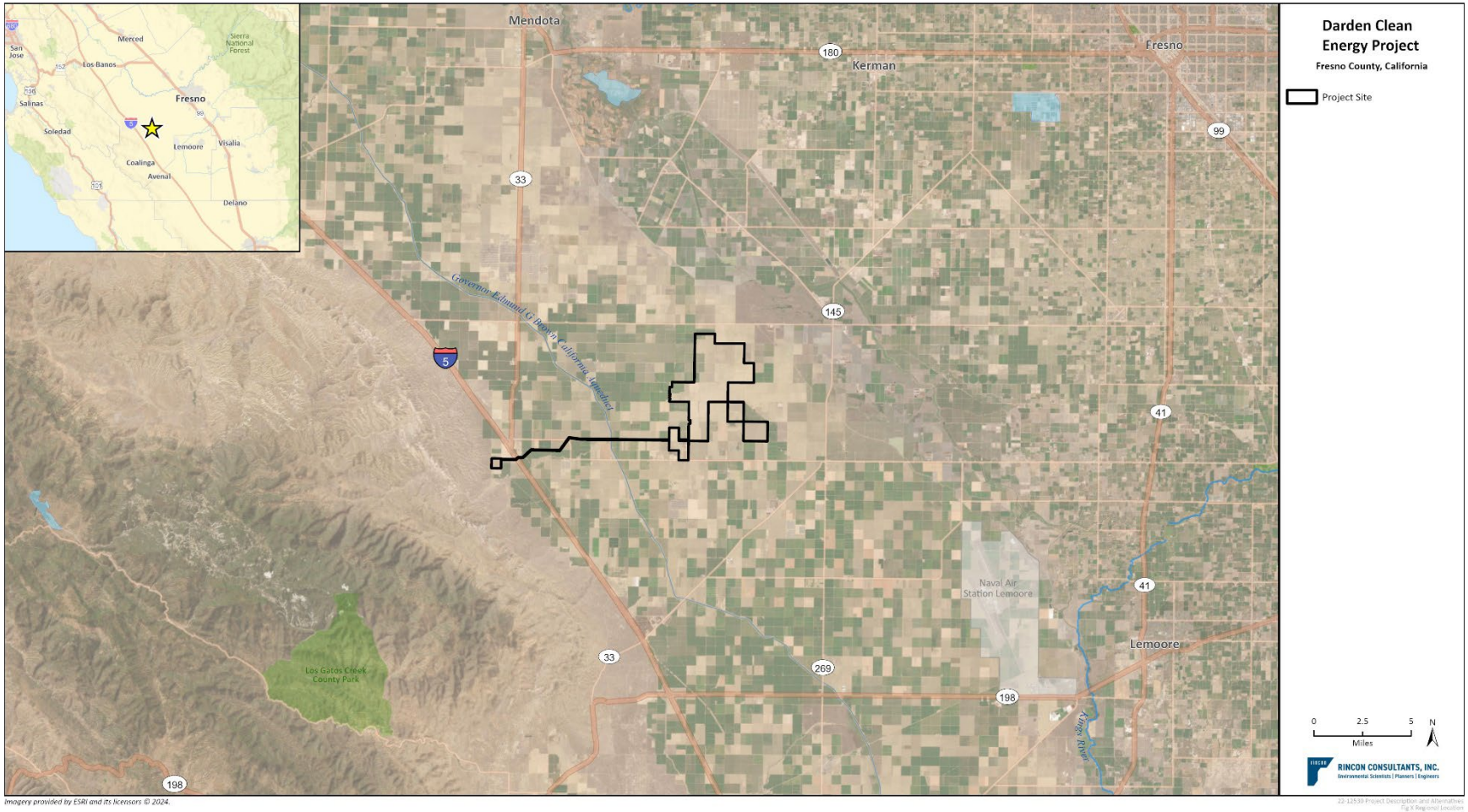
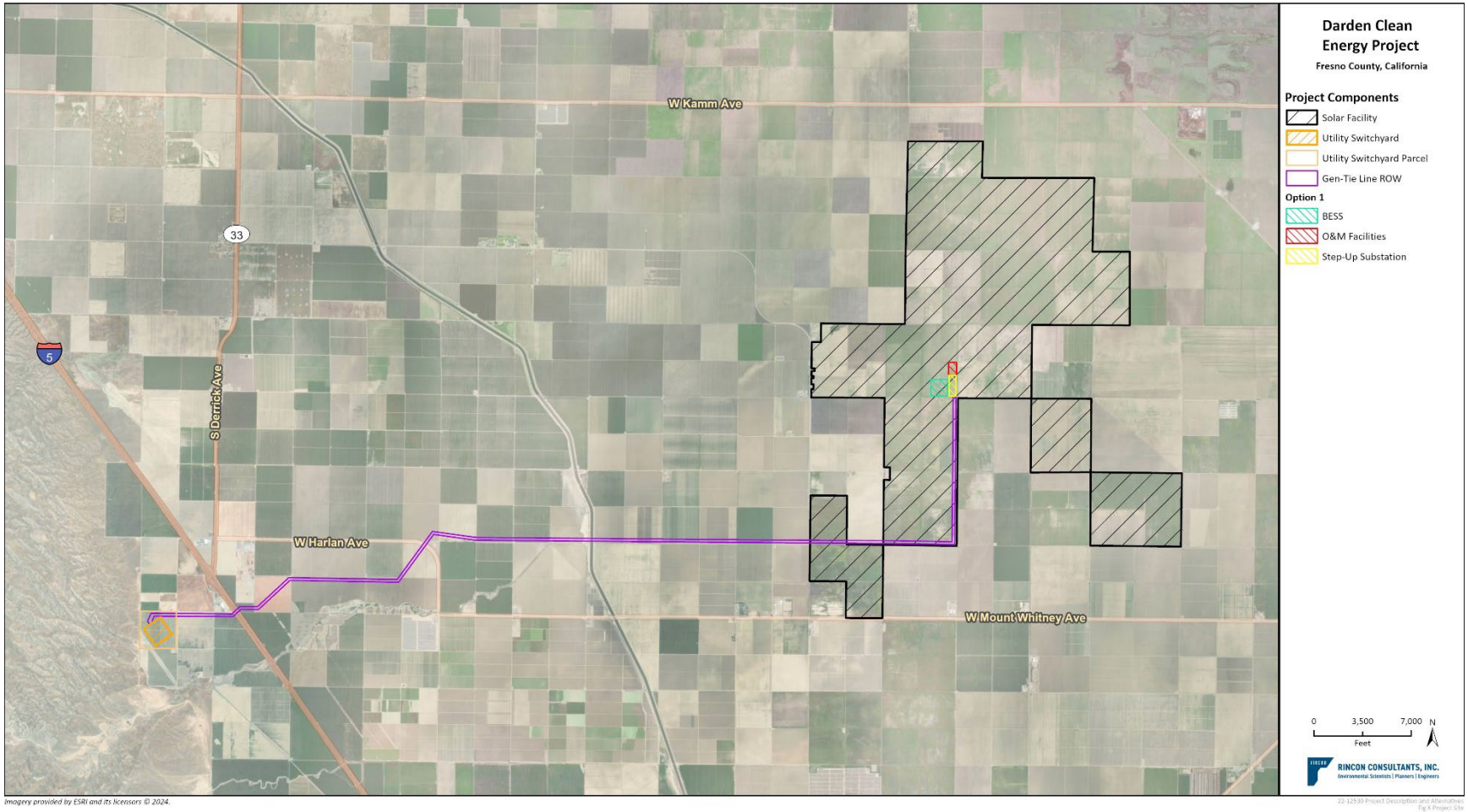


Figure 2-2 Project Site and Components



2.1.3 Solar Facility Description

2.1.3.1 Solar Facility Project Objectives

The Applicant's objectives for the solar facility are as follows:

1. Design, construct, and operate the facility in a manner that respects the local community, its values, and its economy.
2. Operate the facility in a manner that protects the safety of on-site staff and off-site members of the public.
3. Generate sales tax revenues for Fresno County by establishing a point of sale in the County for the procurement of most major Project services and equipment.
4. Create temporary and permanent living-wage, union jobs for local and regional residents.
5. Generate affordable wholesale electric power to serve the ratepayers of the Fresno County region and the State of California.
6. Significantly contribute to addressing the climate crisis by generating renewable energy to displace climate-warming fossil fuel-based generation, and in so doing, helping to create a global climate that is hospitable to future generations and wild places.
7. Substantially contribute to meeting the State of California's renewable energy policy objectives as described by the interim targets in Senate Bill (SB) 1020 to require renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035 and 95 percent of all retail electricity sales by 2040.
8. Assist the nation in meeting its Nationally Determined Contribution commitments under Article 4 of the Paris Climate Agreement to achieve a 50 to 52 percent reduction in United States (U.S.) greenhouse gas pollution from 2005 levels by 2030, and to achieve 100 percent carbon pollution-free production in the electricity sector by 2035.
9. Given the urgency of the climate crisis, site and rapidly construct a major renewable energy generation facility on contaminated lands that are poorly suited for agricultural use and where the highest and best use is long-term solar energy generation.
10. Minimize environmental impacts and land disturbance associated with solar energy development by siting the facility on relatively flat, contiguous lands with low quality habitat, high solar insolation in close proximity to existing roads and established utility corridors.
11. Create a new point of interconnection in the Central Valley along California's backbone transmission infrastructure to facilitate this Project and future generators helping meet the state's renewable energy goals.

2.1.3.2 Solar Facility Components

The solar facility layout is illustrated in Appendix F.

Overview of Solar Technology

Solar cells, also called photovoltaic (PV) cells, convert sunlight directly into electricity. PV gets its name from the process of converting light (photons) to electricity (voltage), which is called the "photovoltaic effect." PV cells are located on panels, which are mounted at a fixed angle facing south or on a tracking device that follows the sun. Many solar panels combined together in a row

and controlled by tracker motors create one system called a solar sub-array. For large electric utility or industrial applications, hundreds of solar sub-arrays are interconnected to form a utility-scale PV system.

Photovoltaic Panels and Support Structures

The solar facility would include approximately 3,100,000 solar panels. It is anticipated that the panels selected for the Project would be First Solar Series 7. The Series 7 panel utilizes First Solar's thin film technology.

The panel mounting system would depend on the market conditions and environmental factors. Either mono-facial or bi-facial panels could be used, and panels would either be mounted in a portrait orientation as single panels or mounted in a landscape orientation and stacked two high on a north-south oriented single-axis tracking system that would track the sun from east to west during the day.

Panels would be arranged in strings with a maximum height of 10 feet at full tilt or slightly higher due to topography or hydrology. Panel faces would be minimally reflective, dark in color, and highly absorptive.

The single axis tracking system would be oriented along a north/south axis with panels facing east in the early morning, lying flat during high noon, and facing west during later afternoon and evening hours.

Spacing between each row would be a minimum of 10 feet. The solar panel array would generate electricity directly from sunlight, which would be collected, converted to alternating current (AC), stored, and delivered to the on-site step-up substation.

Structures supporting the PV panels would consist of steel piles (e.g., cylindrical pipes, H-beams, helical screws, or similar structures). The piles typically would be spaced 18 feet apart. For the tracking system, piles would be installed to a height of approximately 4 to 6 feet above grade (minimum 1 foot clearance between bottom edge of panel and ground but could be higher to compensate for terrain variations and clearance for overland flow during stormwater events).

Inverters, Transformers, and Electrical Collection System

The solar facility would be designed and laid out primarily in sub-arrays of installed rows of panels, ranging in capacity from 4 to 7 MW. Each sub-array would include a direct current (DC) to AC inverter and medium voltage transformer equipment area (i.e., inverter-transformer station) measuring 40 feet by 25 feet. The color of the inverter equipment would be light colored or neutral, depending on thermal requirements and availability from the manufacturer. The inverter-transformer station would be constructed on either a concrete pad or steel skid centrally located within the surrounding rows of panels. Sub-arrays would be designed and sized as appropriate to accommodate the irregular shape of the Project footprint. The precise sub-array dimensions and configuration would be dependent on available technology and market conditions. Each inverter-transformer station would contain an inverter, a transformer, a battery enclosure, and a switchboard.

The inverter-transformer station would contain a security camera at the top of an approximately 20-foot wood or metal pole. If required based on site meteorological conditions, an inverter shade structure would be installed at each inverter-transformer station. The shade structure would consist

of wood or metal supports and a durable outdoor material shade structure (metal, vinyl, or similar). The shade structure, if utilized, would extend up to 10 feet above the ground surface.

Panels would be electrically connected into panel strings using wiring secured to the panel racking system. Underground cables would be installed to convey the DC electricity from the panels via combiner boxes or combiner harnesses with a trunk bus system located throughout the PV arrays, to inverters that would convert the DC to AC electricity. The output voltage of the inverters would be stepped up to the required collection system voltage at the medium voltage pad mount transformer located in close proximity to the inverter. The 34.5 kV level collection cables would be buried underground in a trench about 4 feet deep, with segments installed overhead on wood poles to connect all of the solar facility development areas to the on-site step-up substation, which may or may not involve an overhead or underground road crossing. Thermal specifications require 10 feet of spacing between the medium voltage lines, and in some locations closer to the step-up substation interconnection, more than 20 medium voltage AC lines run in parallel.

In locations where the collection system crosses a road or pipelines overhead, direct embedded wood poles would be used on a case-by-case basis. Wood poles spaced up to 250 feet apart could be installed on the site. The typical height of the poles would be approximately 60 to 100 feet, with an embedment depth of 10 to 15 feet depending on the type of crossing, and diameters varying from 12 to 20 inches.

2.1.4 Battery Energy Storage System Description

2.1.4.1 Battery Energy Storage System Objectives

The Applicant's objectives for the BESS are as follows:

1. Contribute to meeting SB 100 policy objectives with a 2045 goal of California's electricity system to be carbon free by capturing and storing renewable energy when it is plentiful and dispatching for use when it is scarce.
2. Contribute to addressing the climate crisis by firming intermittent renewable energy to displace climate-warming fossil fuel-based generation, and in so doing, help create a global climate that is hospitable to future generations and wild places.

2.1.4.2 Battery Energy Storage System Facility Components

BESS facilities can assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid. The Project would include a battery storage system capable of storing up to 1,150 MW of electricity for 4 hours (up to 4,600 megawatt-hour), requiring up to 35 acres that would be located near the step-up substation. As shown in Figure 2-2, the battery system would be located near the step-up substation to facilitate interconnection and metering.

The storage system would consist of lithium-ion battery packs housed in electrical enclosures and buried electrical conduit. The Tesla Megapack 2 XL, a lithium iron phosphate (LFP) battery technology, is anticipated to be used for the Project. Approximately 1,220 electrical enclosures measuring approximately 40 feet or 52 feet by 8 feet and 8.5 feet high would be installed on level foundations. The enclosures would be connected to pad mount transformers that step up the battery voltage to medium voltage levels and would connect to the Project substation through feeder breakers. The layout of the BESS would entail blocks of 4 to 6 battery energy stations surrounded by access roads, with each energy station consisting of 2 to 4 battery enclosures and 1 medium voltage transformer.

Over the life of the Project the storage capacity of the battery cells will naturally degrade, and the Project would implement an augmentation strategy to maintain the contractually required capacity of the system. Augmentation would entail either a capacity maintenance approach of adding individual battery units to the existing energy stations or overbuilding the BESS by 1 to 4 percent by incorporating additional BESS containers to the system design from the start.

Battery systems would require air conditioners or heat exchangers and inverters. Up to 4 15,000-gallon water tanks for emergency use would be installed for the Project with locations based on the BESS layout and design. The size, final number, and location of water tanks for emergency use would be determined in accordance with California Fire Code (CFC) and be reviewed/approved by the local or State Fire Marshal.

The BESS would comply with the current CFC, which governs the code requirements to minimize the risk of fire and life safety hazards specific to BESS used for load shedding, load sharing and other grid services (Chapter 12 Section 1206 of the 2019 CFC). In accordance with the CFC, the battery enclosure and the site installation design are all required to be approved by the local or State Fire Marshal.

2.1.5 Operations Methods and Activities

Upon commissioning, the Project would enter the operation phase. The Project would operate 7 days a week, 365 days a year. Operational activities at the Project site would include:

- Maintaining safe and reliable solar generation and storage
- Site security
- Responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics
- Communicating with customers, transmission system operators, and other entities involved in facility operations

2.1.5.1 Operations and Maintenance Facility

The Project would include an O&M facility area on approximately 6 acres near the step-up substation within the solar facility, which would include one to two O&M buildings to accommodate staff members, storage areas, and parking. The O&M buildings would likely be 65 feet by 80 feet and up to approximately 10,400 square feet in size. The O&M buildings would be constructed on a concrete foundation and be approximately 15 feet at its tallest point.

2.1.5.2 Operations and Maintenance Workforce

During operation of the Project, an average of 12 permanent staff associated with the solar facility would be on-site daily, with additional staff during intermittent solar panel washing (17 staff), facility maintenance and repairs (4 staff), and vegetation management activities (12 staff). Up to 4 average permanent staff associated with the BESS would be on-site daily. Off-duty Project operators may be on call to respond to specific alerts generated by the monitoring equipment at the Project site. Security personnel would be on-call. It is anticipated that permanent staff would be recruited from nearby communities in Fresno County. The O&M building would house the security monitoring equipment, including security camera feeds for monitoring the Project 24 hours per day. An equipment list for the O&M phase of the Project is provided in Section 5.7, *Air Quality*.

2.1.5.3 Site Maintenance

The Project site maintenance program would be largely conducted during daytime hours. Equipment repairs could take place in the early morning or evening when the facility would be producing the least amount of energy.

Maintenance typically would include the following: panel repairs; panel washing; maintenance of transformers, inverters, energy storage system, and other electrical equipment; road and fence repairs; and vegetation and pest management. The Applicant would recondition roads approximately once per year, as needed, such as after a heavy storm event that may cause destabilization or erosion.

Revegetation would be the primary strategy to control dust across the solar facility site. Soil binders would be used to control dust on roads and elsewhere on the solar facility site, as needed. On-site vegetation would be managed to ensure access to all areas of the site, reduce fire risk, and support wildlife habitat. A Vegetation Management Plan is provided in the Biological Resources Assessment (Appendix Q).

Solar panels would be washed as needed (up to four times each year) using light utility vehicles with tow-behind water trailers to maintain optimal electricity production. Periodic rainfall may be sufficient to remove light dust layers, which would reduce the manual washing of panels. No chemical agents would be used for typical panel washing; potential non-toxic cleaning solutions may be occasionally used. Guidance from the panel manufacturer would be followed.

O&M vehicles would include trucks (pickup and flatbed), forklifts, and loaders for routine and unscheduled maintenance and water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the solar facility infrequently for equipment repair or replacement. No helicopter use is proposed during routine operations although they may be used for emergency maintenance or repair activities.

Long-term maintenance schedules would be developed to arrange periodic maintenance and equipment replacement in accordance with manufacturer recommendations. Solar panels are warrantied for 35 years or longer and are expected to have a life of 50 or more years, with a degradation rate of 0.5 percent per year. Moving parts, such as motors and tracking panel drive equipment, motorized circuit breakers and disconnects, and inverter ventilation equipment, would be serviced on a regular basis, and unscheduled maintenance would be performed as necessary.

2.1.5.4 Drone Use

Drones may be used to perform annual thermal and visual inspections of the gen-tie line and overhead medium voltage collector line structures. The maximum drone operation heights would be restricted to 300 feet, which is higher than the maximum height of the gen-tie line structures.

Annual visual inspections are required by the North American Electric Reliability Corporation FAC-003-4 Transmission Vegetation Management and utilized for preventative maintenance to reduce risk of equipment malfunction or failure. Drone inspections would be performed once per year between September and November to avoid potential impacts to nesting native and migratory birds. A team of two Federal Aviation Administration (FAA) approved and Unmanned Aircraft System certified pilots would drive a truck on gen-tie line access roads as close to the inspection sites as is safe and feasible, park on the road, and begin the inspection. The drones used would be battery-powered *Matrice 300 RTK* or *Matrice 200 series* drones or similar and would perform the inspections between approximately 76-300 feet above ground level. Operating hours for inspections

would be between the hours of 10:00 a.m. and 3:00 p.m. The drone pilots would work in pairs with one flying and one spotting for safety. The use of drones for gen-tie infrastructure inspections would minimize the need for larger vehicles, such as bucket trucks, and no ground disturbance would occur during drone use.

2.1.6 Water Supply and Use

2.1.6.1 Construction Water

Construction of the Project would require approximately 1,100 acre-feet of water. Water demand during construction would primarily be related to dust suppression required for site preparation. Temporary sanitary facilities would be provided during construction and would not require an on-site water supply.

2.1.6.2 Operational Water and Wastewater Requirements

During operation, the total annual water supply for the Project would be approximately 35 acre-feet per year (AFY) as shown in Table 2-1. Water demand during operation of the Project would be related to the following: washing the solar panels up to four times per year; watering sheep used for vegetation management; supplying O&M facilities; and initial landscaping establishment. Section 5.13, *Water Resources*, provides additional details regarding the Project's water requirements.

Table 2-1 Operational Water Demands

Water Use	Demand Over 35 Years (AFY)
PV Panel Washing and Vegetation Management	25
Solar Facility O&M Building and Initial Landscaping Establishment	10
Total	**35**

2.1.6.3 Water Quality

Section 5.13, *Water Resources*, includes a projection of the water quality based on available testing data.

2.1.6.4 Water Treatment

During operation of the Project, if needed, an appropriate size and type of water purification system will be selected for placement within the O&M building, to provide potable water for operational workers. The system would be selected based on site specific water quality parameters and may include reverse osmosis, nanofiltration, ion exchange filtration, carbon filtration, and/or ultraviolet treatment. This system would be used exclusively to provide potable water for up to an average of 16 permanent on site daily staff, including an average of 12 permanent staff associated with the solar facility and 4 permanent staff associated with the BESS. Alternatively to the water purification system, a bottled water service provider may be contracted to provide sufficient water supply for daily use at the facilities.

2.1.6.5 Water Availability

Water supply for the Project would be sourced from groundwater conferred to the Project company by Westlands Water District (WWD) in connection with the option to purchase the property. Groundwater is available in the following allocations, which are accounted for in WWD's approved Groundwater Sustainability Plan for the Westside Subbasin of the San Joaquin Valley Groundwater Basin, which underlies the Project site:

Two (2) acre-feet per 320 acres per year of operations, as follows: "…Buyer or its successors or assigns may extract two (2.0) acre-feet of groundwater per year for operation of its solar power generation facilities for each 320-acre portion of land acquired by Buyer…" (see redacted Purchase Option Agreement, Exhibit B, Section C.1(a) in Appendix L of CEC Data Request Response Set 4).

One hundred thirty (130) acre-feet per 320 acres per year of construction, as follows: "Also, during construction of the solar project facilities located on the Property, Buyer or its successors and assigns may extract an additional one hundred and thirty (130) acre-feet of groundwater per year for construction water purposes for each 320 acre portion of land acquired by Buyer…"

This water supply and its availability to meet Project needs is discussed in the Project's Water Supply Assessment in Appendix S.[4]

2.1.7 Stormwater and Drainage

The Project would include construction of solar arrays within the majority of the Project site that would be located above grade with a low maintenance mix of native/non-native grassland that would not require substantial supplemental water below the arrays, along with minimal impervious surfaces. The Project site has been modeled for site runoff in a 100-year storm event considering soil and landcover type. Project design includes detention basins placed throughout the Project site to control the rate and amount of stormwater runoff associated with each drainage area. Detailed layout maps for the proposed detention basins are provided in the 2023 Preliminary Drainage Report prepared for the Project (IP Darden I, LLC 2023) and are described in more detail in Section 5.13, *Water Resources*.

2.1.8 Waste Management

Wastes produced at the Project site would be properly collected, treated if necessary, and disposed of. Wastes include process wastewater as well as nonhazardous waste and hazardous waste, both liquid and solid. Waste management is discussed below and in more detail in Section 5.11, *Waste Management*.

2.1.8.1 Wastewater Collection, Treatment, and Disposal

During Project operation, wastewater production would be associated with permanent toilet and sanitary facilities. Sanitary facilities would either consist of portable sinks and toilets that would be regularly emptied by a permitted provider, or permanent facilities with an Onsite Wastewater Treatment System (OWTS), subject to oversight and approval by the County of Fresno Public Works and Planning Department.

[4] Updated technical reports can be provided upon request from the California Energy Commission; however, the significance conclusions remain unchanged.

No wastewater generated through Project operations would be disposed of through discharge directly to open waterbodies.

2.1.8.2 Solid Nonhazardous Waste

Solid nonhazardous waste would be produced during Project construction and operation. Nonhazardous construction wastes would generally include soil, scrap wood, excess concrete, empty containers, scrap metal, insulation, and sanitary waste. Nonhazardous wastes generated during Project operation would generally include scrap metal, spent solar panels and transformer components, sanitary waste, and typical refuse generated by workers.

Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. Recycling would be in accordance with applicable California state requirements. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and composted. Other compostable materials, such as non-invasive vegetation, may also be composted off-site.

Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at a Class II/III landfill. All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

Waste management is discussed further in Section 5.11, *Waste Management*.

2.1.8.3 Hazardous Wastes

Hazardous waste would be produced during Project construction and operations. Hazardous construction wastes generally include small amounts of waste oil, solvents, detergents, fuels, oily rags/sorbents, and empty hazardous material containers. Hazardous wastes generated during operations generally include small amounts of waste oil, solvents, detergents, fuels, oily rags/sorbents, and spent batteries.

Several methods would be used to properly manage and dispose of hazardous wastes. In general, hazardous waste and electronic waste would not be placed in a landfill, but rather would be stored on-site for less than 90 days and would be transported to a treatment, storage, and disposal facility by a licensed hazardous waste transporter. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters would either be recycled or disposed of in a Class I landfill. Workers would be trained to handle hazardous wastes generated at the site. Chemical cleaning wastes would be temporarily stored on-site in portable tanks or sumps and disposed of off-site by an appropriate contractor in accordance with applicable regulatory requirements.

Hazardous materials management is further discussed in Section 5.9, *Hazardous Materials Handling*, and Section 5.11, *Waste Management*.

2.1.9 Management of Hazardous Materials

A variety of chemicals would be stored and used during the construction and operation of the Project. The storage, handling, and use of all chemicals will be conducted in accordance with applicable laws, ordinances, regulations, and standards. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in storage tanks, and most other

chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks and spills. Containment pits and drain piping design would allow a full-tank capacity spill without overflowing the containment area. For multiple tanks located within the same containment area, the capacity of the largest single tank would determine the volume of the containment area and drain piping with an allowance for rainwater if applicable. Drain piping for reactive chemicals would be trapped and isolated from other drains to eliminate noxious or toxic vapors.

Personnel would use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel would be properly trained in the handling of these chemicals and would be instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of emergency response equipment including absorbent material would be stored on-site for spill cleanup. Also refer to Section 5.10, *Worker Safety*.

A list of the chemicals anticipated to be used on the Project site and their storage locations is provided in Section 5.9, *Hazardous Materials Handling*.

2.1.10 Fire Protection

Fire protection would be provided to limit the risk of personnel injury, property loss, and possible disruption of the electricity generated by the Project. As discussed in Section 5.10, *Worker Safety*, a Fire Protection and Prevention Plan will be implemented during both Project construction and operations. In addition, fire protection as it pertains to the Project components are discussed below.

Solar Facility

Solar arrays and PV panels are fire-resistant, as they are constructed largely of steel, glass, aluminum, or components housed within steel enclosures. As the tops and sides of the panels are constructed from glass and aluminum, PV panels are not vulnerable to ignition from wildland fires. In a wildfire situation, the panels would be rotated and stowed in a panel-up position. The rotation of the tracker rows would be controlled remotely via a wireless local area network. All trackers could be rotated simultaneously in a hazard situation. During construction, standard defensible space requirements would be maintained surrounding any welding or digging operations.

O&M Facilities

Fire safety and suppression measures, such as smoke detectors and extinguishers, would be installed and available at O&M facilities, in accordance with current CFC.

Battery Energy Storage System

The BESS enclosures are outdoors and are not “walk-in” cabinets; therefore, fire suppression is not required by the CFC. The BESS megapacks would be designed and in compliance with National Fire Protection Association (NFPA) Section 855. A hazard mitigation analysis developed by the BESS manufacturer will be provided to the local authorities and will comply with California Codes 1207.1.4.1 and 1207.1.4.2. The BESS yard will have thermal detection cameras installed externally on battery containers and will be strategically placed in optimal locations to detect fires. These cameras will be remotely monitored 24 hours a day. There will be up to four emergency 15,000-gallon water tanks for the Project, based on final layout.

The BESS equipment selected for the Project will be tested pursuant to UL 9540A standards, and the Project will be designed and built pursuant to UL and NFPA codes. The BESS equipment to be used will be tested to demonstrate that they do not require built-in smoke, gas, or fire detection or suppression devices.

The BESS equipment will be designed to minimize the risk of an over-pressure event and deflagration through the use of over-pressure vents and a sparker system. These safety features will be tested pursuant to UL 9540A standards to demonstrate their effectiveness in preventing deflagration in a large-scale fire.

2.1.11 Emergency Power

Up to three self-contained emergency backup liquid propane gas (LPG)-fired generator sets (genset) would supply emergency power to the Project substation when electric power is not available. The LPG generator for the Project substation would be used for backup power to the substation control buildings during power supply failures for climate control and charging batteries for protective systems. The gensets would be powered by an approximately 150-ekW rated engine.[5]

2.1.12 Auxiliary Systems

2.1.12.1 SCADA and Telecommunications Facilities

The facility would be designed with a comprehensive Supervisory Control and Data Acquisition (SCADA) System to allow remote monitoring of facility operation and/or remote control of critical components. The fiber optic or other cabling required for the monitoring system typically would be installed in buried conduit within the access road or planned trenching leading to a SCADA system cabinet at the on-site step-up substation for the Project site or a SCADA system cabinet within the O&M building. External telecommunications connections to the SCADA system cabinets could be provided through wireless or hard-wired connections to locally available commercial service providers.

The Project's SCADA system would interconnect to an external fiber optic network or fixed wireless service at the on-site step-up substation, and would require installation of buried fiber optic cables underground or fixed wireless antennas. External telecommunications connections to the SCADA system cabinets could be provided through wireless or hard-wired connections to locally available commercial service providers, so no additional disturbance associated with telecommunications is anticipated for the SCADA system. However, downstream network upgrades associated with the Project were identified in the California Independent System Operator (CAISO) Phase II Interconnection Study discussed in Section 2.2.1. Downstream network upgrades would include establishing microwave and fiber line communications paths to meet PG&E's communications reliability standards and support redundant communication paths for the utility switchyard.

The digital microwave pathway will utilize the utility switchyard's new approximately 120-foot to 200-foot microwave antenna tower and either existing or new microwave towers at existing substations or switchyards. PG&E proposes to install a combination of fiber lines on existing electric transmission 230-kV structures using Optical Ground Wire (OPGW) and on existing electric distribution structures using All-Dielectric Self-Supporting (ADSS). Additional details on the PG&E

[5] These engines are expected to operate less than 100 hours per year for reliability testing and maintenance. They would only otherwise operate in an emergency requiring operation of the critical facility loads when electric power is not available. This emergency backup equipment does not need to operate for the facility to function during normal operation.

telecommunication pathways is included in the response to Data Request DR TSD-3 in Response Set 4. Fuel Types, Handling, and Use Scenarios

The Project does not require the use of fossil fuels during normal operations, with the exception of diesel that would be used for fueling equipment and LPG that would be used for the self-contained emergency backup generators. Diesel would be stored in an above ground storage tank in compliance with federal, state and local rules and regulations. LPG for refueling the emergency backup generators would not be stored on site. Also refer to Section 5.9, *Hazardous Materials Handling*.

2.1.13 Safety

The Project would be designed to maximize safe operation. Potential hazards could occur during both Project construction and operation. Facility operators would be trained in safe operation, maintenance, and emergency response procedures to minimize the risk of personal injury and damage to the facilities. Section 5.10, *Worker Safety*, provides a hazards analysis and describes Project training and safety programs.

2.1.14 Generation Site and Facilities Selection

The Project site and components were selected taking into consideration engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, and electric transmission constraints, among other factors. The Project site was selected in furtherance of the project objectives. The site selection criteria are discussed in detail in Chapter 6, *Alternatives*.

2.2 Transmission and Interconnection Description, Design, and Operation

The Project would be interconnected with the regional electrical grid by a new approximately 15-mile 500 kV gen tie-line with a corridor width of up to 275 feet. The final placement of the corridor and poles would be within the easements and based on engineering considerations including geotechnical results and existing infrastructure (roads, agricultural facilities, utilities, etc.). In general, the 500 kV line runs west from the Project across privately owned lands, across Interstate 5, and into the new utility switchyard, as shown in Figure 2-2. Figure 2-3a through Figure 2-3h at the end of this chapter provide a map of the proposed gen-tie route and existing transmission lines within 1 mile of the Project. There are no settled areas, parks, recreational areas, or scenic areas within one mile of the Project; therefore, these are not shown on the maps. Section 5.5, *Visual Resources*, provides photographic simulations of the Project. The design details upon which the photographic simulations are based are located in Appendix F.

Figure 2-3a Existing Transmission Lines Within 1 Mile of the Project Site Overview

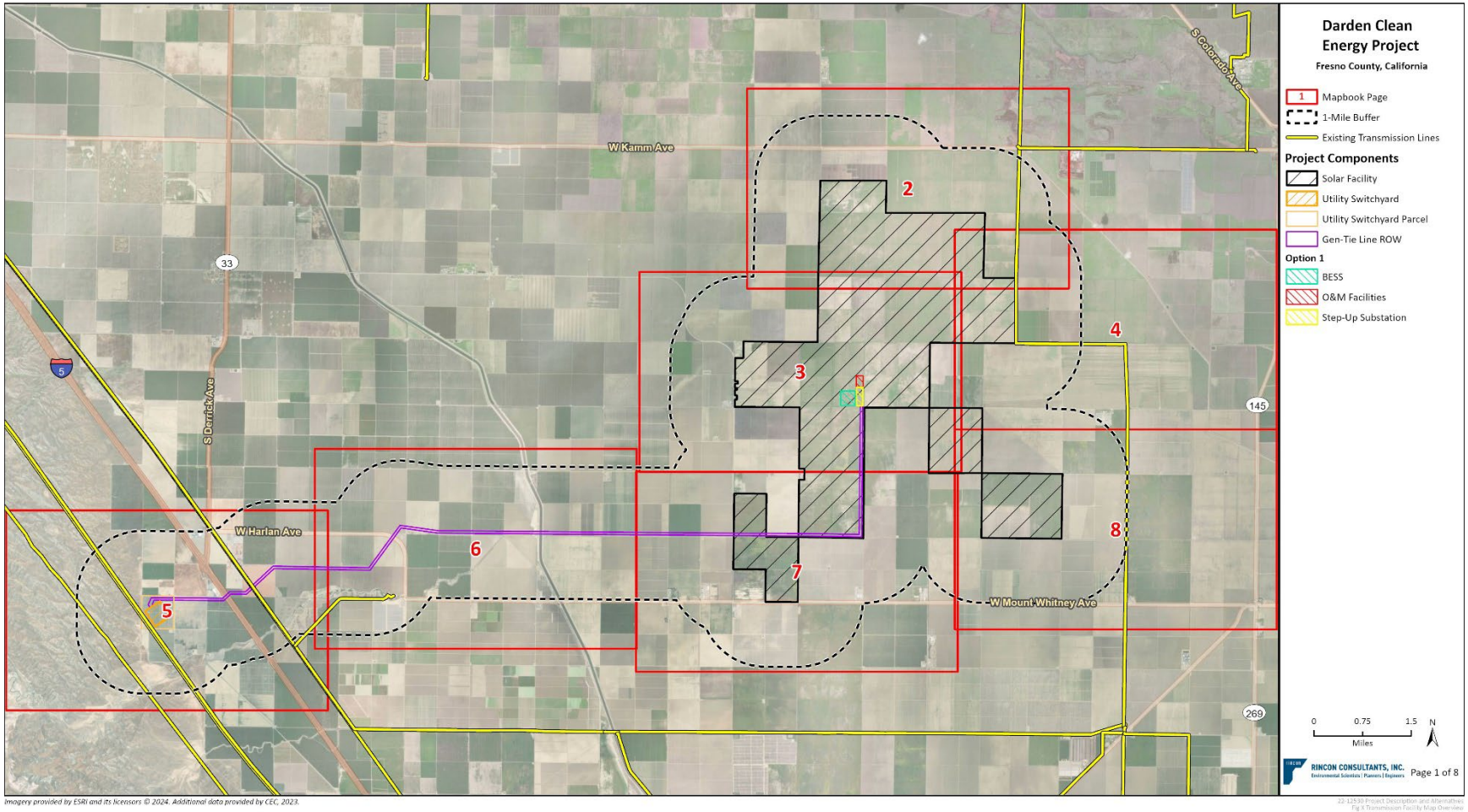


Figure 2-3b Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 2)

Figure 2-3c Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 3)

Figure 2-3d Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 4)

Figure 2-3e Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 5)

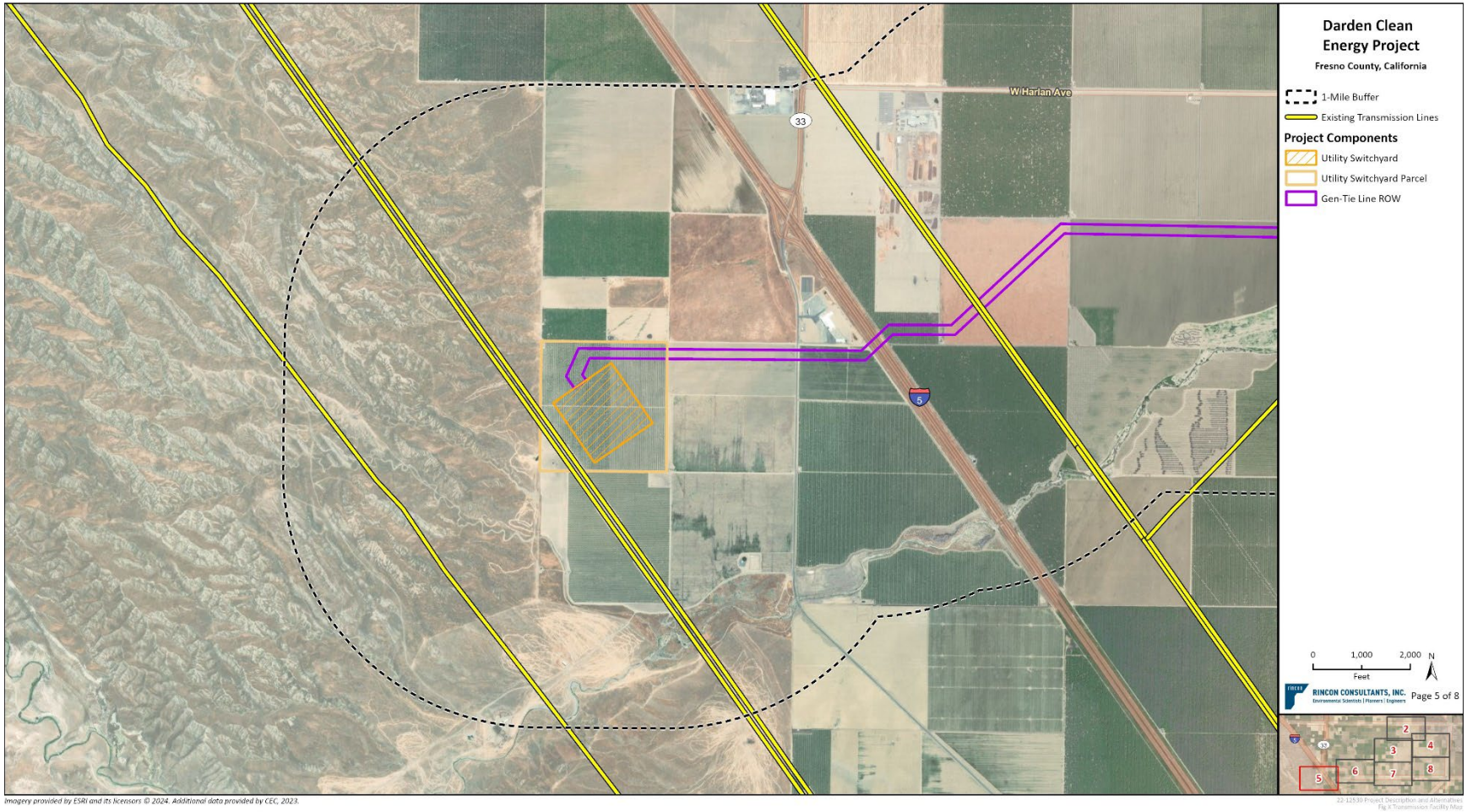


Figure 2-3f Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 6)

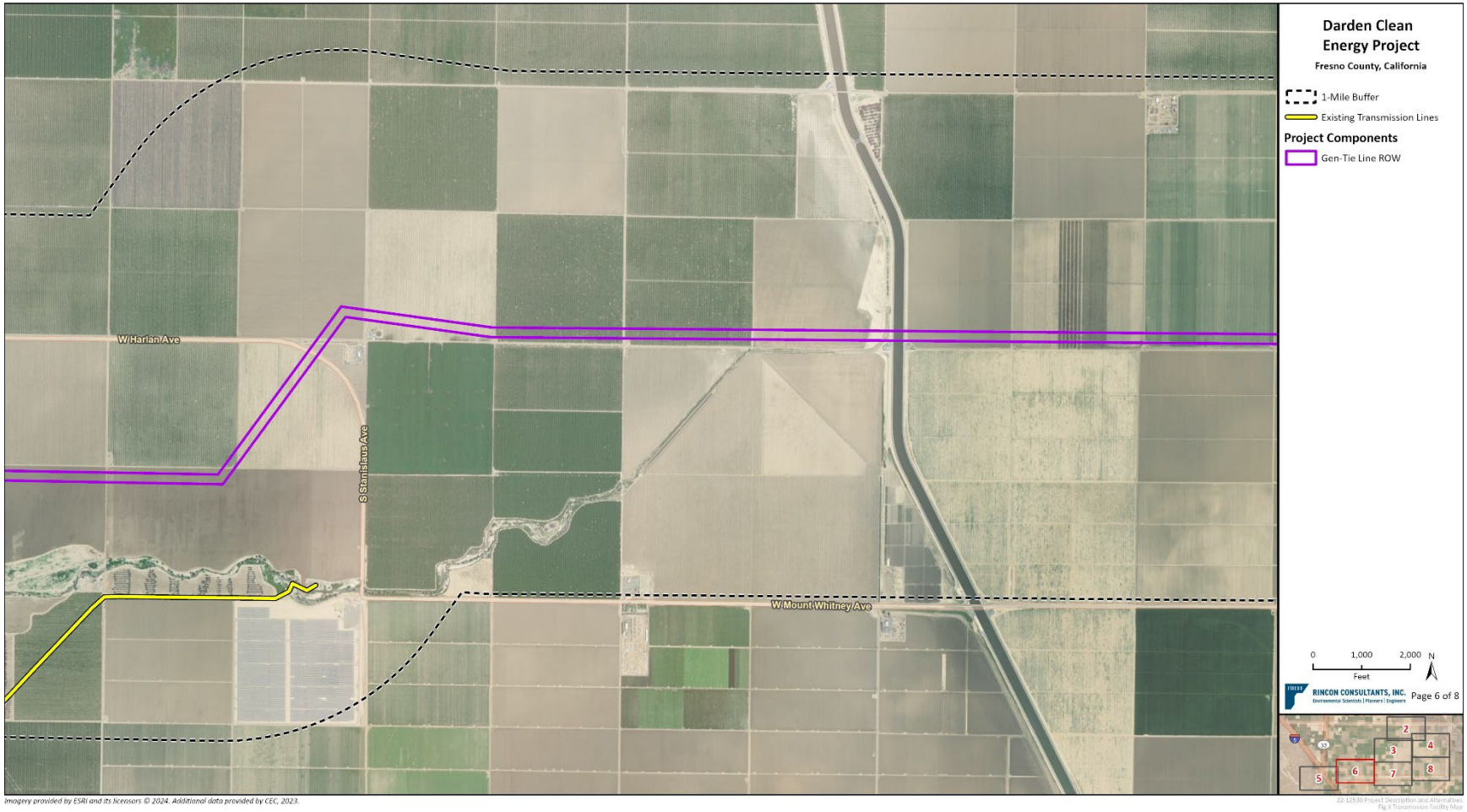


Figure 2-3g Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 7)

Figure 2-3h Existing Transmission Lines Within 1 Mile of the Project Site (Mapbook Page 8)

2.2.1 Affected Systems

The Project would interconnect to PG&E's transmission system within the CAISO planning area. CAISO has identified four potential Affected Systems from the QC14 Phase I Interconnection Study: CCSF, CDWR, MID, and WAPA-SNR.

The Applicant has contacted all four potential affected systems as of August 2023. After CAISO completed and published the QC14 Phase II Interconnection Study in January 2024, conversations with the four identified systems resumed.

Table 2-2 below lists the downstream network upgrades associated with the Project that were identified in the CASIO Phase II Interconnection Study.

2.2.2 Generation-Intertie Description

The interconnecting 500 kV transmission circuit would consist of a single-circuit configuration constructed overhead. The gen-tie line would be constructed with either monopole tubular steel poles (TSPs) or steel H-frame structures. Gen-tie structures would be at least 120 feet tall, with a maximum height of 200 feet. There would be a total of approximately 80 monopole or H-frame structures, in addition to dead-end structures. The total number of gen-tie structures would be determined by the final design of the gen-tie line. The Project transmission facilities would be designed consistent with the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006) where feasible. Transmission facilities would also be evaluated for potential collision reduction devices in accordance with *Reducing Avian Collisions with Power Lines: The State of Art in 2012* (APLIC 2012).

Table 2-2 PG&E Downstream Network Upgrades

Upgrade Classification	Upgrade	Description	Project Cost Allocation	CEQA Analysis
Reliability Network Upgrade (RNUs)				
Interconnection RNU- Allocated (IRNU-A)	Darden Utility Switchyard	▪ See PG&E Utility Switchyard project description	100.00%	Included as a part of the Project's application for Opt-In certification under AB 205.
IRNU-A	Los Banos Substation	▪ Install a megawatt (MW) terminal and Direct Transfer Trip (DTT) scheme between the Darden Utility Switchyard and Los Banos Substation using existing IT T1 infrastructure for the communication circuits.	100.00%	Work will occur within the fence line of the Los Banos Substation. PG&E standard Construction Measures will be implemented to ensure impacts are less than significant.
IRNU-A	Midway Substation	▪ Install a DTT scheme between the Darden Utility Switchyard and Midway Substation using existing IT T1 infrastructure for the communication circuits. ▪ Remove existing shunt reactor and install a new smaller shunt reactor to maintain the level of compensation. ▪ Replace or modify line relays installed with the new control building to maintain compatibility with line relays at the Darden Utility Switchyard.	100.00%	Work will occur within the fence line of the Midway Substation. PG&E standard Construction Measures will be implemented to ensure impacts are less than significant.
IRNU-A	Gates (or Manning) Substation	▪ Modify the Series Capacitor, as required. ▫ A new series capacitor bank would need to be installed at Manning Substation, if that facility is built and comes online before Darden. If Darden comes online first, the series capacitor would then need to be installed at the Gates Substation instead.	100.00%	Work will occur within the fence line of the Gates Substation. PG&E standard Construction Measures will be implemented to ensure impacts are less than significant. Or, this scope will be considered as part of the Manning Substation scope, which is being permitted under a separate California Public Utilities Commission (CPUC) formal process with proponent, LS Power.
IRNU-A	Transmission Line and Fiber Install	▪ See PG&E Utility Switchyard project description	100.00%	Included as a part of the Darden Project's application for Opt-In certification under AB 205.

Upgrade Classification	Upgrade	Description	Project Cost Allocation	CEQA Analysis
Network Upgrade Interconnection Facility (NU/IF)	Transmission Line Transposition Towers (Manning Substation Scope)	A Transposition Structure will be added at approximately 8 miles and 16 miles south of the Manning Substation (two total structures) in the existing PG&E 500 kV corridor. Scope includes concrete foundations and Lattice Steel Poles or Tubular Steel Poles to transpose the line conductors. This upgrade is currently in the Manning Substation scope and would only be associated with the Darden Clean Energy Project if both of the following occurred: ▪ Harlan switching station seeks in-service prior to the Manning Substation ▪ The scope currently assigned to Manning Substation cannot be scheduled ahead of the Harlan switching station's desired in-service date	TBD	Work is being considered as part of the Manning Substation scope, which is being permitted under a separate CPUC formal process with proponent, LS Power.
General RNU (GRNU)	Los Banos 500 kV circuit breakers 822, 832 & 842 overstress	▪ Replace Los Banos 500 kV circuit breakers 822, 832 & 842	15.17%	Work will occur within the fence line of the Los Banos Substation. PG&E standard Construction Measures will be implemented to ensure impacts are less than significant.
GRNU	Midway 500 kV CB 742, 822, 912, 942 Overstress beyond 50 kA	▪ Replace Midway 500 kV circuit breakers 742, 822, 912, 942	17.40%	Work will occur within the fence line of the Midway Substation. PG&E standard Construction Measures will be implemented to ensure impacts are less than significant.
Conditionally Assigned Network Upgrades (CANUs)				
GRNU	Midway 230 kV Bus Overstress	▪ Install 2 x 16 ohm series bus reactors between Midway substation 230 kV bus sections D and E (16 ohm parallel/8 ohm net)	6.43%	Work will occur within the fence line of the Midway Substation. PG&E standard Construction Measures will be implemented to ensure impacts are less than significant.

2.2.3 Step-Up Substation

The step-up substation would step up the medium voltage of the PV collector system from 34.5 kV to 500 kV. The step-up substation would be located on approximately 20 acres within the solar facility, as shown in Figure 2-2. The step-up substation would terminate the medium voltage solar feeders to several common medium voltage busses and transform the power at these busses to the high voltage required for transmission on the gen-tie line to the utility switchyard.

The internal arrangements for the step-up substation would include:

- Eight power and auxiliary transformers with foundations
- Prefabricated control building(s) to enclose the protection and control equipment, including relays and low voltage switchgear (each building is approximately 20 feet by 80 feet, and 10 to 20 feet high)
- Metering stand
- Capacitor bank(s)
- Nine 500 kV circuit breakers and disconnect switches
- Up to two microwave towers, approximately 18 feet by 18 feet and up to 200 feet tall, mounted with an antenna up to 15 feet in diameter
- Dead-end structure(s) up to 100 feet in height to connect the step-up substation to the grid

2.2.4 Utility-Owned High-Voltage Switchyard Description

The Applicant's objectives for the utility-owned switchyard are to construct a high-voltage electrical interconnection facility to enhance the capacity of the transmission system and allow for the delivery of wholesale renewable electricity to the statewide grid, on behalf of the regulated utility.

2.2.4.1 Utility Switchyard Facility Components

One utility-owned switchyard would be located on approximately 50 acres and would electrically connect the Project generation onto the utility's 500 kV transmission network. As shown in Figure 2-2, the utility switchyard would be located on the west side of the Project and serve as a termination point for the Project gen-tie and would loop into the Los Banos-Midway #2 500 kV transmission line. The utility switchyard would contain approximately five (5) 500 kV circuit breakers and will be surrounded by a new security wall or chain link barbed wire security fence up to approximately 20-feet in height with a secure gate accessible only by PG&E staff.

Structural components within the utility switchyard area would include:

- One up to 199-foot-tall free-standing digital microwave antenna (radio tower) to support SCADA communication between the switchyard and the off-site PG&E Operations Center. The foundation would either be a concrete slab of up to 50-feet by 50-feet or drilled-pier depending on the results of future soils studies. Support guy wires may be utilized if deemed necessary.
- Series capacitor banks (sizing to be determined by utility requirements).
- Approximately fifteen (15) 500 kV steel A-frame dead-end poles up to 150 feet in height with foundations approximately 20 feet deep or more.
- Busbar (a conducting bar that carries heavy currents to supply several electric circuits)

- Two (2) modular protection automation and control (MPAC) enclosure(s) approximately 150 feet by 25 feet by 12 feet tall for PG&E's substation control and protection equipment; MPAC building would be installed on a concrete foundation.
- Two (2) switchyard battery enclosure area(s) approximately 34-feet by 16-feet by 12-feet tall
- Five (5) 500 kV circuit breakers and air disconnect switches
- On-site stormwater retention pond (approximately 1,300 feet by 130 feet) for temporary run-off storage during rainfall events
- New security wall or chain link barbed wire security fence up to approximately 20-feet in height with a secure gate accessible only by PG&E staff.

2.2.4.2 Utility Switchyard Operations

At the completion of the switchyard, ownership would transfer to PG&E, who would assume responsibility for operation of the switchyard. It is anticipated that the switchyard would be remotely operated and maintained within PG&E's existing O&M program.

2.2.5 Transmission Facilities Selection

The selection process for transmission facilities also followed the process described in Section 2.1.14. In addition, the gen-tie route selected was the shortest possible distance connecting the Project site area to the Point of Interconnection through parcels with landowners who were interested in entering into easement agreements. Where possible, the gen-tie would abut existing roads and parcel boundaries, as well as circumvent existing landowner permanent infrastructure. All major infrastructure that the gen-tie crosses (Interstate 5, California Aqueduct, high voltage utility transmission lines) would be done so as close to perpendicular as possible. Existing land use activities within the gen-tie easement areas are consistent with the overall region; therefore, minimizing the distance of the line best reduces the overall environmental impact.

Project step-up substations are typically located to minimize the gen-tie length; however, due to the scale of this Project, preliminary design and engineering indicates that a centrally located substation reduces the footprint of the medium voltage collection lines, has a more efficient site footprint, and reduces electrical losses.

The proposed utility switchyard location is adjacent to the existing PG&E Los Banos-Midway #2 500 kV line and other existing transmission lines, which the Project, as well as future projects, would tie into.

2.3 Project Construction

This section describes construction of the overall Project, including the generating facility components and transmission components. Construction of the Project is anticipated to take 18 to 36 months to complete. Construction would begin in late 2025 or early 2026 and the Project would be operational by 2027 or 2028. The 36-month duration would require a peak workforce of approximately 1,200 and the 18-month duration would require a peak workforce of approximately 1,500. Construction would typically occur Monday through Friday from 6:00 a.m. to 7:00 p.m., but may occur seven days a week if necessary. Table 2-3 below includes the anticipated construction phases and dates for each of the construction scenarios.

Table 2-3 Preliminary Construction Schedules

	18-Month			36-Month		
Phase	Start	End	Days	Start	End	days
Phase 1: Site Preparation	12/31/2025	4/30/2026	90	12/31/2025	7/31/2026	140
Phase 2: PV Panel System	2/28/2026	6/28/2027	320	5/31/2026	6/30/2028	500
Phase 3: Inverters, Transformers, Substation, and Electrical	5/28/2026	3/28/2027	200	5/30/2027	5/30/2028	240
Phase 4: Gen-Tie	1/30/2026	6/30/2026	100	11/30/2027	5/30/2028	120
Phase 5: BESS Facility	10/28/2026	4/28/2027	120	1/30/2028	9/30/2028	160
Phase 7[1]: Utility Switchyard	2/28/2026	11/28/2026	180	5/31/2026	3/31/2027	200

[1] Phase 6 has been removed from the Project; however, the numbering for the remaining phases has not been changed for ease of reference across other Opt-In Application materials.

The following sections describe the construction methods and activities for the major Project components.

2.3.1 Solar Facility and Step-Up Substation Construction Methods and Activities

The PV panels would be manufactured at an off-site location and transported to the Project site. The structures supporting the PV panel arrays would consist of steel piles (e.g., cylindrical pipes, H-beams, or similar) driven into the soil using pneumatic techniques, similar to a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. The piles typically are spaced 18 feet apart. Piles typically would be installed to a reveal height of approximately 4 to 6 feet above grade. Following pile installation the associated motors, torque tubes, and drivelines (if applicable) would be placed and secured. Some designs allow for PV panels to be secured directly to the torque tubes using appropriate panel clamps. A galvanized metal racking system, which secures the PV panels to the installed foundations, may be field-assembled and attached according to the manufacturer's guidelines.

DC lines from PV sub-arrays would be installed in conduits. The lines would be collected and combined and routed to the inverters to be converted to AC and stepped up to 34.5 kV via a pad mount transformer. Within the sub-arrays this wiring would typically be hung from the racking equipment. Final sections would be connected to the inverters via an underground stub.

Electrical inverters would be placed on steel skids, elevated as necessary with steel piles to allow for runoff to flow beneath the inverter structures.

Medium-voltage (34.5 kV) cabling from the inverters to the step-up substation (Section 2.2.3) would be installed either primarily underground, or overhead along panel strings in a CAB3 system to avoid the need for underground cabling and trenching, where required. At the end of panel strings, cables would be combined and routed overhead on wood poles roughly 30 to 50 feet high, depending on voltage. Trenches for the 34.5 kV collector lines would be run from the inverters to the on-site step-up substation.

Underground cables would be installed using direct bury equipment and/or ordinary trenching techniques, which typically include a rubber-tired backhoe excavator or trencher. An underground 34.5 kV line would likely be buried at a minimum of 36 inches below grade but could go as deep as 6 feet and include horizontal drilling to avoid environmental resources. Shields or trench shoring

would be temporarily installed for safety to brace the walls of the trench, if required based on the trench depth. After the excavation, cable rated for direct burial would be installed in the trench, and the excavated soil would be used to fill the trench and compress to 90 to 95 percent maximum dry density or in accordance with final engineering.

As shown in the site plan (Appendix F), the Project would achieve a minimum 50-foot buffer to adjacent properties by excluding structural improvements and equipment (excluding fencing) from within 50 feet of the outside boundary of the Project site, in accordance with the Fresno County Solar Facility Guidelines. On-site stormwater detention and treatment systems would be designed to limit stormwater-related erosion onto adjacent properties, consistent with County and State Water Resources Control Board requirements and a Pest Management Plan would be implemented to minimize the likelihood of pests (including weeds and rodents) that could impact the Project site and adjacent properties.

Construction of the O&M building and distribution line connection would likely be part of the solar facility development in tandem with the PV panel installation. The site of the O&M building would be cleared and graded, followed by installation of a concrete foundation.

2.3.2 Battery Energy Storage System Construction Methods and Activities

The BESS must be nearly level; therefore, the proposed BESS area would be cleared and graded. Site preparation would also include construction of drainage components to capture and direct stormwater flows around the BESS facility. Once the concrete foundations are in place for the BESS, the batteries, inverters, and other electrical equipment would be mounted and installed. Equipment would be delivered to the site on trucks.

2.3.3 Gen-tie Construction Methods and Activities

Minimal to no grading is anticipated due to the flat topography of the Project area. The entire gen-tie corridor would not be cleared or mowed for construction. For the overhead 500 kV line, TSP foundations would be excavated to an average depth of up to 40 feet. Installation would consist of the following basic steps:

- Deliver new poles to installation sites
- Auger new hole using line truck attachment to a depth of up to 40 feet and include concrete supports depending on final engineering
- Pour concrete foundation
- Install bottom pole section by line truck, crane, or helicopter
- Install top pole section(s) by line truck, crane, or helicopter, if required

Once poles are erected, the 500 kV conductor would be strung generally using a wire truck, crane and/or helicopter, splicing rig and puller from conductor pull and tension sites at the end of the power line. Each conductor would be pulled into place at a pre-calculated sag and then tension-clamped to the end of each insulator using sag cat and static truck/tensioner equipment. The sheaves and vibration dampers and accessories would be removed once installation is complete.

Helicopters are anticipated to be used for wire stringing activities including hanging travelers, pulling conductor and optical ground wire, dead-end activities, and the installation of bird diverters. Alternative ground-based construction activities may be utilized as appropriate. There would be one

Helicopter Landing Zone (HLZ) located in the 20-acre step-up substation laydown yard. A water truck would be on-site to water the HLZ prior to helicopter activities to prevent fugitive dust from rotor wash. Helicopter refueling would be done within the HLZ from a construction vehicle equipped as a fuel truck. Refueling would occur at one of the nearest local airports, between 2 (Five Points Ranch Airport) and 10 miles away (San Joaquin Airport), where the helicopter would be hangered overnight, before and/or after each day the helicopter is utilized. While the helicopter may land briefly within approved, existing disturbed areas on the gen-tie line to pick up equipment, materials, or personnel, no helicopter refueling would occur on private land. Helicopter activities would occur over a temporary two-month period and would occur within the typical construction hours Monday through Friday 6:00 a.m. to 7:00 p.m. A full-time avian monitor would be on-site for the full duration of helicopter activities to specifically monitor helicopter activities.

The helicopter contractor selected for helicopter operations would abide by all requirements in the Helicopter Use Plan prepared for the Project. All aircraft, pilots, linemen, and mechanics would be in full compliance with applicable Federal Aviation Administration (FAA) requirements and standards. The helicopter crew would be comprised of a qualified pilot, mechanic, and lineman required for Project activities. All linemen would be experienced journeyman lineman and would be Quanta H certified to perform tasks from the helicopter via Human External Cargo and/or from the helicopter skid. The helicopter contractor would utilize an MD-500 helicopter capable of performing light lift and other construction support operations. The flight crew would utilize very high frequency radios to communicate with the selected airport's common traffic frequency as well as ground crews within the Project and HLZs. All helicopters are equipped with geographic positioning system tracking units via Spidertracks, to track helicopter flight paths.

No helicopter use is proposed during routine operations although they may be used for emergency maintenance or repair activities.

2.3.4 Utility Switchyard Construction Methods and Activities

The Project Applicant will construct the utility switchyard and deed it to PG&E upon completion and inspection, to be owned and operated by PG&E as a public utility. Construction will occur in a phased approach beginning with site preparation and grading of the site, installing foundations and underground equipment, and then installing and testing electrical equipment. Site preparation will involve grubbing, clearing, and grading of the utility switchyard footprint (grading would be minimal due to the existing flat terrain) as well as installing the security wall or fence. Underground equipment, if necessary, will be installed in trenches and backfilled with suitable material (e.g., excavated soil or clean fill). Utility switchyard equipment will be installed on concrete foundations.

Equipment used for construction of the utility switchyard may include, but is not limited to: cranes, aerial lift, skid steer loaders, rubber tired loaders, rubber tired dozer, welders, trencher, forklift, bore/drill rig, grader, roller, tractor/loader/backhoe, haul trucks, and UTVs. Approximately 3-acrefeet of water will be used during construction of the utility switchyard, at an average of 50 to 100 gallons per day (this number is included in the overall 1,100 acre-feet of construction water needed for the Project as a whole).

Construction of the power line interconnection and other interconnection facilities will be completed by PG&E. The new structures will require permanent concrete foundations approximately 6 feet in diameter and up to 35 feet deep. Construction will involve temporary ground disturbance around each new power pole location (approximately a 50-foot radius) as well

as temporary ground disturbance associated with access to each proposed structure location (approximately a 15-foot-wide access route if there is an adequate turning radius).

2.3.5 Commissioning

Often thought of as the last phase of the construction process, once the site is completely built, the Project would go through a commissioning phase that entails energization and testing before full site operation. Commissioning of equipment would include testing, calibration of equipment, and troubleshooting. The step-up substation equipment, inverters, collector system, and PV array systems would be tested prior to commencement of commercial operations. Upon completion of successful testing, the equipment would be energized. The Project may go through commissioning in phases as sections are completed. During commissioning staff members would be driving the site performing energization procedures and troubleshooting bugs to ensure the overall health and safety of the site. Typically, heavy equipment and large crews are not needed at this point, unless repairs or part replacements are required.

2.4 References

Avian Power Line Interaction Committee. 2006 *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006.* Available at https://www.nrc.gov/docs/ML1224/ML12243A391.pdf (Accessed November 2023)

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Attachment U.2 - Volume 1

Biological Resources Assessment

Darden Clean Energy Project

Biological Resources Assessment

prepared for

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October 2023

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Executive Summary

This document provides the findings of a Biological Resources Assessment prepared by Rincon Consultants, Inc. (Rincon) for the proposed Darden Clean Energy Project (Project). The Project consists of the development of a photovoltaic (PV) solar facility, battery energy storage system (BESS), green hydrogen facility, step-up substation, generation intertie (gen-tie) line, utility switchyard, and associated infrastructure on approximately 9,500 acres, herein referred to as the Biological Study Area (BSA). The report documents existing conditions on all parcels and assesses potential impacts to sensitive biological resources based on proposed Project designs and development plans.

The Project consists of the construction, operation, and eventual repowering or decommissioning of a 1,150 megawatt (MW) solar PV facility, an up to 4,600 megawatt-hour BESS, an up to 1,150 MW green hydrogen facility, a 34.5-500 kilovolt (kV) grid step-up substation, a 10 to 15-mile, 500 kV, gen-tie line, a 500 kV utility switchyard along the Pacific Gas and Electric Company Los Banos-Midway #2 500 kV transmission line, and appurtenances.

The BSA is an irregular shape, located in an agricultural area of unincorporated Fresno County south of the community of Cantua Creek. The proposed solar facility, BESS, step-up substation, and green hydrogen facility site would be located on approximately 9,100 acres of land owned by Westlands Water District, between South Sonoma Avenue to the west and South Butte Avenue to the east. The proposed approximately 10 to 15-mile gen-tie line would span west from the intersection of South Sonoma Avenue and West Harlan Avenue to immediately west of Interstate 5, where it would connect to the proposed utility switchyard site.

The BSA predominantly consists of tilled and disked fields containing ruderal vegetation that grows between disking events. Other minor landcover includes some tomato and garlic crops, named and unnamed roads and tracks, and ruderal areas along the margins of fields and roads. Surrounding properties include active and retired and managed agricultural lands. The gen-tie line right-of-way (ROW) spans privately-owned land on the western portion of the BSA with land-cover types, including active agriculture, an orchard and retired and managed fields. The California Aqueduct bisects the gen-tie parcels, running generally north-south. Compacted dirt and paved roads border and separate each land-cover type.

Project Area Special-Status Plants and Wildlife

Rincon identified 53 special-status plant species known to occur regionally and evaluated each one for their potential to occur within the BSA. One special-status plant species, Lost Hills crownscale (*Atriplex coronate* var. *vallicola*) was documented within 1 mile of the BSA west of the utility switchyard. Rincon determined that the Project site within the BSA contains no habitat suitable to support special-status plant species known to occur in the region, including Lost Hills crownscale. The absence of suitable habitat is the direct result of decades of agricultural activity. As a result, no special-status plant species are expected to occur on the Project site.

Rincon identified 49 special-status wildlife species known to occur regionally and evaluated each one for their potential to occur on the Project site. Of these, Rincon identified 18 species as having some level of potential for occurrence within the Project area or a portion of the Project area. Thirteen (13) special-status wildlife species were observed within the BSA: golden eagle (*Aquila*

chrysaetos), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*, wintering), Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus hudsonius*), mountain plover (*Charadrius montanus,* wintering), white-tailed kite (*Elanus luecurus*), California horned lark (*Eremophila alpestris actia*), prairie falcon (*Falco mexicanus*), loggerhead shrike (*Lanius ludovicianus*), Oregon vesper sparrow (*Pooecetes gramineus affinis*, wintering), yellow warbler (*Setophaga petechia,* migrant), and American badger (*Taxidea taxus*).

Two special-status wildlife species were assessed to have **moderate potential** to occur in restricted portions of the BSA: yellow-headed blackbird (*Xanthocephalus xanthocephalus*) within the proposed solar facility location; the Options 1 and 2 step-up substation, BESS, green hydrogen component locations, and the eastern end of the gen-tie line ROW location; and San Joaquin kit fox (*Vulpes macrotis mutica*) within the proposed utility switchyard location.

Three special-status wildlife species were assessed as having **low potential** to occur in the BSA: San Joaquin coachwhip (*Masticophis flagellum ruddocki*) in the proposed utility switchyard, California condor (*Gymnogyps californianus*), and tricolored blackbird (*Agelaius tricolor*).

A variety of common bird species protected by the California Fish and Game Code and the Federal Migratory Bird Treaty Act, including most bird species that are not otherwise considered to have any special-status designation, may nest on-site. Nesting opportunities in the BSA include trees, transmission towers, and retired and managed agricultural land.

Special-status species and common nesting birds that may occur on-site could experience direct or indirect impacts as a result of Project construction and operation. These impacts would be potentially significant but would be reduced to a less-than-significant level through implementation of proposed mitigation measures.

Sensitive Natural Communities and Critical Habitat

There are no sensitive natural communities, designated Critical Habitat, or wildlife movement corridors within the BSA. The Project would not impact these resources.

Jurisdictional Waters and Wetlands

Rincon conducted an aquatic resources delineation of the Project site and a 250-foot buffer (herein defined as the jurisdictional study area [JSA]) and a preliminary determination of jurisdictional waters and wetlands that may be subject to regulation by the California Department of Fish and Wildlife, Central Valley Regional Water Quality Control Board, and/or United States Army Corps of Engineers. With the exception of the California Aqueduct, Cantua Creek, ephemeral streams and their impoundments in the foothills on the west side, the features within the JSA are man-made irrigation ditches, manmade canals, and manmade irrigation basins, which are exempt/excluded from California Fish and Game Code, Porter-Cologne Water Quality Control Act, and Clean Water Act permitting requirements. No impacts to potentially jurisdictional waters, including those at the California Aqueduct, Cantua Creek or in the foothills on the west side, are anticipated as a result of the Project. As the Project is not located in the Coastal Zone, it is not subject to the California Coastal Act.

Wildlife Movement

The Project site does not occur within a corridor that links between or among larger habitat areas on a regional basis and is not within any areas mapped as Essential Connectivity Areas by the California Essential Habitat Connectivity Project, nor would the construction, operation or decommissioning of the Project create a significant barrier for wildlife movement. Therefore, potential impacts of Project construction, operation and closure activities on wildlife movement would be less than significant and no mitigation is recommended.

Resources Protected by Local Policies and Ordinances

No resources protected by local (Fresno County) policies or ordinances occur within the BSA, and the BSA is not within the boundary of any local, regional, or state conservation planning areas; therefore, the Project would not conflict with such policies, ordinances, and conservation plans.

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1 Project Description

Rincon Consultants, Inc. (Rincon) prepared this Biological Resources Assessment (BRA) to document the existing biological conditions for the Darden Clean Energy Project (Project) located in unincorporated Fresno County. The Project consists of the development of a photovoltaic (PV) solar facility, battery energy storage system (BESS), green hydrogen facility, step-up substation, utility switchyard, and an estimated 10 to 15 miles of generation intertie (gen-tie) line. This BRA is prepared with the intent of serving as the basis for suitable analysis of the potential impacts to biological resources pursuant to the California Environmental Quality Act (CEQA) environmental review process.

1.1 Project Overview

The Project consists of the construction, operation, and eventual repowering or decommissioning of a 1,150 megawatt (MW) solar PV facility, an up-to 4,600 megawatt-hour (MWh) BESS, an up to 1,150 MW green hydrogen facility, a 34.5-500 kilovolt (kV) grid step-up substation, a 10 to 15-mile 500 kV gen-tie line, a 500 kV utility switchyard along the Pacific Gas and Electric Company (PG&E) Los Banos-Midway #2 500 kV transmission line, and appurtenances.

Construction of the Project is anticipated to take between 18 to 36 months to complete, and the Project would be operational by 2027 or 2028. The Project would include the following major components:

1.1.1 Solar Facility, Step-Up Substation, and Gen-Tie

The proposed solar facility would be located between South Sonoma Avenue to the west and South Butte Avenue to the east. The approximately 10 to 15-mile-long gen-tie line would predominantly run parallel to West Harlan Avenue, cutting across the California Aqueduct and veering southwest along Cantua Creek. The gen-tie corridor would be up to 275 feet wide and comprises approximately 240 acres in total, running roughly parallel to Cantua Creek, which is approximately 0.25-mile south of the gen-tie line corridor at its nearest proximity. Construction would include:

- A 1,150 MW solar PV facility, consisting of approximately 3,100,000 solar panels, inverter-transformer stations, and an electrical collection system. The collection cables would be buried underground in a trench about 4-feet deep, with segments installed overhead on wood poles to connect all of the solar facility development areas to the on-site step-up substation.
- A new step-up substation to step-up the medium voltage of the PV collector system from 34.5 kV to 500 kV, located on approximately 20 acres. Two locations (Option 1 and 2 sites) are being considered for the step-up substation.
- Operations and maintenance facilities.
- An approximately 10 to 15-mile, 500 kV, gen-tie line, consisting of monopole tubular steel poles or steel H-frame structures, and dead-end structures, to interconnect the step-up substation to the new utility switchyard. The gen-tie line would be located within an up to 275-foot-wide corridor.

1.1.2 BESS

The Option 1 BESS component location would be located at the northeast corner of South El Dorado Avenue and West Davis Avenue. The Option 2 BESS component location would be on South Sonoma Avenue north of West Harlan Avenue. Either Options 1 or 2 BESS component locations would be up to 35 acres. Construction would include:

- A battery storage system capable of storing up to 1,150 MW of electricity for 4 hours (up to 4,600 MWh), located on up to 35 acres.

1.1.3 Green Hydrogen Facility

Three locations are being considered for the green hydrogen facility. Option 1 or Option 2 sites would be approximately 225 acres in size and would be located within the solar facility. In addition, an approximately 100-acre alternate site located west of Interstate 5 (I-5) is being considered. If the alternate site is selected, it would include the construction of a substation and switchyard on approximately 20 additional acres. Construction would include:

- An up to 1,150 MW green hydrogen facility, consisting of an electrolyzer and water treatment plant with reverse osmosis and electrodeionization facilities and ancillary equipment such as filters, storage tanks, backwash systems and chemical dosing systems. Three locations are being considered for the green hydrogen facility. Option 1 or Option 2 sites would be approximately 225 acres in size and would be located within the solar facility. In addition, an approximately 100-acre alternate site located west of Interstate 5 (I-5) is being considered. If the alternate site is selected, it would include the construction of a substation and switchyard on approximately 20 additional acres.

1.1.4 Utility Switchyard

The proposed utility switchyard would be located on approximately 40 acres at the western terminus of the proposed gen-tie line corridor, west of I-5. Construction would include:

- A PG&E-owned switchyard, consisting of high-voltage circuit breakers, switches, and series capacitor line compensation equipment in a breaker-and-half configuration, to electrically connect the Project's generation onto PG&E's 500 kV transmission network. The utility switchyard would be located on approximately 40 acres.

The Project would operate for approximately 35 years, at which time Project facilities would be either repowered or decommissioned. Following decommissioning, the Project site would be restored and reclaimed to the extent practicable to pre-construction conditions consistent with site lease agreements.

1.2 Project Location

The Project site is an irregular shape, located in an agricultural area of unincorporated Fresno County south of the community of Cantua Creek (Figure 1). The proposed solar facility, BESS, step-up substation, and green hydrogen facility site (Options 1 and 2) would be located on approximately 9,100 acres of land owned by Westlands Water District, between South Sonoma Avenue to the west and South Butte Avenue to the east. The proposed approximately 10 to 15-mile gen-tie line would span west from the intersection of South Sonoma Avenue and West Harlan Avenue to immediately

west of I-5, where it would connect to the proposed utility switchyard along PG&E's Los Banos-Midway #2 500 kV transmission line (Figure 2). The alternate green hydrogen facility site being considered is located adjacent to the proposed utility switchyard site.

Land-cover types are predominantly retired agricultural lands that have been irregularly farmed over the last 10 years and seasonally or annually disked when not growing crops, and associated dirt roads, field and road shoulders, basins, ditches, and berms. This land-cover type is herein referred to as "retired and managed agricultural land." Some non-irrigated farming occurred in limited areas on the Project site during 2023, viable because of the unusually wet 2022/2023 winter. Surrounding properties include retired and active agricultural lands. The gen-tie line corridor spans privately-owned land on the western portion of the Project site with land-cover types including active agriculture. The California Aqueduct bisects the gen-tie parcels, running generally north-south. Compacted dirt and paved roads border and separate each land-cover type.

Figure 1 Regional Location Map

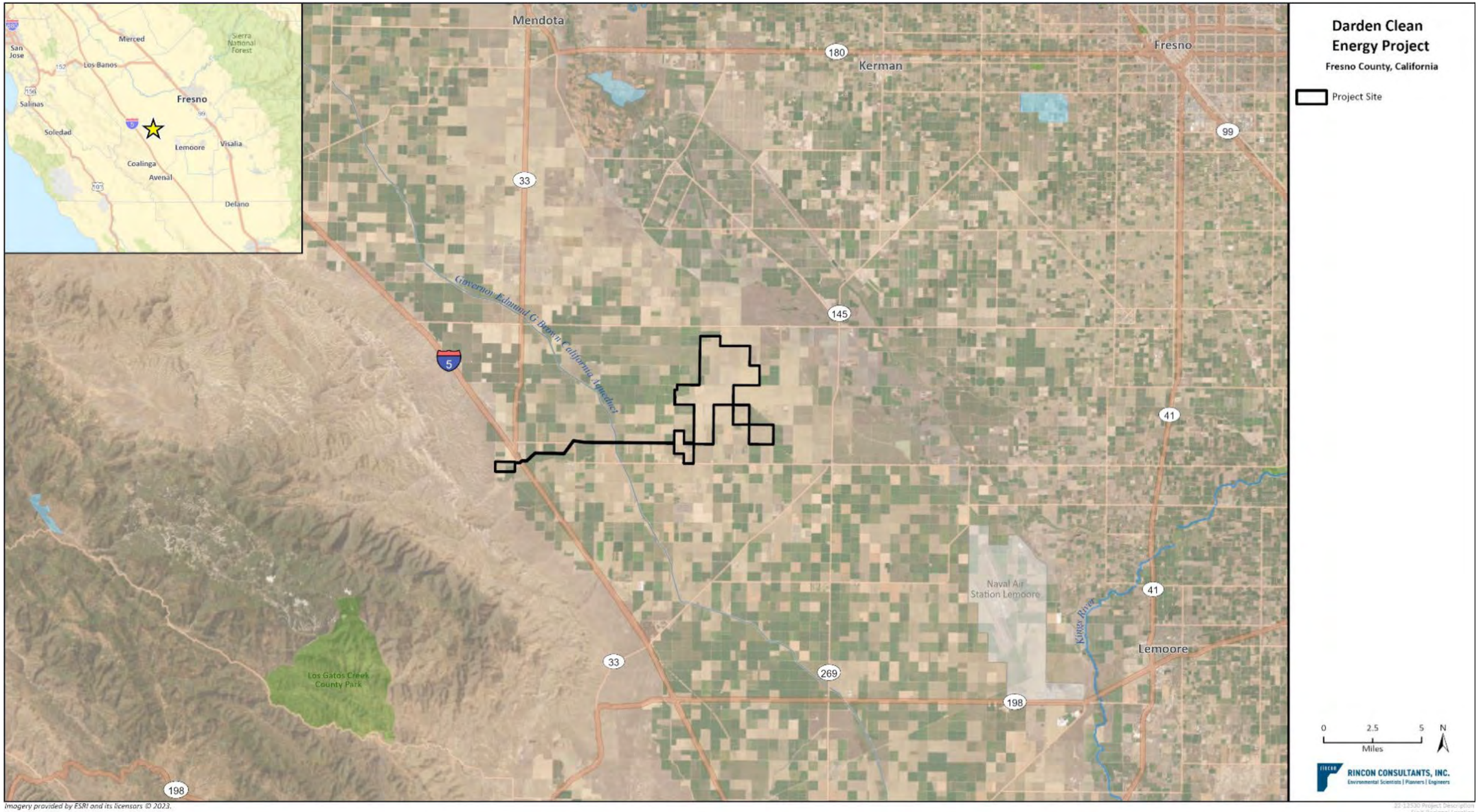
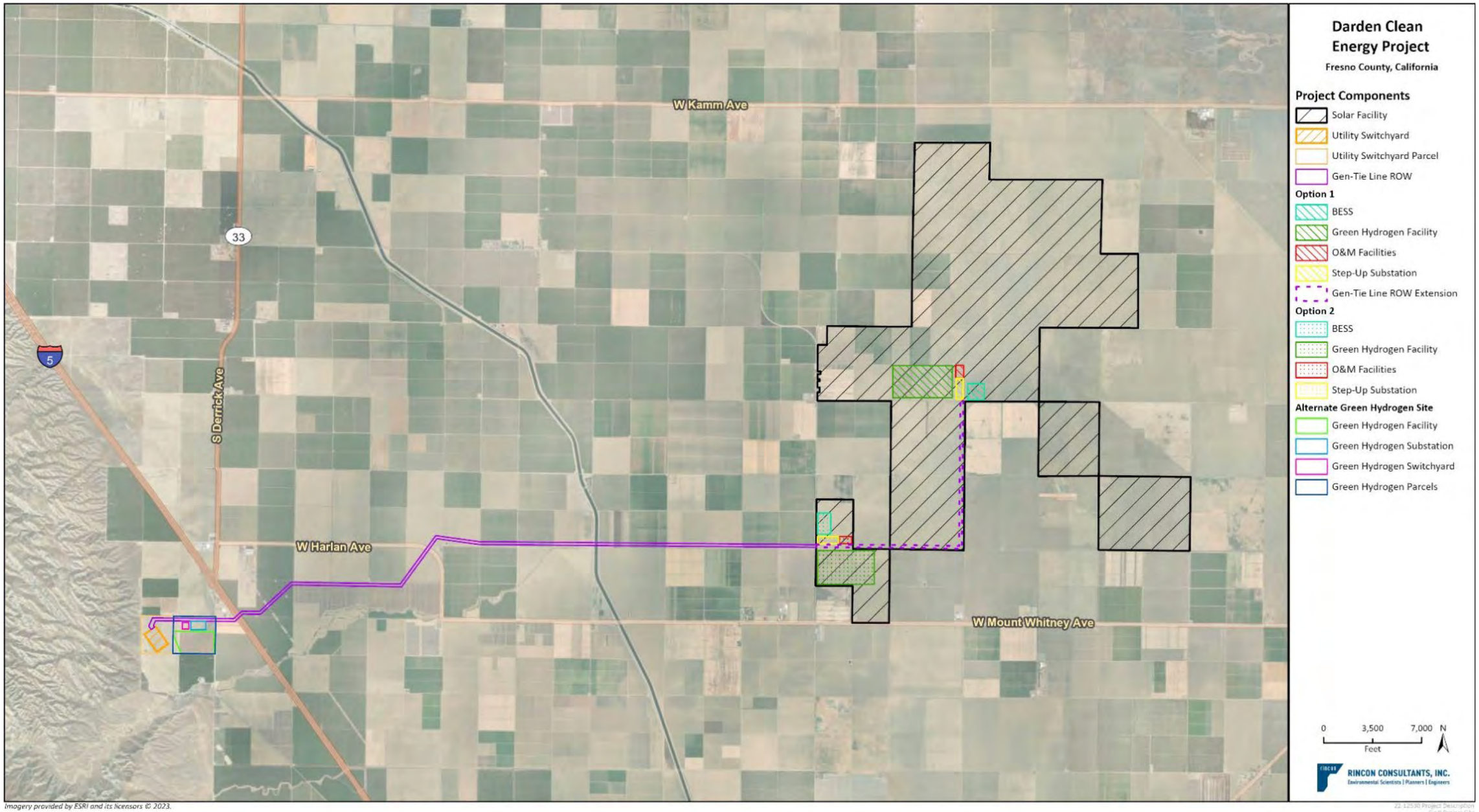


Figure 2 Project Site Map



1.3 Regulatory Summary

Regulated or sensitive resources studied and analyzed herein include special-status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, regionally protected resources (e.g., from county-wide Habitat Conservation Plans [HCP] and Natural Community Conservation Plans [NCCP]), and locally protected resources, such as protected trees. Regulatory authority over biological resources is shared by federal, state, and local authorities.

1.3.1 Assembly Bill 205

The CEC has been authorized under AB 205 (Chapter 61, 2022) to establish a new certification program for eligible non-fossil-fueled power plants and related facilities to optionally seek certification from the CEC, using emergency rulemaking authority provided by AB 205. Per the Notice of Approval of Emergency Regulatory Action for Opt-in Regulations Section 1877, Opt-In applications are required to include all the information specified by California Code of Regulations (CCR) Title 20 Division 2 Section 1704(a) Appendix B that is relevant to the Project (see Appendix Q-1).

1.3.2 Definition of Sensitive Biological Resources

For the purposes of this report, sensitive biological resources, including sensitive or special-status species, are those that meet the criteria defined by CEC in Appendix B, requirement 13(A) inclusive of:

- Areas of Critical Environmental Concern as defined by 20 CCR Section 1201I (formerly 1201(d)), including but not limited to, wildlife refuges, wetlands, thermal springs, endangered species habitats, and areas recognized by the California Natural Area Coordinating Council and the Governor's Office of Planning and Research.
- Species of Special Concern, as defined by 20 CCR Section 1201(t) (formerly 1201(u)), including but not limited to species designated pursuant to state and federal law and those rare and endangered plant species recognized by the Smithsonian Institution or the California Native Plant Society.
- Species and habitats identified by local, state, and federal agencies as needing protection, including but not limited to those identified by the California Natural Diversity Database (CNDDB), or where applicable, in Local Coastal Programs or in relevant decisions of the California Coastal Commission
- Species listed under state or federal Endangered Species Acts
- Species identified as state Fully Protected
- Species covered by Migratory Bird Treaty Act (MBTA)
- Species receiving consideration during environmental review under CEQA Guidelines 14 CCR Section 15380
- Locally significant species that are rare or uncommon in a local context such as county or region or is so designated in local or regional plans, policies, or ordinances
- Plant species listed as rare under the California Native Plant Protection Act
- Established native resident or migratory wildlife corridors or wildlife nursery sites

1.3.3 Environmental Statutes

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes (Appendix Q-1):

- CEQA
- Federal Endangered Species Act
- California Endangered Species Act
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- MBTA
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- County of Fresno General Plan (2000)

1.3.4 Guidelines for Determining CEQA Significance

The following threshold criteria, as defined by the CEQA Environmental Checklist (Appendix G of the *CEQA Guidelines*), were used to evaluate potential impacts to biological resources. Based on these criteria, the Project would have a significant impact on biological resources if it would:

a) Have substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

2 Methodology

2.1 Biological Study Area

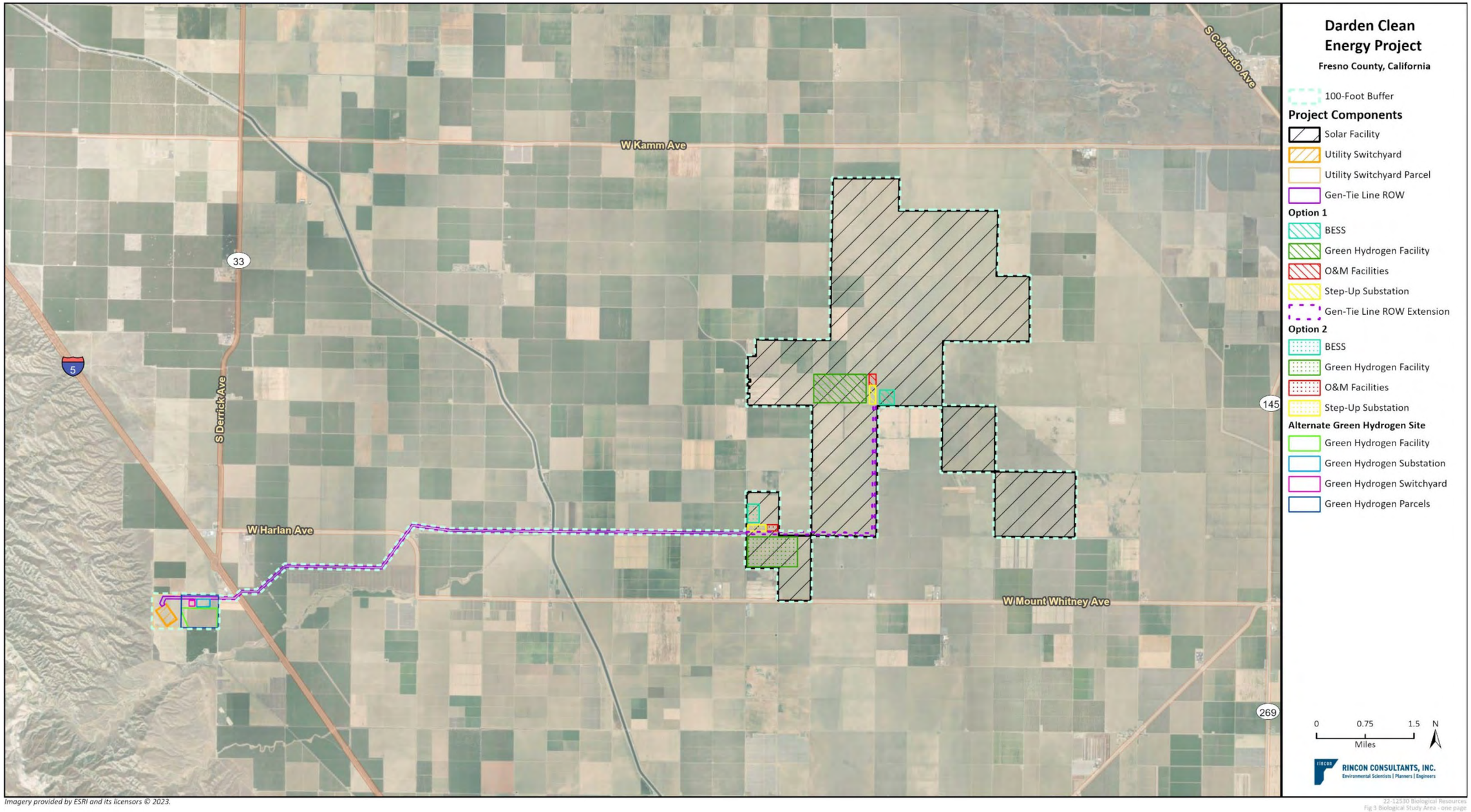
The CEC specifies a project's biological study area should be able to address sensitive biological resources within ten (10) miles of the project. Database queries encompassed the project site and an area of 10-miles surrounding the project site; however, the size of the project site (9,500 acres), the homogeneity of the land cover types and land uses within 10-miles of the site, and the ecological nuances of the special-status species of the region warranted a variety of survey areas. General reconnaissance surveys and annual site inspections were conducted within a Biological Study Area (BSA) that was defined for this Project as the approximately 9,500-acre Project site (encompassing all Project components, including the gen-tie line corridor) and a 100-foot survey buffer where accessible. The biological study area for Swainson's hawk was expanded to include local protocol Swainson's hawk surveys to assess nesting within 0.5 mile of the Project site, and regional Swainson's hawk nest surveys to inform a Swainson's hawk foraging analysis. These studies incorporated species-specific buffers of 0.5 mile for the protocol surveys and 10 miles for the foraging analysis. The Aquatic Resources Delineation study area included the project site and a 250-foot buffer. The BSA and all Project components described below are displayed on Figure 3.

2.2 Literature Review

Rincon conducted a literature review to characterize the nature and extent of biological resources with potential to occur within and adjacent to the BSA. The literature review included an evaluation of current and historical aerial photographs of the site (Google Earth), regional and site-specific topographic maps, and climatic data.

Queries of the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation system (IPaC; USFWS 2023a), CDFW CNDDB inclusive of the following USGS 7.5 minute topographical quadrangles: *San Joaquin, Westside, Tres Picos, Lillis Ranch, California* USGS 7.5-minute topographic quadrangles and the surrounding 14 quadrangles (*Ciervo Mountain, Monocline Ridge, Levis, Cantua Creek, Tranquility, Jamesan, Kerman, Helm, Five Points, Calfax, Harris Ranch, Domengine Ranch, Joaquin Rocks, and Santa Rita Peak* (CDFW 2023a), and California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants of California (2023) were conducted to obtain comprehensive information regarding state and federally listed species, and other special-status species, considered to have potential to occur within 10 miles of the BSA. Occurrence records for special-status bird species were also reviewed in eBird, an online database of bird distribution and abundance. The final list of special-status biological resources (species and sensitive natural communities) was evaluated based on documented occurrences within the 10-mile search area, and Rincon biologists' expert opinions on species known to occur in the region. Rincon conducted an analysis of the species' potential to occur based on species' known distributions and habitat requirements in the context of the existing site conditions. The analysis was conducted for each species and each sensitive community under consideration, and the results were tabulated (Appendix Q-2) and discussed in detail (Section 4, *Sensitive Biological Resources*). Species observed during field surveys described in Section 2.3.1, *Field Reconnaissance Surveys,* were also included in the potential to occur analysis and were evaluated for their specific use (e.g., nesting or foraging) of areas within the BSA.

Figure 3 Biological Study Area



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22-12530 Biological Resources
Fig 3 Biological Study Area - one page

The following is the full list of resources reviewed for information on existing conditions relating to biological resources within the BSA:

- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (2023a)
- CDFW Special Animals List (2023b)
- CDFW CNDDB (CDFW 2023a)
- CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2023c)
- USFWS Critical Habitat Mapper (USFWS 2023b)
- USFWS National Wetlands Inventory (NWI) (USFWS 2023c)
- USGS National Hydrography Dataset (NHD) (USGS 2023)
- CNPS Online Inventory of Rare and Endangered Plants of California (CNPS 2023)
- eBird: An online database of bird distribution and abundance (eBird 2023)

The vegetation community characterizations for this analysis were based on the classification systems presented in *A Manual of California Vegetation, Second Edition* (MCV2; Sawyer et al. 2009).

The potential for wildlife movement corridors was evaluated based on the California Essential Habitat Connectivity Project commissioned by the California Department of Transportation and CDFW (Spencer et al. 2010), and by evaluating the presence of other site-specific natural corridors typically used by wildlife, such as creeks or topographic features (gullies, berms, etc.).

2.3 Field Surveys

Rincon biologists conducted field reconnaissance surveys, ongoing biological site inspections and an aquatic resources delineation. Based on the literature review, a habitat assessment of San Joaquin kit fox was conducted by H.T Harvey and Associates and a habitat assessment of Swainson's hawk was conducted by Rincon and Stringer Biological. Protocol surveys for Swainson's hawk were determined to be necessary based on the habitat assessment and were conducted by Rincon and Stringer Biological. Survey dates, weather conditions, personnel and qualifications are provided in Table 1 below. Field forms are included in Appendix Q-3.

Table 1 Survey Summaries

Survey Type	Date	Time and Weather Conditions	Personnel	Qualifications
SJKF Habitat Assessment Survey	12/8/2022	Time: 08:45-16:00 Skies: overcast	C. Wilkinson	B.S., Biology, 20 years' experience
SJKF Habitat Assessment Survey	12/9/2022	Time: 09:00-15:30 Skies: partly cloudy	C. Wilkinson	B.S., Biology, 20 years' experience
SJKF Habitat Assessment Survey	12/13/2022	Time: 09:45-14:00 Skies: partly cloudy	C. Wilkinson C. Butler	B.S., Biology, 20 years' experience B.S., Biology, 5 years' experience
SJKF Habitat Assessment Survey	12/14/2022	Time: 12:00-14:00 Skies: partly cloudy	C. Wilkinson	B.S., Biology, 20 years' experience
Reconnaissance Survey	12/14/2022	Time: 07:20-15:15 Temperature: 33-54 °F	A.L. Trost	B.S., Biologist, 10 years' experience
			S. Morris	B.S., Biologist, 4 years' experience

Survey Type	Date	Time and Weather Conditions	Personnel	Qualifications
		Skies: Clear skies Wind: 2-6 mph	W. Lawton	M.S., Biologist, 12 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
Reconnaissance Survey	12/15/2022	Time: 07:00-15:15 Temperature: 34-52 °F Skies: Overcast Wind: 0-5 mph	A.L. Trost	B.S., Biologist, 10 years' experience
			S. Morris	B.S., Biologist, 4 years' experience
			W. Lawton	M.S., Biologist, 12 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
Reconnaissance Survey	12/16/2022	Time: 07:36-13:40 Temperature: 35-51 °F Skies: Hazy/Fog Wind: 1-3 mph	A.L. Trost	B.S., Biologist, 10 years' experience
			S. Morris	B.S., Biologist, 4 years' experience
			W. Lawton	M.S., Biologist, 12 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
Reconnaissance Survey	3/31/2023	Time: 07:45-14:50 Temperature: 43-62 °F Skies: Clear skies Wind: 0-6 mph	A.L. Trost	B.S., Biologist, 10 years' experience
			S. Morris	B.S., Biologist, 4 years' experience
SWHA Protocol Survey	4/3/2023	Time: 16:00-20:00 Temperature: 55-58 °F Skies: Clear skies Wind: 15-20 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol Survey	4/4/2023	Times: 06:30-10:00 16:00-19:45 Temperatures: 35-51 °F 61-50 °F Skies: Mostly cloudy Winds: 3-10 mph 10-14 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol Survey	4/5/2023	Time: 07:00-12:00 Temperature: 35-55 °F Skies: Cloudy Wind: 6-9 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol Survey	4/11/2023	Time: 16:00-20:00 Temperature: 75-65 °F Skies: Cloudy Wind: 8-12 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol Survey	4/12/2023	Times: 06:30-10:00 16:00-19:45 Temperatures: 48-57 °F 70-60 °F Skies: Mostly cloudy Winds: 8-14 mph 10-15 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience

Survey Type	Date	Time and Weather Conditions	Personnel	Qualifications
SWHA Protocol Survey	4/13/2023	Time: 06:30-10:00 Temperature: 50-58 °F Skies: Partly sunny Wind: 12-16 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol Survey	4/17/2023	Times: 06:30-10:00 16:00-19:45 Temperatures: 47-61 °F 71-58 °F Skies: Mostly cloudy Winds: 0-7 mph 7-10 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol Survey	4/18/2023	Time: 06:30-10:00 Temperature: 45-56 °F Skies: Cloudy Wind: 0-12 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
SWHA Protocol and Foraging Habitat Survey	5/01/2023	Times: 06:00-10:45 15:00-19:45 Temperatures: 47-61 °F 71-58 °F Skies: Cloudy Winds: 0-3 mph 1-5 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
			S. Morris	B.S., Biologist, 4 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
SWHA Protocol and Foraging Habitat Survey	6/12/2023	Time: 15:30-19:30 Temperatures: 82-81 °F Skies: Cloudy Winds: 0-7 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			A.L. Trost	B.S., Biologist, 10 years' experience
			S. Morris	B.S., Biologist, 4 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
SWHA Protocol Survey	7/11/2023	Time: 16:30-19:30 Temperature: 92-99 °F Skies: Clear skies Wind: 1-2 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
SWHA Protocol Survey	7/12/2023	Times: 06:00-10:00 16:30-19:45 Temperatures: 63-86 °F 102-92 °F Skies: Clear skies Winds: 3-5 mph 0-8 mph	S. Stringer	M.S., Principal Biologist, 20 years' experience
			M. Craig	B.S., Biologist, 3 years' experience
Aquatic Resources Delineation	8/21/2023	Time: 08:15-15:45 Temperature: 71-88 °F Skies: Overcast, showers Wind: 5-15 mph	K. Asmus	M.S., Biologist, 23 years' experience
			O. Routt	B.S., Biologist, 11 years' experience

Survey Type	Date	Time and Weather Conditions		Personnel	Qualifications
Aquatic Resources Delineation	8/22/2023	Time:	08:00-13:30	K. Asmus	M.S., Biologist, 23 years' experience
		Temperature:	68-85 °F		
		Skies:	Overcast	O. Routt	B.S., Biologist, 11 years' experience
		Wind:	0-5 mph		

°F = degrees Fahrenheit; mph = miles per hour

2.3.1 Field Reconnaissance Survey

Four Rincon biologists conducted field reconnaissance surveys throughout the BSA on three consecutive days, December 14-16, 2022. A reconnaissance survey along the gen-tie corridor was conducted by two biologists on March 31, 2023. Reconnaissance surveys focused on documenting existing conditions and biological resources, field-verifying land cover types and any native vegetation communities and evaluating the BSA for the potential to support special-status plant and wildlife species, sensitive plant communities, wildlife corridors and nursery sites, locally protected resources, and potential jurisdictional waters. Results of the surveys were used to identify suitable habitat that may require focused protocol surveys or other more involved analyses, and to develop a research approach for evaluating existing biological resources in the BSA.

The reconnaissance surveys consisted of a combination of "vehicular windshield" surveys and pedestrian surveys. Windshield surveys were conducted where agricultural parcels were recently disked and vegetation cover was non-existent or extremely low. Biologists conducted all surveys with the aid of binoculars to support the observation and identification of biological resources. Particular attention was given to areas with lower levels of disturbance and a higher likelihood of supporting special-status species such as burrowing owl (*Athene cunicularia*), blunt-nosed leopard lizard (*Gambelia sila*), Swainson's hawk (*Buteo swainsoni*), and San Joaquin kit fox (*Vulpes macrotis mutica*). Rincon biologists conducted vehicular windshield surveys and walked pedestrian transects along plot edges where open pipes were observed and within ditches. Wildlife was also detected via the observation of calls, tracks, scat, nests, or other signs of presence. Irrigation ditches and open pipes were mapped using ArcGIS FieldMaps. Biologists also documented and mapped points where any sign or presence of special-status species were observed within the BSA. Because the same individual, or sign from that individual, could have occurred at multiple locations, the number of mapped points may not represent the actual number of individuals observed. No special-status plant species were observed during the reconnaissance surveys; therefore, these figures are limited to wildlife observations only.

Field forms from the reconnaissance survey are included in Appendix Q-3. Biologists captured representative photographs documenting vegetation communities, irrigation ditches, open pipes, species sign, or other notable biological observations. Photographs and a figure depicting photo point, burrow point, and species point locations are included in Appendix Q-4. Compendia of plants and wildlife observed during surveys are included in Appendix Q-5 of this report. Survey dates, staff, and weather conditions are shown in Table 1 above.

2.3.2 Ongoing Biological Site Inspections

In addition to reconnaissance surveys, the presence of sensitive biological resources was recorded during regular biological site inspections conducted by qualified Rincon biologists each month from January 31 through September 9, 2023 (refer to Appendix Q-3). The site inspections covered all project component development areas within the BSA, including some locations up to almost 1-mile outside the 100-foot BSA survey buffer, at the United States Public Land Survey System Section corners within and adjacent to the project component development areas. Biologists' observations of special-status species during these inspections were included in evaluations of species potential to occur within the BSA.

2.3.3 San Joaquin Kit Fox Habitat Assessment Survey

A focused habitat assessment for San Joaquin kit fox was conducted and prepared by H.T. Harvey & Associates in March of 2023 (HT Harvey & Associates 2023). The assessment included a reconnaissance-level field survey conducted on December 8, 9, 13, and 14, 2022 within the Project site and a desktop evaluation of habitat within 5 miles, which approximated the average dispersal distance of San Joaquin kit fox from its natal habitat. Habitat suitability for San Joaquin kit fox was modeled both within the Project site and the 5-mile buffer based on preferred habitat attributes identified within the species' historical range by Cypher et al. (2013), verification of existing conditions using aerial imagery and the reconnaissance survey, and San Joaquin kit fox home range estimates based on prey availability. The full San Joaquin Kit Fox Habitat Assessment is included in Appendix Q-6 and associated field forms are included in Appendix Q-3.

2.3.4 Swainson's Hawk Protocol Surveys and Foraging Analysis Surveys

A literature review of previously documented Swainson's hawk nests was conducted by Stringer Biological Consulting, Inc. (SBC). Following the literature review, surveys were conducted within the entire Project site, a 0.5-mile buffer around the Project site (protocol surveys), and a 10-mile buffer around the Project site (foraging habitat impacts analysis). Biologists documented all observed raptor nests and all observed species of nesting raptors during both surveys. Protocol nesting Swainson's hawk surveys were conducted in accordance with the guidelines prepared by the Swainson's hawk Technical Advisory Committee (TAC) in the document *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (TAC 2000). The Project site was surveyed a total of six times during survey Periods II (March 20 to April 5, early territory establishment), III (April 5 to April 20, nest building), IV (April 21 to June 10, monitoring known nest sites), and V (June 10 to July 30, monitoring for nestlings and fledglings) by SBC and (Rincon) biologists with extensive experience conducting Swainson's hawk surveys (SBC and Rincon 2023). The full *Swainson's Hawk Nesting Survey Report* is included in Appendix Q-7 and associated field forms are included in Appendix Q-3. In the Project site and 10-mile buffer, a survey of active and known previously active nests, and potentially suitable foraging habitat was conducted by SBC and qualified Rincon biologists. The amount of suitable foraging habitat required for the nesting Swainson's hawks within the Project site and within the 10-mile buffer, the amount of suitable habitat available, and impacts to that habitat were analyzed following methodology developed for other utility-scale solar project in the Central Valley reviewed in Estep (2017) (SBC 2023). The *Analysis of Project Impacts to Swainson's Hawk Foraging Habitat* is in Appendix Q-8.

2.3.5 Aquatic Resources Delineation

Prior to the field survey, Rincon reviewed aerial imagery depicting the Study Area (Google Earth 2023), the USGS's The National Map (TNM) Viewer (USGS 2023) topography and high-resolution elevation data layers, the Web Soil Survey (USDA NRCS 2023a), and other available background information, including the results of Rincon's December 2022 reconnaissance survey and January 2023 desktop analysis, to characterize the Jurisdictional Study Area and its surroundings from a hydrologic and geologic/topographical perspective.

Furthermore, the NWI (USFWS 2023c) and TNM Viewer national hydrography dataset layer (USGS 2023) were reviewed to determine if any wetlands and/or other waters had been previously documented and mapped on or in the vicinity of the proposed Project site and Wetland Mitigation Area. The National Hydric Soils List by Survey: Fresno County, California, Western Part (USDA NRCS 2023b) was also reviewed to determine if any soil map unit types mapped on or in the vicinity of the Study Area were classified as hydric.

Rincon regulatory specialists Kristin Asmus and Owen Routt conducted a delineation of on-site aquatic resources following protocol consistent with the current federal and state methods and guidelines (Appendix Q-9). This guidance is typically used to identify and delineate aquatic features and develop a preliminary determination of the limits of jurisdictional areas. The JSA included all project components and a 250-foot buffer and is situated within the jurisdiction of the Central Valley Region of the Regional Water Quality Control Board (RWQCB) (Region 5). On August 21-22, 2023, the Rincon biologists surveyed the JSA by car and on foot documenting aquatic resources and verifying previously mapped resources identified in the NWI, the December 2022 reconnaissance surveys, and the pre-field investigation.

Drainage features, riparian habitat, and wetland sample points were mapped using a Trimble® GeoXT GPS unit and recent aerial photography. Width measurements for RWQCB jurisdictional waters were determined based on the lateral extent of the ordinary high-water mark (OHWM). CDFW jurisdictional limits were measured laterally from bank to bank at the top of the channel, or to the outer drip-line of associated riparian vegetation, if present. Wetland Sample Points and OHWM data sheets were completed at representative locations.

2.4 Impact Evaluation

Impacts are defined as project-related activities that destroy, damage, alter, or otherwise affect biological resources. This may include injury or mortality to plant or wildlife species, effects on an animal's behavior (such as through harassment or frightening off an animal by construction noise), as well as the loss, modification, or disturbance of natural resources or habitats. Impacts are defined as either direct or indirect, and either permanent or temporary. This section includes a brief overview of the types of impacts analyzed in Section 5, *Impact Analysis and Recommended Measures,* of the BRA.

Direct impacts involve a direct physical change in the environment which is caused by and immediately related to the project. Direct impacts for this Project may include injury, death, and/or disturbance of special-status wildlife species, if present in the work areas or vicinity. Direct impacts from direct physical changes to the environment may also include dust, noise, and traffic from construction machinery, or the destruction of vegetation communities necessary for special-status species breeding, feeding, or sheltering. Direct impacts to plants can include crushing of plants, bulbs, or seeds where present in the impact areas.

Indirect impacts involve an indirect physical change in the environment which is not immediately related to the project but is caused indirectly by the project. An indirect physical change is considered only for those that are reasonably foreseeable rather than a change that is speculative. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect impact. Specific examples for this Project may include activities that result in compacted soils or areas cleared of vegetation that, in the future, following completion of the Project, prevents wildlife from digging burrows, or facilitates site colonization by invasive species (particularly weedy plant species that outcompete native plant species) that over time negatively affect the local ecology. Other examples may include dust that drifts outside of Project disturbance areas and covers native plants, thereby decreasing their photosynthetic capacity.

Permanent impacts that result in the long-term or irreversible loss of biological resources are considered permanent. For example, construction of a new electrical substation, which would result in a large, developed, and fenced property where native vegetation may have existed before would be a permanent impact.

Temporary impacts to biological resources are those that are reversible over time, with or without implementation of mitigation measures. Examples include the generation of fugitive dust and noise during Project implementation, trimming or crushing vegetation that will regrow following Project completion, and removed vegetation that will be actively restored. These temporary impacts are anticipated to last during Project implementation and shortly thereafter; however, the biological resources are anticipated to return to baseline after Project completion.

3 Existing Conditions

3.1 Physical Characteristics

3.1.1 Topography and Geography

The BSA is located in unincorporated Fresno County in the San Joaquin Valley. The San Joaquin Valley is bounded by the Sacramento – San Joaquin River Delta to the north, the Diablo Mountain Range to the west, the Sierra Nevada Mountains to the east, and the Tehachapi Range to the south. The region is primarily composed of agricultural land dating back to as early as the 1940s, and cattle grazing land, with areas of residential and industrial development primarily concentrated near the city of Fresno. Vegetation occurring in the San Joaquin Valley mostly consist of annual/ruderal grassland, pasture, cropland, valley-foothill riparian, vernal pool, alkali scrub, and orchard-vineyard (Fresno County 2000). Within the BSA, the Project site is relatively flat, with elevations ranging from approximately 186- to 644-feet above mean sea level (AMSL), increasing in elevation from the east to the west and southwest towards the Diablo Range. Geography in the vicinity of the BSA includes agriculture with a few small scattered rural residential areas and small solar facilities. Topography within each of the Project components is described below.

Solar Facility, Step-Up Substation, and Gen-tie

Topography within the solar facility location is relatively flat, ranging from approximately 183- to 262-feet AMSL and increasing moving southwest towards the Ciervo Hills east of the Diablo Range. The Option 1 step-up substation location has an average elevation of 213-feet AMSL and the Option 2 step-up substation location has an average elevation of 254-feet AMSL. The elevation of the gen-tie line corridor increases from 257- to 487-feet AMSL northeast to southwest.

BESS

The Option 1 BESS location has an average elevation of 209-feet AMSL and the Option 2 BESS location has an average elevation of 256-feet AMSL.

Green Hydrogen Facility

The Option 1 green hydrogen component location has an average elevation of 220-feet AMSL. The Option 2 green hydrogen component location has an average elevation of 252-feet AMSL. The alternate green hydrogen component location has an average elevation of 526-feet AMSL. The elevation of the alternate green hydrogen component increases from 494-feet to 558-feet AMSL northeast to southwest.

Utility Switchyard

The utility switchyard location has an average elevation of 597-feet AMSL with a minimum elevation of 574-feet AMSL on the northeastern side and a maximum elevation of 620-feet AMSL on the southwestern side.

3.1.2 Watershed and Drainages

The JSA is located in the Arroyo Hondo-Fresno Slough Watershed (Hydrologic Unit Code [HUC]-10 1803000908) and the Cantua Creek-Fresno Slough Watershed (HUC-10 1803000906). The California Aqueduct crosses the proposed gen-tie line corridor approximately 3-miles west of the proposed solar facility. Cantua Creek roughly parallels the gen-tie line corridor approximately 0.25- to 0.5-mile south of the gen-tie line corridor west of the aqueduct. This creek is identified as a dashed "blue-line creek" in the NHD and as R4SBC, riverine intermittent streambed seasonally flooded, in the NWI. Ephemeral swales formed in the draws of the hillsides and two impoundments are present within the buffer on the west end of the JSA. There are several excavated palustrine wetlands within the JSA, identified in the NWI as either unconsolidated bottom, unconsolidated shore, or emergent, and seasonally or semi-permanently flooded (PUBFx. PUSCx or PEM1Fx) (USFWS 2023c). Three excavated basins located on the east side of the solar facility are mapped as intermittent riverine features (R4SBC) in the NWI. Additional agricultural ditches, canals, and excavated basins that were not documented in the NWI or NHD were mapped during the December 2022 reconnaissance and August 2023 delineation surveys. All aquatic resources documented during the surveys are shown in Appendix Q-9.

Solar Facility, Step-Up Substation, and Gen-tie

The solar facility location contains the majority of the features classified under the NWI as palustrine freshwater pond/emergent wetland. Three palustrine freshwater features are mapped along the gen-tie line corridor in the NWI; however, two of those features are no longer present, the third is an unvegetated agricultural basin. There are additional agricultural ditches and excavated basins scattered throughout the solar facility and along the gen-tie line corridor. There are no NWI mapped features within the Option 1 or Option 2 step-up substations, though one agricultural ditch was field mapped within the buffer west of the Option 2 step-up substation, across South Sonoma Avenue from the proposed site (Appendix Q-9).

The California Aqueduct bisects the gen-tie line corridor approximately 3-miles west of the solar facility. To the west, Cantua Creek is the only natural waterway that occurs within the JSA, with the portion closest to the gen-tie line corridor occurring within the two parcels immediately west of the California Aqueduct. Cantua Creek is an intermittent creek that originates in the hills west of the BSA and flows to the east-northeast. At South San Mateo Avenue the creek is channelized between levees and directed northeast then east along the south side of West Harlan Avenue approximately 200-feet south of the gen-tie line corridor, terminating approximately 0.25-mile east of the California Aqueduct (Appendix Q-10, Photos 1-5).

BESS

There are no NWI mapped features within the Option 1 or Option 2 BESS locations, but one agricultural ditch was field mapped within the buffer west of the Option 2 BESS, across South Sonoma Avenue from the proposed site (Appendix Q-9).

Green Hydrogen Facility

There are no NWI mapped features within the Option 1, Option 2 or Alternative green hydrogen facility locations. An excavated basin and an agricultural ditch are mapped within the buffer southwest of the Option 1 location and one excavated basin was field mapped within the buffer south of the Option 2 location. There is one agricultural ditch within the Alternative green hydrogen

facility location and a second mapped within the buffer on the east side, across South Derrick Avenue from the proposed site (Appendix Q-9).

Utility Switchyard

There are no NWI or field mapped features within the utility switchyard site or 250-foot buffer of the site. Four ephemeral swales and two impoundments (stock ponds) are present within the buffer of the Utility Switchyard parcels on the west end of the JSA.

3.1.3 Soils

According to the USDA NRCS Web Soil Survey data for Fresno County, California (USDA NRCS 2023a), eight soil map units occur within the BSA. Figure 4 a through Figure 4h depicts the location of the soil series throughout the BSA. A summary of soils within each Project component is below, followed by descriptions of each soil series. None of these soils are considered hydric.

Solar Facility, Step-Up Substation, and Gen-Tie

The solar facility location contains Tranquillity clay, saline-sodic, wet, 0 to 1 percent slopes; Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes; Calflax clay loam, saline-sodic, wet, 0 to 1 percent slopes, MLRA 17; Posochanet clay loam, saline-sodic, wet 0 to 1 percent slopes; Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes; and Ciervo clay, 0 to 2 percent slopes.

The Option 1 step-up substation location contains Tranquillity clay, saline-sodic, wet, 0 to 1 percent slopes and the Option 2 step-up substation location contains Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes.

The gen-tie line corridor contains Panoche clay loam, 0 to 2 percent slopes; Panoche loam, 0 to 2 percent slopes; Panoche sandy loam, 0 to 2 percent slopes; Cerini clay loam, 0 to 2 percent slopes; Ciervo clay, 0 to 2 percent slopes; Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 percent slopes; and Cerini clay loam, 0 to 2 percent.

BESS

The Option 1 BESS location contains Tranquillity clay, saline-sodic, wet, 0 to 1 percent slopes and the Option 2 BESS location contains Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes and Ciervo clay, 0 to 2 percent slopes.

Green Hydrogen Facility

The Option 1 green hydrogen component location contains Ciervo clay, 0 to 2 percent slopes, Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes, Tranquillity clay, saline-sodic, wet, 0 to 1 percent slopes, and Calflax clay loam, saline-sodic, wet, 0 to 1 percent slopes, MLRA 17. The Option 2 green hydrogen component location contains Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes.

The alternate green hydrogen component location contains Panoche loam, 0 to 2 percent slopes and Panoche sandy loam, 0 to 2 percent slopes.

Utility Switchyard

The utility switchyard location contains Panoche sandy loam, 0 to 2 percent slopes and Polvadero-Guijarral complex, 5 to 15 percent slopes.

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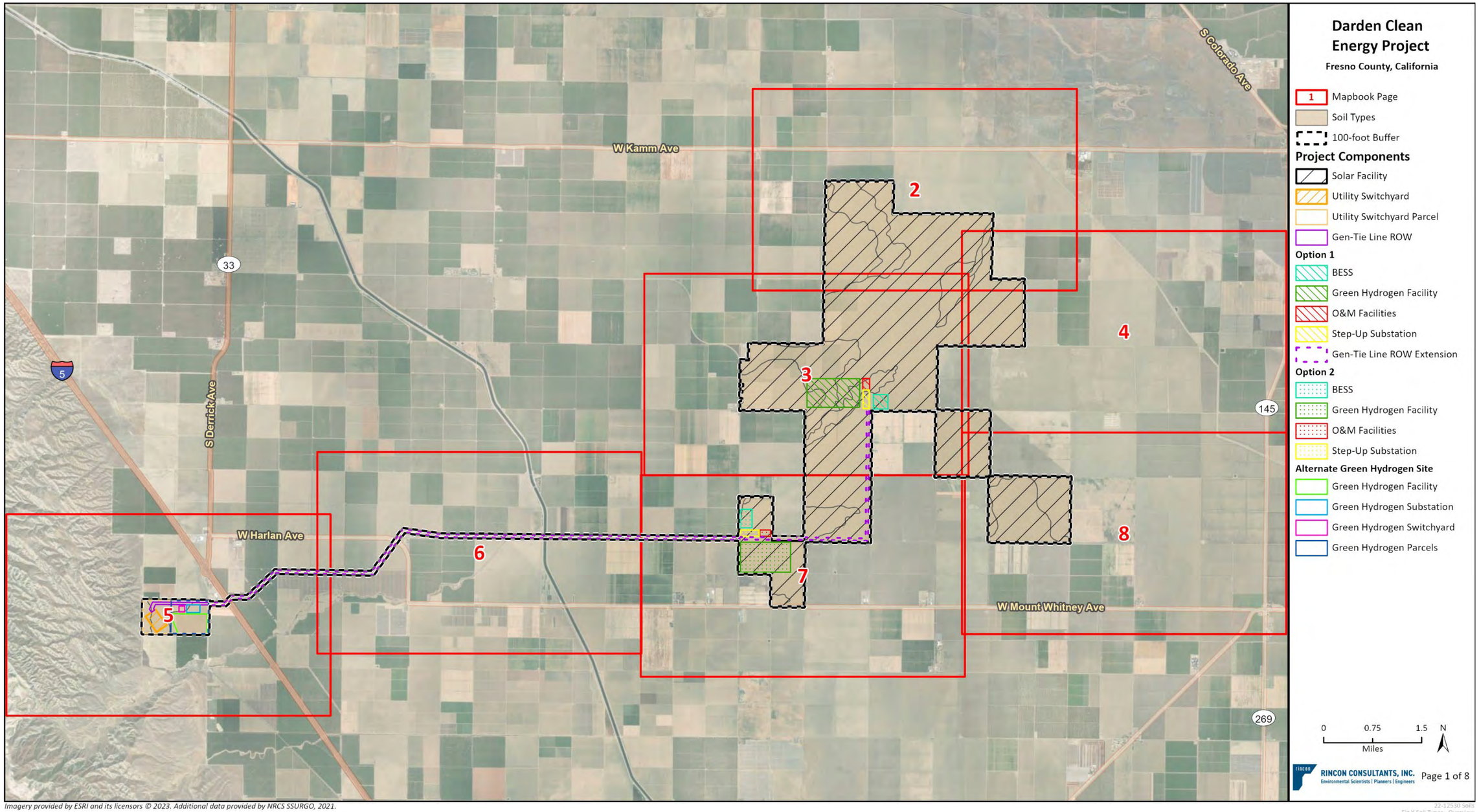
Figure 4a Soils within the BSA Overview



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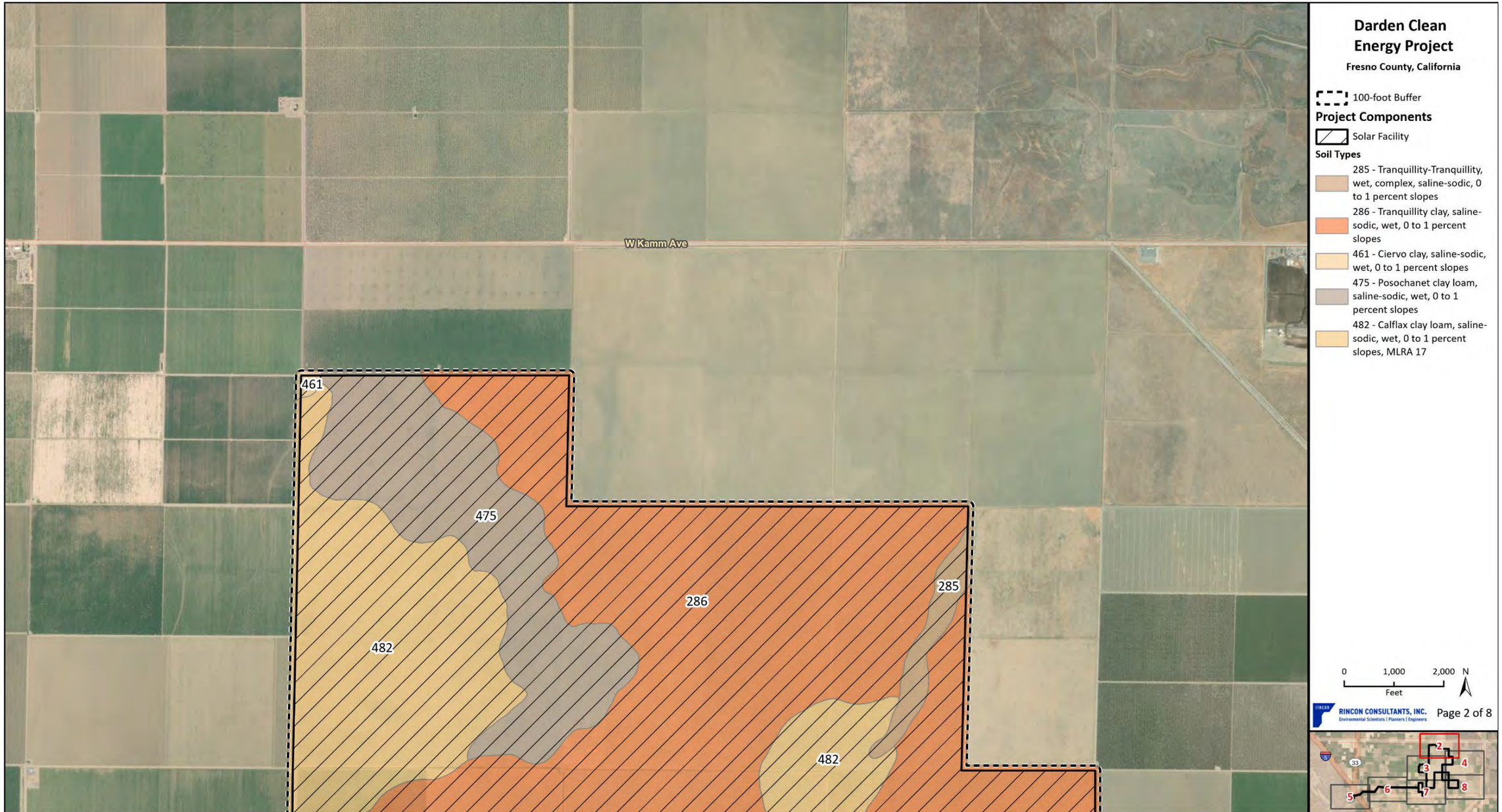
22-12530 Soils
Fig X Soil Types - Overview

Figure 4b Soils within the BSA (Mapbook Page 2)



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22-12530 Soils
Fig X Soil Types

Figure 4c Soils within the BSA (Mapbook Page 3)

Imagery provided by ESRI and its licensors © 2023. Additional data provided by NRCS SSURGO, 2021.

Figure 4d Soils within the BSA (Mapbook Page 4)

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Figure 4e Soils within the BSA (Mapbook Page 5)

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Figure 4f Soils within the BSA (Mapbook Page 6)

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Figure 4g Soils within the BSA (Mapbook Page 7)

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22-12530 Soils
Fig X Soil Types

Figure 4h Soils within the BSA (Mapbook Page 8)

3.1.3.1 Soil Descriptions

Tranquillity Series

The Tranquillity series is a soil series composed of very deep, somewhat poorly drained soils on fan skirts. These soils formed in alluvium derived dominantly from calcareous sedimentary rock. The mean annual precipitation is about 8 inches. Drainage is somewhat poor, runoff is high and this soil series permeates slowly.

Polvadero-Guijarral Complex

Polvadero Series

The Polvadero series consists of very deep, well drained, sodic soils on fan remnants. These soils formed in alluvium derived dominantly from calcareous sedimentary rock. The mean annual precipitation is about 7 inches. This soil series is well drained and has moderately slow permeability.

Guijarral Series

The Guijarral series consists of very deep, well drained soils on fan remnants. These soils formed in alluvium derived dominantly from calcareous sedimentary rock. Slope is 2 to 15 percent. The mean annual precipitation is about 7 inches. These soils are well drained with very low or low runoff and moderately rapid permeability.

Ciervo Series

The Ciervo series consists of very deep, moderately well drained soils on fan skirts. These soils formed in alluvium derived dominantly from sedimentary rock. The mean annual precipitation is about 7 inches. This soil series drains moderately well, has medium to high runoff and very slow permeability.

Panoche Series

The Panoche series consists of very deep, well drained soils on alluvial fans and flood plains. These soils formed in loamy calcareous alluvium from sedimentary rock. The mean annual precipitation is about 6 inches. This soil series is well drained, has negligible to medium runoff, and moderate permeability.

Excelsior Series

The Excelsior series consists of very deep, well drained soils on alluvial fans and bars and channels on flood plains. These soils formed in mixed alluvium dominantly from igneous and calcareous sedimentary rocks. The mean annual precipitation is about 7 inches. This soil series is well drained, has negligible to medium runoff, and moderate to slow permeability (particularly in saline-sodic horizons).

Cerini Series

The Cerini series consists of very deep, well drained soils on alluvial fans. These soils formed in alluvium derived dominantly from sedimentary rock. The mean annual precipitation is about 7 inches. This soils series drains well, has low to medium runoff and moderately slow permeability.

Calflax Series

The Calflax series consists of very deep, moderately well drained soils on fan skirts. These soils formed in alluvium derived from calcareous sedimentary rock. The mean annual precipitation is about 7 inches. This soil series is moderately well drained, has low runoff, and moderately slow permeability.

Posochanet Series

The Posochanet series consists of moderately well drained soils on fan skirts. These soils formed from alluvium derived calcareous sedimentary rock. The soil series has medium runoff and moderate to moderately high permeability.

3.2 Vegetation and Other Land Cover

The BSA was dominated by active and seasonally managed non-active agricultural fields. During the spring, tomatoes and garlic were grown on some of the parcels, and most of the non-active parcels were grown over with mustard (*Brassica nigra*), then were disked in May. In this report, we refer to the non-active fields as "retired agriculture" and note if there was evidence of recent disking. Plant species observed included black mustard (*Brassica nigra*), bread wheat (*Triticum aestivum),* great valley phacelia (*Phacelia ciliata)* and field bindweed (*Convolvulus arvensis*). Larger trees were generally restricted to windrows or situated around structures and included red gum eucalyptus (*Eucalyptus camaldulensis*), arroyo willow (*Salix lasiolepis*), Fremont cottonwood (*Populus fremontii*) and local agricultural trees including olive, almond, and various fruit (Appendix Q-5).

3.2.1 Solar Facility, Step-Up Substation, and Gen-Tie

The land-cover type within the solar facility and Options 1 and 2 step-up substation component locations is composed of retired and managed agricultural land. Two large windrows of red gum eucalyptus are present within the proposed solar facility location with other large trees sparsely situated throughout the BSA. The gen-tie line corridor generally consists of active agricultural land with some retired and managed agriculture or disked fields.

3.2.2 BESS

Land cover within the Options 1 and 2 BESS component locations is retired and managed agricultural land.

3.2.3 Green Hydrogen Facility

Land cover within the Options 1 and 2 green hydrogen component locations is retired and managed agricultural land. Land cover within the alternate green hydrogen component location is retired and managed agricultural land.

3.2.4 Utility Switchyard

The utility switchyard is located in an active orchard which contains a disturbed/cleared area devoid of vegetation in the southwest where a transmission line crosses the BSA.

3.3 General Wildlife

Most wildlife detected during the reconnaissance survey were common to the region. Most raptors were observed soaring above or perched on poles or wires. Burrowing owls were generally observed in larger irrigation ditches, at the ends of irrigation piping, or along the edges of dirt roads.

Wildlife detected during the reconnaissance surveys and ongoing biological inspections were consistent with expectations for an agricultural setting of the Central Valley. Bird diversity was high and included common resident species and expected migrant species during spring and fall migratory seasons, while mammal, reptile, and amphibian diversity was low. Common bird species observed included Anna's hummingbird (*Calypte anna*), barn owl (*Tyto alba*), black phoebe (*Sayornis nigricans*), Canada goose (*Branta canadensis),* common raven (*Corvus corax*), dark-eyed junco (*Junco hyemalis*), great egret (*Ardea alba)*, killdeer (*Charadrius vociferus)*, mourning dove (*Zenaida macroura)*, northern mockingbird (*Mimus polyglottos*), red-tailed hawk (*Buteo jamaicensis)*, western meadowlark (*Sturnella neglecta)*, white-crowned sparrow (*Zonotrichia leucophrys*), and yellow-rumped warbler (*Setophaga coronate)*. Common mammals observed included black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Otospermophilus beecheyi*), and coyote (*Canis latrans*). Reptiles and amphibians observed included California king snake (*Lampropeltis californiae*), western fence lizard (*Sceloporus occidentalis*), and western toad (*Anaxyrus boreas*). A full list of wildlife detected during the surveys is included in Appendix Q-5.

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4 Sensitive Biological Resources

This section discusses special-status species and sensitive biological resources observed in the BSA and evaluates the potential for the BSA to support additional sensitive biological resources. Assessments for the potential occurrence of special-status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and other sources, species occurrence records from other sites in the vicinity of the BSA, previous reports for the Project, and the results of surveys of the BSA. The potential for each special-status species to occur in the BSA was evaluated according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime), and species would have been identifiable on the site if present (e.g., oak trees).
- **Low Potential.** Few of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- **Moderate Potential**. Some of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential**. All the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present**. Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last 5 years).

4.1 Special-Status Species

The list of special-status plant and wildlife species known to occur within 10 miles of the Project site resulting from the literature review is in Appendix Q-2. This BRA does not contain a figure showing CNDDB records; however, species known to occur within 1 mile of the solar facility location, Options 1 and 2 step-up substation, BESS, and green hydrogen component locations, alternate green hydrogen component location, and the utility switchyard location, and within 1,000 feet of the gen-tie line corridor are included in a Confidential Appendix R to the CEC Opt-In Application. Special-status species and sensitive resources observed during surveys, including nests protected by the MBTA and potentially occupied or occupied burrows, are shown in Figure 5a through Figure 5e.

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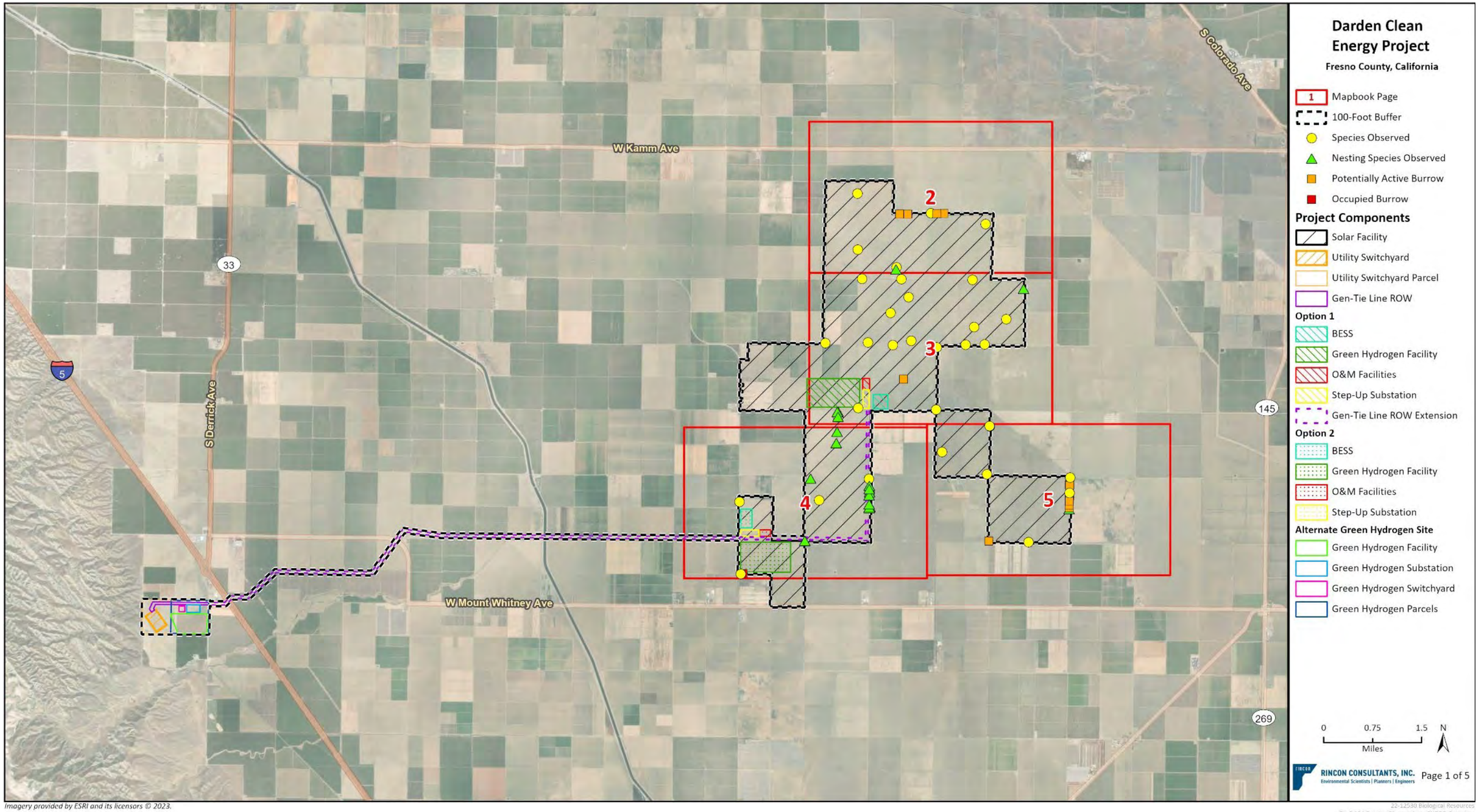
Figure 5a Special-Status Species Observations within BSA Overview



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22-12530 Biological Resources
Fig 5.124 Species Observed_no CNDDB Overview

Figure 5b Special-Status Species Observations within BSA (Mapbook Page 2)

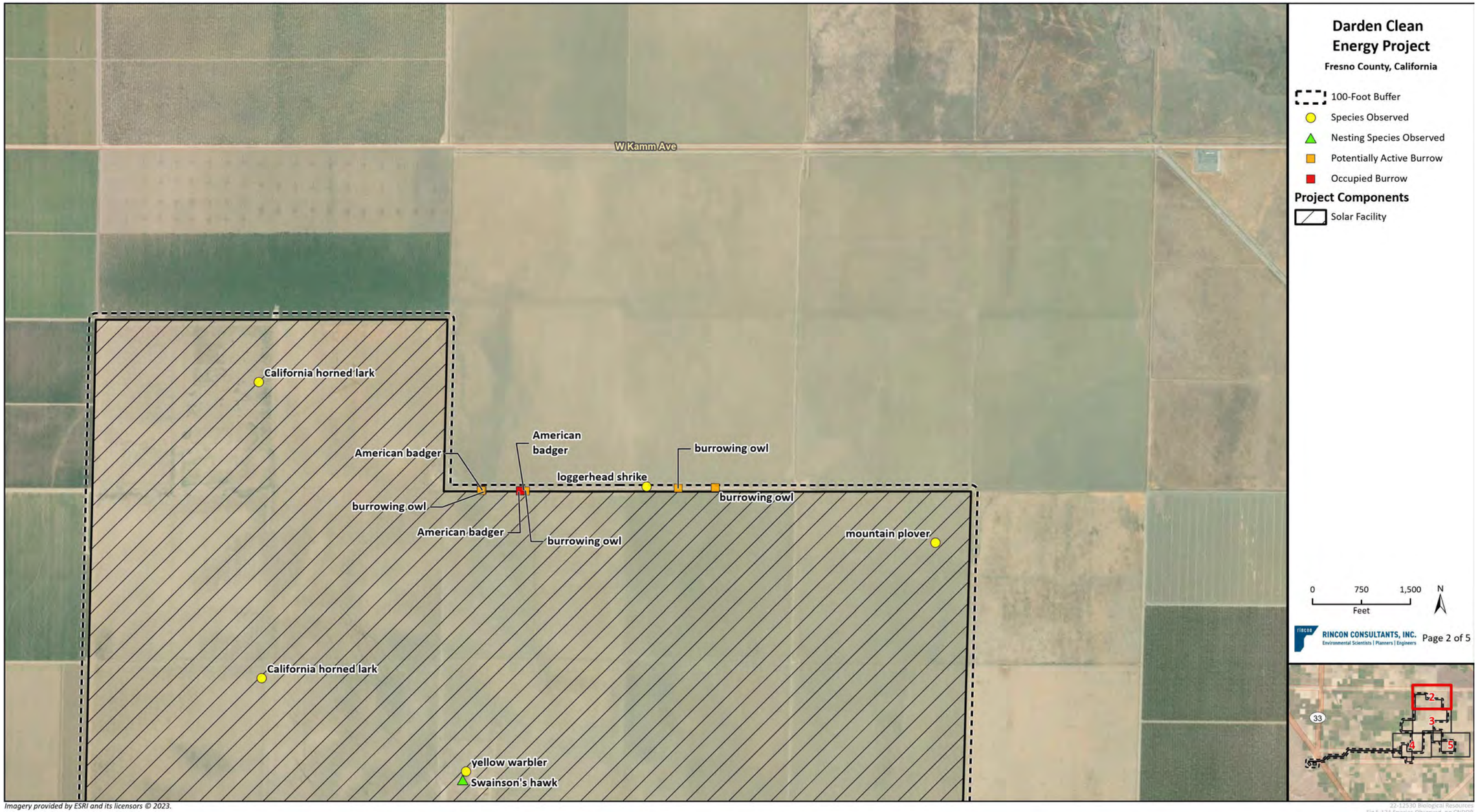

Figure 5c Special-Status Species Observations within BSA (Mapbook Page 3)

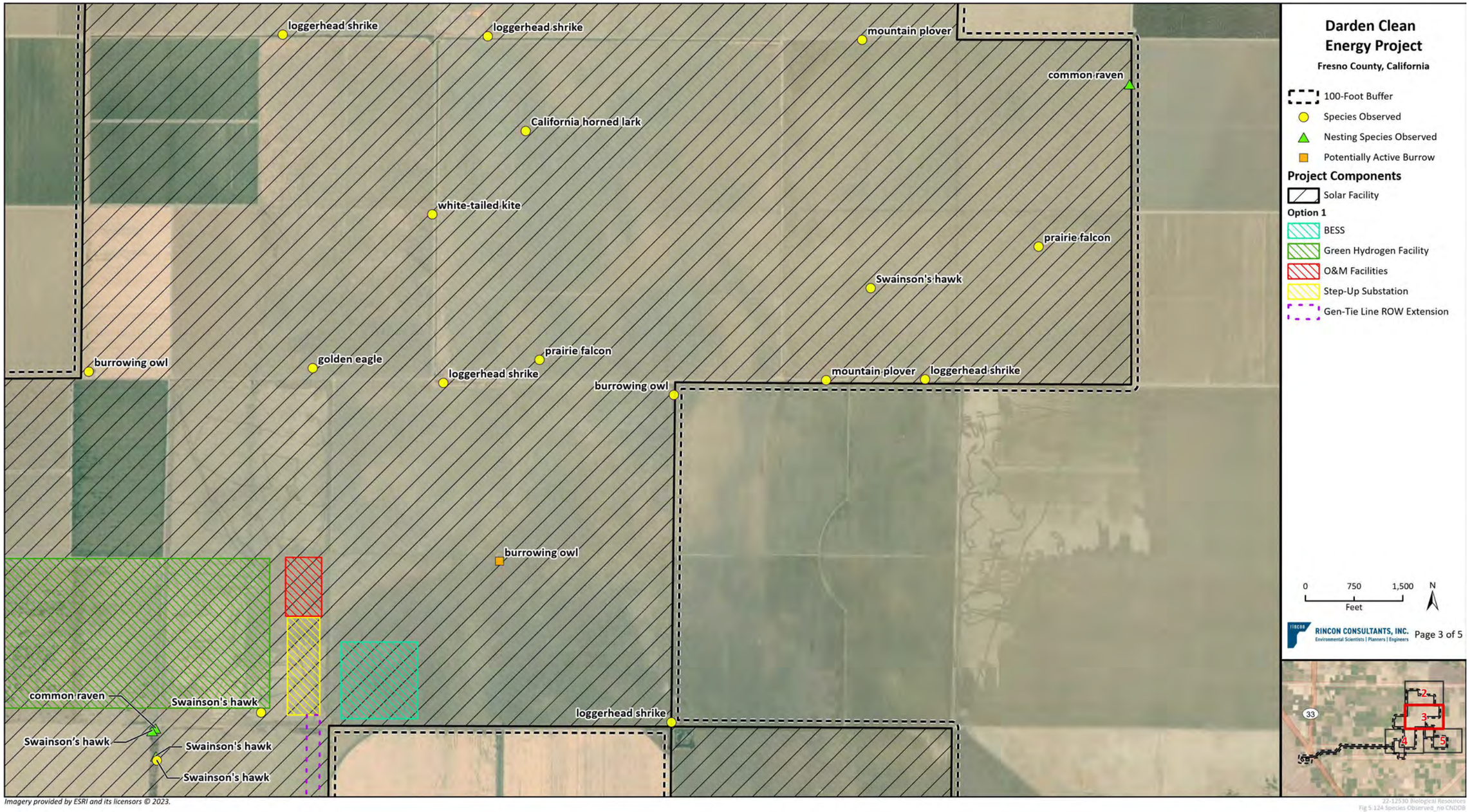

Figure 5d Special-Status Species Observations within BSA (Mapbook Page 4)

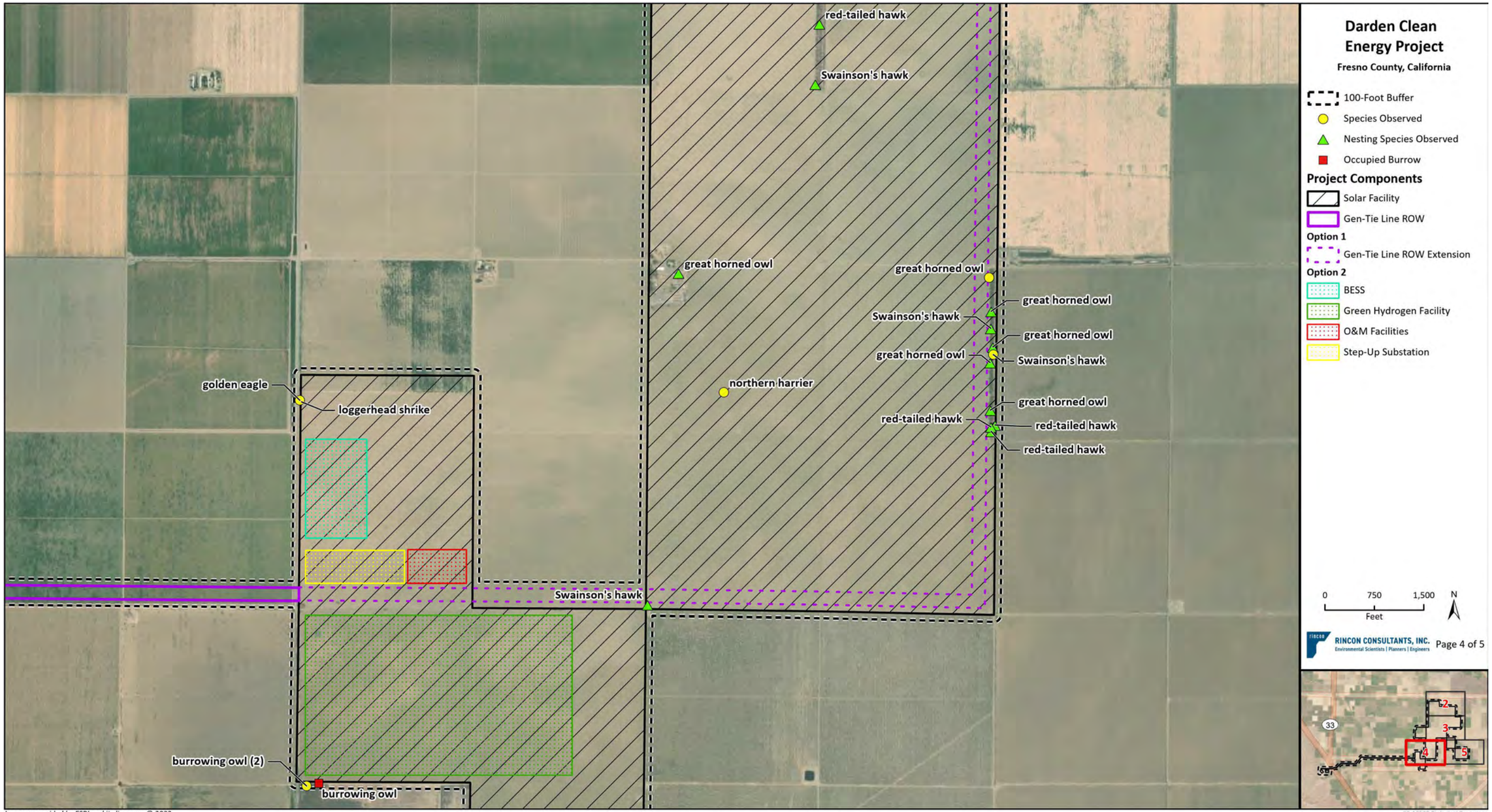

Figure 5e Special-Status Species Observations within BSA (Mapbook Page 5)

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4.1.1 Special-Status Plant Species

The evaluation of special-status plant species with potential to occur within the BSA included 54 species known to occur in the region (Appendix Q-2). Fifty-three of those species have specific habitat requirements associated with mountains, forest, woodland, streams, and/or elevation ranges not present in the BSA. One special-status plant species, Lost Hills crownscale (*Atriplex coronate* var. *vallicola*) that was previously documented within 1 mile of the BSA is discussed below. This species is not expected to occur within the BSA due to ongoing agricultural disturbance.

Lost Hills Crown scale (*Atriplex coronate var. vallicola*); California Rare Plant Rank 1B.2

Lost Hills crownscale, California Rare Plant Rank 1B.2 was the only species documented within 1 mile of the BSA. Lost Hills crownscale is an annual herb that occurs in alkaline soils in chenopod scrub, valley and foothills grasslands, and vernal pools at elevations between 165 and 2085 feet throughout the San Joaquin Valley.

Solar Facility, Step-Up Substation, and Gen-tie

Lost Hills crownscale was documented approximately 0.5-mile west of the western terminus of the gen-tie line corridor in 2002 within the Ciervo Hills; however, habitat within the gen-tie line corridor has been continually disturbed by agricultural activities since at least July 2004 through July 2020. Therefore, this species is not expected to occur in the western end of the gen-tie line corridor.

This species was documented within 10 miles of the solar facility location and Options 1 and 2 step-up substation component locations and is not expected to occur within these Project component locations.

BESS

Lost Hills crownscale was documented more than 10 miles from the Options 1 and 2 BESS component locations and is not expected to occur within these Project component locations.

Green Hydrogen Facility

Lost Hills crownscale was documented more than 10 miles from the Options 1 and 2 green hydrogen component locations and is not expected to occur within these Project component locations. Lost Hills crownscale was documented approximately 1-mile west of the alternate green hydrogen component location in 2002 within the Ciervo Hills. Suitable valley grassland does not occur on or adjacent to this area and Lost Hills crownscale is not expected to occur within this Project component location.

Utility Switchyard

Lost Hills crownscale was documented approximately 0.5-mile west of the utility switchyard location in 2002 within the Ciervo Hills. Habitat within the utility switchyard has been continually disturbed by agricultural activities since at least July 2004 through July 2020. Therefore, this species is not expected to occur within the utility switchyard location.

4.1.2 Special-Status Wildlife Species

Rincon evaluated 49 species known to occur in the region (Appendix Q-2). Of those, 31 species are not expected to occur in the BSA based on the absence of suitable habitat, three have a low potential to occur, two have a moderate potential to occur and 13 are considered present (individuals or recent sign observed on-site) (Table 2).

Table 2 Special-Status Wildlife Species Documented in or with the Potential to Occur within the BSA

Common Name	Scientific Name	Agency Status (Federal/State/Other)	Potential to Occur
Reptiles			
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	--/--/SSC	Low Potential
Birds			
tricolored blackbird	*Agelaius tricolor*	--/ST/SSC	Low Potential (foraging), No Potential (nesting)
golden eagle	*Aquila chrysaetos*	--/--/FP	Present (foraging), No Potential (nesting)
burrowing owl	*Athene cunicularia*	--/--/SSC	Present (nesting, foraging)
ferruginous hawk	*Buteo regalis*	--/--/WL	Present (winter migrant)
Swainson's hawk	*Buteo swainsoni*	--/ST/--	Present (nesting, foraging)
northern harrier	*Circus hudsonius*	--/--/SSC	Present (foraging), No Potential (nesting)
mountain plover	*Choradrius montanus*	--/--/SSC	Present (winter migrant)
white-tailed kite	*Elanus luecurus*	--/--/FP	Present (foraging), Low Potential (nesting)
California horned lark	*Eremophila alpestris actia*	--/--/WL	Present (foraging, nesting)
prairie falcon	*Falco mexicanus*	--/--/WL	Present (foraging), No Potential (nesting)
California condor	*Gymnogyps californianus*	FE/SE/--	Low Potential (foraging), No Potential (nesting)
Loggerhead shrike	*Lanius ludovicianus*	--/--/SSC	Present (foraging), No Potential (nesting)
Oregon vesper sparrow	*Pooecetes framineus affinus*	--/--/SSC	Present (winter migrant)
yellow warbler	*Setophaga petechia*	--/--/SSC	Present (migration)
yellow-headed blackbird	*Xanthocephalus xanthocephalus*	--/--/SSC	Moderate Potential (nesting, foraging)
Mammals			
American badger	*Taxidea taxus*	--/--/SSC	Present
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST/--	Moderate Potential

FE=Federally Endangered
FT=Federally Threatened
FC=Federal Candidate
FD=Federal Delisted
FPE=Federally Proposed for Listing as Endangered
SE=State Endangered
ST=State Threatened
SCE=State Candidate Endangered
FP = CDFW Fully Protected
SSC = CDFW Species of Special Concern
WL = CDFW Watch List
Source: California Natural Diversity Database (CNDDB) (Fresno County), May 2021

Species that occur or potentially occur within specific project components are summarized below. Section 4.1.3, *Species Discussions,* includes detailed discussions of each species' habitat requirements, occurrences within the vicinity of the BSA, and presence of suitable habitat within the BSA.

Solar Facility, Step-Up Substation, and Gen-tie

The solar facility, the gen-tie line corridor, and both Option 1 and 2 step-up substation component locations contain suitable nesting habitat for:

- Burrowing owl (*Athene cunicularia*)
- Swainson's hawk (*Buteo swainsoni*)
- California horned lark (*Eremophila alpestris actia*)

The solar facility location contains suitable nesting habitat for yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

The solar facility, the gen-tie line corridor, and Options 1 and 2 step-up substation component locations contain suitable foraging habitat for the species above and the following species:

- Tricolored blackbird (*Agelaius tricolor*)
- Golden eagle (*Aquila chrysaetos*)
- Ferruginous hawk (*Buteo regalis*)
- Mountain plover (*Charadrius montanus*)
- Northern harrier (*Circus hudsonius*)
- White-tailed kite (*Elanus luecurus*)
- Prairie falcon (*Falco mexicanus*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Oregon vesper sparrow (*Pooecetes framineus affinus*)
- Yellow warbler (*Setophaga petechia*)

The solar facility, the gen-tie line corridor, and Options 1 and 2 substation component locations contain marginal foraging habitat for California condor (*Gymnogyps californianus*).

Suitable habitat for American badger (*Taxidea taxus*) is present throughout all portions of these Project component locations.

BESS

The Options 1 and 2 BESS component locations contain suitable foraging habitat for:

- Tricolored blackbird
- Golden eagle
- Burrowing owl
- Ferruginous hawk
- Swainson's hawk
- Mountain plover
- Northern harrier

- White-tailed kite
- California horned lark
- Prairie falcon
- Loggerhead shrike
- Oregon vesper sparrow
- Yellow-headed blackbird

The Options 1 and 2 BESS component locations contain marginal foraging habitat for California condor. These areas also have suitable habitat for American badger.

Green Hydrogen Facility

The Options 1 and 2 green hydrogen component locations are within 0.5 mile of Swainson's hawk nests that were active in 2023.

The Options 1 and 2 green hydrogen component locations contain suitable foraging habitat for:

- Tricolored blackbird
- Golden eagle
- Burrowing owl
- Ferruginous hawk
- Swainson's hawk
- Mountain plover
- Northern harrier
- White-tailed kite
- California horned lark
- Prairie falcon
- Loggerhead shrike
- Oregon vesper sparrow
- Yellow-headed blackbird

The Options 1 and 2 green hydrogen component locations contain marginal foraging habitat for California condor. These areas also have suitable habitat for American badger.

California ground squirrel burrows located predominantly around the edges of the alternate green hydrogen component location comprise suitable nesting and wintering habitat for burrowing owl at this Project component location.

The alternate green hydrogen component location contains suitable foraging habitat for:

- Tricolored blackbird
- Golden eagle
- Ferruginous hawk
- Swainson's hawk
- Mountain plover
- Northern harrier

- White-tailed kite
- California horned lark
- Prairie falcon
- Loggerhead shrike
- Oregon vesper sparrow

This Project component location also has suitable habitat for American badger.

Utility Switchyard

The utility switchyard location contains moderately suitable habitat for:

- San Joaquin kit fox (*Vulpes vulpes macrotis*) (Appendix Q-6)

Habitat in the utility switchyard location is low-quality due to the presence of an orchard that provides limited habitat for prey species and their burrows for:

- San Joaquin coachwhip (*Masticophis flagellum ruddocki*)
- burrowing owl (foraging)
- American badger

There is low-quality foraging habitat in the utility switchyard location for:

- Golden eagle
- Prairie falcon

4.1.3 Species Discussions

San Joaquin Coachwhip (*Masticophis flagellum ruddocki*); CDFW Species of Special Concern (SSC)

San Joaquin coachwhip occur in open, dry, treeless areas, including grassland and saltbush scrub, and feeds on small mammals including bats, nestling and adult birds, bird eggs, lizards, snakes, amphibians, and carrion. Hatchlings and juveniles will eat large invertebrates (Nafis 2023). This species takes refuge in rodent burrows, under shaded vegetation and surface objects (NatureServe 2023).

An area of suitable open dry habitat with burrows made by California ground squirrels occurs west of the utility switchyard location within the BSA. A single CNDDB occurrence for this species was documented approximately 7.75-miles northwest of the BSA in 1989.

Tricolored Blackbird (*Agelaius tricolor*); State Threatened (ST), SSC

Tricolored blackbird requires open, accessible water; a protected nesting substrate including either flooded, thorny, or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony. Colonies also use Himalayan blackberry and thistles and grain fields near dairies (Shuford and Gilardi 2008). Preferred foraging habitats include crops such as rice, alfalfa, irrigated pastures, and ripening or cut grain fields, annual grasslands, cattle feedlots, and dairies, wet and dry vernal pools and other seasonal wetlands, riparian scrub habitats, and open marsh borders (Shuford and Gilardi 2008).

This species was not observed during the reconnaissance survey or subsequent site visits. Vegetation adjacent to a freshwater wetland within the solar facility location provides suitable roosting habitat but lacks the size and structure to function as suitable nesting habitat for a colony. Retired and managed agricultural fields provide marginally suitable foraging habitat within the BSA but are unlikely to function as preferred foraging habitat given the absence of crops. Accounts documented in eBird include a 2013 account of ten individuals in "open ag land" approximately 3.62 miles southeast from the alternate green hydrogen component location; and April 2004 and January 2005 accounts (30 individuals and three individuals respectively) approximately 0.8-mile south of the gen-tie line corridor, near its intersection with I-5 near Cantua Creek. There is no suitable nesting habitat within the BSA.

Golden Eagle (*Aquila chrysaetos*); CDFW FP

Golden eagles generally inhabit open and semi-open habitats such as prairies, sagebrush scrub, savannahs, and barren areas, especially in hilly or mountainous regions with sufficient mammalian prey base and nearby suitable nesting sites. This species feeds primarily on rabbits, hares, and ground squirrels and may also consume carrion (Kochert et al. 2002). Nesting sites are most often on rock ledges or cliffs but may also be found in large trees, on steep hillsides, or on the ground (Great Basin Bird Observatory 2010). Golden eagles are permanent residents and migrants throughout California except the center of the Central Valley (Zeiner et al. 1990).

This species was observed flying over the solar facility location on May 11, 2023 (Figure 5a through Figure 5e). The BSA is outside the known nesting range of this species and contains marginally suitable foraging habitat based on a low abundance of preferred prey within the BSA.

Burrowing Owl (*Athene cunicularia*); CDFW SSC

The burrowing owl is a grassland specialist dependent on the presence of fossorial mammals, whose burrows are used for nesting and roosting (Klute et al. 2003). The burrowing owl is a yearlong resident of open grasslands, especially prairie, plains, and savanna, and sometimes other open areas such as vacant lots near human habitation or airports. This species spends much time on the ground or on low perches such as fence posts, and nests in abandoned burrows such as those dug by ground squirrels, desert kit foxes, and badgers (Zeiner et al. 1990). During migration and winter, burrowing owls are more widespread in lowland areas of the state and reach offshore islands (Shuford et al. 2008). This species is threatened by habitat loss due to agriculture and control of burrowing mammals, such as the eradication of prairie dogs (NatureServe 2023).

Agricultural fields in the BSA provide suitable foraging habitat for burrowing owl. Suitable California ground squirrel burrows for both breeding and wintering burrowing owls are present throughout the BSA in areas that were not disked along roadsides and the fence line west of the utility switchyard location, and on drainage ditch berms and associated open pipes. This species was documented during the reconnaissance surveys conducted in December 2022 and March 30, 2023, and during subsequent site inspections in and February and June, 2023 in the solar facility location and the Option 2 green hydrogen component location. Nine individual burrowing owls were observed in the solar facility location. Some owls were observed twice, including one individual in a pipe on the southeastern edge of the solar facility location, and a pair of owls associated with a burrow found within a trash pile near the southwest corner of the Option 2 green hydrogen component location. Four owls were observed within the solar facility in or on pipes on the western, southeastern, and southern boundaries, one was observed near the corner of West Cerini Avenue and South Yuba Avenue, one was observed near a known burrow on the corner of South Butte

Avenue and West Cerini Avenue, and another was observed near the corner of West Elkhorn Avenue and South Colusa Avenue near a large burrow. During the same period, 15 active or potentially active burrows, and a pipe showing signs of active use, were observed on the north-central boundary, central portion, southeastern, and southern boundaries of the solar facility (Figure 5a through Figure 5e).

Ferruginous Hawk (*Buteo regalis*), CDFW Watch List (WL)

Ferruginous hawks inhabit open areas including open grasslands, sagebrush flats, desert scrub, low foothill fringes of pinyon and juniper habitats throughout western North America from southern Canada to Central Mexico between the Great Plains and the Rocky Mountains (Zeiner et al. 1990). This species breeds in the northern states and Canada, and winters south from California and Texas to Mexico. Wintering habitat consists of open grasslands, deserts, and cultivated fields (Ng et al. 2020). The ferruginous hawk is a California winter resident from August to early March. Ferruginous hawks feed primarily on rabbits, ground squirrels, and prairie dogs. Breeding for ferruginous hawks begins in April and are single-brooded (Ng et al. 2020).

This species was observed actively foraging on December 16, 2022, outside the BSA near the northeast side of the solar facility location. There is no sagebrush flat, desert scrub, or pinyon and juniper habitat present within the BSA. However, agricultural fields within the BSA provide suitable foraging habitat for this species.

Swainson's Hawk (*Buteo swainsoni*); ST

Swainson's hawk occurs in savanna, and open pine-oak woodland and cultivated lands. It breeds in grasslands scattered with trees, juniper-sage flats, riparian areas, or agricultural lands or orchards with groves or lines of trees. Its habitat requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations (Bloom 1980, Estep 1989). It builds its nests in solitary trees, bushes, or small groves and sometimes on rock ledges. In the Central Valley of California, nests are often within 1 mile of a riparian zone. Its diet is predominantly other vertebrates during its breeding season, and it does not feed during most of its migration. The Swainson's hawk was historically threated by habitat loss (e.g., conversion of foraging and nesting habitat to unsuitable agricultural land use), residential and commercial development and pesticide use (Bloom 1980, Battisone et al. 2016). However, recent research has documented significant increases in population numbers in the Central Valley of California, particularly in the Sacramento region where nesting habitat is abundant (Gifford et al. 2012, Furnas et al. 2022).

The BSA has suitable agricultural land for Swainson's hawk foraging, characterized as "medium quality" foraging habitat (SBC 2023, Appendix Q-8). Protocol Swainson's hawk surveys recorded five active nests within the solar facility location, and one additional nest immediately adjacent to, but outside the solar facility location in 2023. Figure 4 in the Swainson's Hawk Survey Report (SBC and Rincon 2023, Appendix Q-7) includes locations of nests documented in 2023.

Mountain Plover (*Charadrius montanus*); CDFW SSC

Mountain plover are found on short grasslands and plowed fields of the Central Valley from Sutter and Yuba counties southward. They are winter residents from September through March (Hunting and Edson 2008).

The BSA has suitable freshly plowed fields for foraging by this species. This species was documented foraging during the reconnaissance surveys conducted in December 2022 and during a subsequent

site visit in February 2023 (Figure 5a through Figure 5e). Mountain plover are winter residents of California and are not known to breed in the state.

Northern Harrier (*Circus hudsonius*); CDFW SSC

Northern harrier is a CDFW SSC that generally inhabits meadows, grasslands, open rangelands, desert sinks, and wetlands. This species nests on the ground in shrubby vegetation, usually at the marsh edge (Brown and Amandon 1968). This species may also nest in emergent wetlands, grasslands, grain fields, sagebrush flats, or along rivers or lakes, and feeds mostly on small mammals, birds, frogs, small reptiles, crustaceans, insects, and rarely on fish. Northern harriers are highly territorial and will attack other birds of prey during the breeding season (Zeiner et al. 1988).

An adult male northern harrier was documented foraging in the solar facility location within the BSA during a site visit conducted on April 5, 2023. Agricultural fields within the solar facility location provide suitable foraging habitat; however, as these fields are frequently disturbed by agricultural activities during the nesting season, they do not provide suitable nesting habitat.

White-tailed Kite (*Elanus luecurus*); CDFW FP

White-tailed kite occur in coastal and valley lowlands, often in agricultural areas. Substantial groves of dense, broad-leafed deciduous trees are used for nesting and roosting, with nest placed usually 20-100-feet above ground near open foraging area. This species preys mostly on voles and other small, diurnal mammals, occasionally on birds, insects, reptiles, and amphibians. This species forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands (Zeiner et al. 1988).

This species was observed foraging along a drainage ditch within the solar facility location of the BSA during a site visit conducted on May 24, 2023 (Figure 5a through Figure 5e). Although suitable nest trees occur within the BSA, the BSA does not support nesting white-tailed kite. Nesting has not been documented for this species within the 10 miles surrounding the BSA and eBird observations within that area are from outside the breeding season.

California Horned Lark (*Eremophila alpestris actia*), CDFW WL

The California horned lark is a common to abundant resident in a variety of open habitats generally devoid of trees and large shrubs This subspecies ranges from the inner Coast Ranges and San Joaquin Valley to northern Baja, California. In the San Joaquin Valley, California horned larks inhabit bare ground, deserts, short-grass prairie, tundra, sandy/stony areas, agricultural feed lots, and fallow row crops characterized by open, treeless areas with low vegetation. Nest sites are built on bare ground, often next to tufts of grass or stones. Breeding begins in late February and pairs may produce two or even three broods in a season (Zeiner et al. 1990).

The BSA has suitable agricultural fields and other open and barren area for horned lark foraging and open bare ground for nesting at the margins of agricultural fields and roads. Horned larks were documented during the reconnaissance surveys throughout the BSA conducted in December 2022 (Figure 5a through Figure 5e).

Prairie Falcon, CDFW WL

Prairie falcons inhabit grasslands, desert, scrub, and agricultural lands, where they pursue birds, mammals, and reptiles as prey. California ground squirrel is likely a common prey item where this mammal is abundant. Prairie falcons use dry, open areas with cliffs and bluffs for nesting. They

prefer cliffs with a sheltered ledge with loose debris or gravel for a nest but may also nest in caves or other cavities and crevices. Prairie falcons reuse nest sites in subsequent years (Zeiner et al. 1990).

While no nesting habitat occurs within the BSA, suitable foraging habitat exists for this species throughout the retired and managed agricultural land within the BSA. Prairie falcons were documented foraging during the reconnaissance surveys throughout the BSA conducted in December 2022 and in the solar facility location during a site inspection in April 2023 (Figure 5a through Figure 5e).

California Condor (*Gymnogyps californianus*); Federally Endangered (FE), State Endangered (SE), State Fully Protected

The California condor requires vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls provide nesting sites and this species will forage up to 100 miles from its roost or nest. The California condor has a small population that relies on captive breeding programs in Southern California. This species is threatened by lead poisoning from ingesting lead bullets from hunter-killed carcasses, as well as ingestion of trash (NatureServe 2023).

The BSA does not provide suitable cliffs for nesting. Sheep carcasses were found in several of the irrigation ditches throughout the BSA which would provide suitable carrion for this species, and the BSA is within the 100-mile foraging range of known populations in the Sierra Nevada, Tehachapi, and Diablo Mountain ranges. The nearest occurrence of this species is more than 10 miles from the BSA; however, it was evaluated since it was identified during the IPAC search.

Loggerhead Shrike (*Lanius ludovicianus*); CDFW SSC

The loggerhead shrike inhabits open country with scattered trees and shrubs, savannah, desert scrub, and occasionally open woodland with suitable hunting perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats. This species occurs only rarely in heavily urbanized areas but is often found in open cropland, and sometimes uses edges of denser habitats. The species is territorial throughout the year, constructing a nest of coarse twigs and animal hair that is typically placed in shrubs or small trees with dense foliage. Throughout California, this species is a common resident and winter visitor in lowlands and foothills (Zeiner et al. 1990).

This species was observed foraging within the solar facility location during the reconnaissance survey in December 2022 and during a site visit on February 22, 2023 (Figure 5a through Figure 5e). There is no suitable shrub habitat for nesting within the BSA.

Oregon Vesper Sparrow (*Pooecetes gramineus affinis*); CDFW SSC

The Oregon vesper sparrow is a grassland species that winters in the western Sierra Nevada foothills, western foothills of the San Joaquin Valley, and on the southern coast. The species is found in open areas with sparse or short vegetation, including road edges, weedy agricultural fields, alfalfa, and washes, as well as semi-desert scrub and areas with sandy substrate, and feeds on invertebrates and seeds September through March (Shuford and Gardali 2008).

This species was observed within the solar facility location during a site visit on April 5, 2023 (Figure 5a through Figure 5e). Retired and managed agricultural land in the BSA with sparse or weedy, low-growing vegetation provides suitable winter foraging habitat for this species.

Yellow Warbler (*Setophaga petechia*); CDFW SSC

Yellow warbler occurs in riparian deciduous habitat with cottonwoods, willows, alders, and other trees and shrubs in open-canopy riparian woodland in lower elevations and foothills from northern California to the south coastal areas. During the breeding seasons, this species uses open to medium-density woodlands and forests with a heavy brush understory for nesting and tall trees for singing. They forage on insects and spiders in upper canopy of deciduous trees and shrubs and occasionally eat berries. Yellow warblers winter in the Imperial Valley and along the Colorado River in southern California, and occur widely across the state during migration (Zeiner et al. 1988).

This species was observed within the solar facility location during a site visit on May 8, 2023 (Figure 5a through Figure 5e), most likely during migration. There is no suitable riparian nesting habitat within the BSA, but tree canopies within the solar facility location provide marginal foraging habitat.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*); CDFW SSC

Yellow-headed blackbird nests in fresh emergent wetland with dense vegetation and deep water, often along borders of lakes or ponds and forages in emergent wetland and moist, open areas, especially cropland and muddy shores of lacustrine habitat (Zeiner et al. 1990).

Accounts from eBird document yellow-headed blackbird colonies consisting of 5, 10, and 24 individuals in a roadside “pond” approximately 2.5 miles southwest of the solar facility location. These records were from 2012 and 2016, including a June 2016 observation of nine fledglings. Agricultural fields in the BSA provide suitable foraging habitat. One freshwater wetland in the BSA within the solar facility location provides suitable nesting habitat.

American Badger (*Taxidea taxus*); CDFW SSC

The American badger inhabits drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Cropland, desert, grassland, savanna, and shrubland/chaparral are preferred habitat types for the American badger. The species is chiefly nocturnal, mostly solitary, and feeds primarily on small rodents that are captured by digging out the rodent burrows. American badgers are an uncommon, permanent resident throughout most of California, except in the northern North Coast area (Zeiner et al. 1990). Threats to the species include habitat loss, collisions with vehicles, and direct persecution (NatureServe 2023).

The BSA provides suitable friable soils. Surveys documented the presence of suitable prey species throughout the BSA, including California ground squirrels, small birds, and reptiles. Oblong burrows with characteristic claw marks of this species were observed during the reconnaissance surveys conducted in December 2022 (Figure 5a through Figure 5e).

San Joaquin Kit Fox (*Vulpes macrotis mutica*); FE, ST

San Joaquin kit fox inhabit the San Joaquin Valley and associated foothills, and flatlands such as the Carrizo Plain and Panoche Valley (USFWS 2020). Habitat includes alkali sink, valley grassland, and woodland, in valleys and adjacent gentle foothills (USFWS 2010). San Joaquin kit fox hunt in areas with low sparse vegetation that allows good visibility and mobility (McGrew et al. 1979). Multiple underground dens in dry soils are used throughout the year. Sometimes these foxes use pipes or culverts as den sites (McGrew et al. 1979). Young are born in underground dens, and natal dens typically have multiple entrances.

The San Joaquin kit fox habitat assessment concluded that the majority of the BSA was not suitable for San Joaquin kit fox occupation, that the species was not expected to occur in any portion of the solar facility location, and that no suitable habitat was present within the BSA (Figure 5 in H.T. Harvey 2023, Appendix Q-6).

4.2 Sensitive Natural Communities and Critical Habitat

Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. Vegetation rarity ranking is based on a rank calculator developed by NatureServe. According to the CDFW Vegetation Program, alliances with state ranks of S1-S3, as well as certain additional associations specifically noted as sensitive in the list, are considered to be imperiled, and thus, potentially of special concern. Sensitive natural communities and USFWS-designated Critical Habitat do not occur within the BSA; therefore, they do not occur within any Project component locations.

4.3 Jurisdictional Waters and Wetlands

Aquatic resources delineated within the JSA (Project site and a 250-foot buffer) were reviewed and evaluated for a preliminary determination of jurisdiction. A map set of all delineated features and a table of the features listed by unique ID with their linear feet and acreages is attached in Appendix Q-9. Representative photographs of the various types of features with detailed descriptions are included in Appendix Q-10, accompanied by a photo point location figure. Wetland Sample Point and Ordinary High Water Mark data sheets are included in Appendix Q-11. For purposes of this report, basins are manmade features designed to collect and store water in a static location. Ditches and canals are manmade linear features designed to convey flowing water and are typically culverted at one or both ends; ditches are under 15 feet in width, canals are wider and situated in-line with flow through from and to smaller ditches at each end.

The JSA contains numerous manmade agricultural ditches, canals, and excavated basins. Aside from those specifically discussed in the following sections below, the remaining features have been determined to be either not jurisdictional or exempt from permitting procedures for the below-listed agencies under the following criteria:

- USACE: The solar facility and step-up substation component are located within an isolated system of interconnected ditches and basins, which were constructed from uplands and do not support a relatively permanent flow of surface water. Basins that may meet the definition of wetlands are isolated. Based on current USACE regulations, consistent with the recent *Sackett vs. Environmental Protection Agency* United States Supreme Court Case, these features are not federally jurisdictional.
- RWQCB: The site's large (over 1 acre in size) manmade irrigation basins and manmade basins under 1 acre in size are not considered wetland waters of the State by definition in Section II.3 and II.3.d.v. of the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (the Procedures; SWQCB 2021) because they are manmade ("artificial") features that are less than one acre in size and/or constructed and maintained for agricultural crop irrigation or stock watering. The site's ditches are not subject to the Procedures pursuant to Section IV.D.2.c of the Procedures which exempts agricultural ditches in most cases. This exemption does not limit the SWRCB's authority to regulate discharges to the ditches under the Porter Cologne Water Quality Control Act; however, no discharge into these features is

proposed as part of the Project If discharges were proposed, they would potentially be subject to the SWRCB's permitting authority but would not require compliance with the Procedures.

- CDFW: The on-site features are manmade and have not acquired the characteristics of natural waterways and are therefore assumed to not be jurisdictional by the CDFW (CDFG 1988).

The owners and tenants of the agricultural lands actively reconfigure on-site drainages by filling and reconstructing irrigation ditches, canals, and basins as needed to support agricultural operations. Many ditches and basins, some identified during desktop review of April 21, 2021, aerial imagery (Google Earth 2023) and some identified during the reconnaissance surveys in December 2022 were no longer present at the time of the delineation survey. Minor ditches such as v-ditches, created to hold irrigation piping or formed during road grading, were generally not mapped due to the changing and non-jurisdictional nature of these features; however, one pipe ditch (AD-4) was mapped and included in the Photo Appendix (Appendix Q-10, Photo 10) as an example of the type.

4.3.1 Solar Facility, Step-Up Substation, and Gen-Tie

Two potentially jurisdictional aquatic resources were identified within the vicinity of the solar facility and step-up substation project component locations, or are crossed by the gen-tie line corridor, which are described in detail below:

California Aqueduct

The gen-tie line corridor crosses the California Aqueduct, an aquatic resource that is potentially jurisdictional to the USACE, RWQCB, and CDFW, as it is a relatively permanent stream providing habitat to animals.

Cantua Creek

Cantua Creek is an intermittent creek that originates in the hills west of the JSA and flows to the east-northeast roughly parallel to the gen-tie line corridor and outside the JSA for most of its length, ranging from 0.25- to 0.5-mile south of the JSA. Approximately 0.6-mile west of the California aqueduct Cantua Creek enters the JSA buffer area approximately 200-feet south of the gen-tie line corridor and runs along the south side of West Harlan Avenue for approximately 0.25 mile, then terminates where it sinks into the Valley floor. Cantua Creek within the JSA is channelized between levees. The stream has OHWM indicators and riparian vegetation is present (see Appendix Q-9, Photos 1-5). The creek is considered potentially jurisdictional to RWQCB and CDFW as a streambed and a water of the State. Because Cantua Creek is isolated, lacking connection to any traditionally navigable waters or their tributaries, the creek is considered non-jurisdictional to the USACE.

4.3.2 BESS

No potentially jurisdictional aquatic resources were identified within the vicinity of the Options 1 and 2 BESS component locations.

4.3.3 Green Hydrogen Facility

No potentially jurisdictional aquatic resources were identified within the vicinity of the Option 1, Option 2, or Alternate locations. The Alternate green hydrogen component location is less than a mile, but more than 250 feet north of Cantua Creek.

4.3.4 Utility Switchyard

Four ephemeral swales (ES-1 through ES-4) and impoundments of two of the swales (Impoundment 1 and 2) are present west of the utility switchyard location, within the buffer area of the JSA but more than 250 feet from the site footprint. The swales are natural features formed in the draws of the hillsides and are considered potentially jurisdictional to RWQCB and CDFW as waters of the State. Because the impoundments are manmade and used for stock watering they do not meet the SWRCB Procedures' definition of waters of the State under Sect II.3.d.v. Stock ponds are part of agricultural operations and are regularly maintained. Therefore, the impoundments are considered RWQCB and CDFW non-jurisdictional. Ephemeral features are not considered USACE jurisdictional and furthermore none of these features have connectivity to traditional navigable waters or their tributaries. Thus, the features are also not federally jurisdictional. The utility switchyard location is less than a mile, but more than 250 feet north of Cantua Creek.

4.4 Wildlife Movement

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Habitats within a linkage are not necessarily the same as those being linked. Rather, the linkage needs only contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species during periods of movement among areas of suitable habitat. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending on the species, a linkage may require specific minimum physical characteristics (such as rock outcroppings, vernal pools, specific vegetation cover, etc.) to function as an effective wildlife corridor, and allow those species to traverse the linkage. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a relatively short period of time.

The CDFW BIOS website (CDFW 2023c) and the California Essential Habitat Connectivity Project: A Strategy for Conserving Connected California (Spencer et al. 2010) were reviewed for wildlife movement information. The BSA is not located within an identified wildlife movement corridor or linkage (CDFW 2023c, Spencer et al. 2010). The BSA does not contain any documented wildlife movement corridors. However, a California Essential Connectivity Area and Natural Landscape Block occurs adjacent to the western boundary of the BSA within the Panoche Hills (CDFW 2023c). Generally, habitat within the Panoche Hills consists of valley and foothill grassland and differs greatly from the agricultural land uses of the valley floor within the BSA where the Project site is located. None of the Project component locations contain identified wildlife corridors or habitat linkages for wildlife movement. The overall Project site and surrounding lands do not contain any natural landscape blocks and are unlikely to function as local or regional wildlife corridors.

4.5 Resources Protected by Local Policies and Ordinances

Fresno County General Plan Policy OS-A.18 requires that natural watercourses be integrated into new development and the buffer areas between waterways and urban development be provided. None of the Project component locations contain any natural watercourses; therefore, resources protected by local policies and ordinances are not present within the Project component locations.

4.6 Habitat Conservation Plans

There are no local, regional, or state conservation planning areas located within the BSA; therefore, local, regional, or state conservation planning areas are not present within any Project component locations.

5 Impact Analysis and Recommended Measures

Implementation of project construction (including site preparation), operation (including maintenance), and closure have the potential to result in direct and indirect impacts to sensitive biological resources. The following sections provide an analysis of potential impacts to biological resources using the threshold criteria specified in the CEQA Environmental Checklist (Appendix G of the *CEQA Guidelines*) and include recommendations for mitigation measures that would reduce impacts to a less-than-significant level.

5.1 Special-Status Species Impact Evaluations

The Project would have a significant impact on biological special-status species if it would:

a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.*

5.1.1 Special-Status Plant Species

Lost Hills Crownscale

Lost Hills crownscale is not expected to occur within any of the Project component locations closest to suitable grassland habitat for this species due to the high levels of disturbance in the utility switchyard location and lack of suitable habitat in the alternate green hydrogen component location.

Direct Impacts

No direct impacts are expected for Lost Hills crownscale as the species is not expected to occur within the Project component locations during construction, operation or closure.

Indirect Impacts

No indirect impacts are expected for Lost Hills crownscale as the species is not expected to occur within the Project component locations during construction, operation or closure.

5.1.2 Special-Status Wildlife Species

San Joaquin Coachwhip

There is a low potential for San Joaquin coachwhip to occur within the utility switchyard location. Burrows in the utility switchyard location could provide refugia for this species, but other cover is limited.

Direct Impacts

Direct impacts to San Joaquin coachwhip during construction, operation or closure could include injury or death as a result of individuals being crushed or buried by project vehicles, equipment, or displaced soil, entrapment of individuals in excavation areas, accidental destruction of active burrows by construction vehicles or equipment, or disturbance of individuals by construction-related noise and vibration. Direct impacts to San Joaquin coachwhip could be considered significant under CEQA.

Indirect Impacts

Potential indirect impacts to San Joaquin coachwhip during construction, operation or closure could include the introduction or spread of invasive plant species or fugitive dust that could degrade foraging habitat or refugia. Human activities and food waste may also pose threats by attracting opportunistic predators such as ravens, coyotes, and feral dogs to construction work areas. Indirect impacts to San Joaquin coachwhip could be considered significant under CEQA.

Recommended Measures

Direct and indirect impacts to San Joaquin coachwhip would be reduced to less than significant through implementation of measure BIO-1, BIO-2, and BIO-3 as presented in Section 5.1.2.2.

Burrowing Owl

Burrowing owls are considered present within the BSA and could potentially nest or forage within all Project component locations.

Direct Impacts

If burrowing owls are present in disturbance areas during construction, maintenance or closure activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with project vehicles or equipment; destruction of occupied burrows and/or active nest sites; and disturbance from increased vehicle traffic, noise at work sites, and human presence that could result in an interruption of normal behaviors or nest abandonment. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation clearing or ground disturbance. Direct Impacts to burrowing owls would be considered significant under CEQA.

Indirect Impacts

The introduction or spread of invasive plants, fugitive dust, erosion, sedimentation, and the runoff of hazardous materials during construction, maintenance or closure could indirectly impact burrowing owl by decreasing habitat value. In addition, soil compaction resulting from construction activities may impede burrow creation by California ground squirrels. Indirect Impacts to burrowing owls would be considered significant under CEQA.

Recommended Measures

Direct impacts to burrowing owls would be avoided and minimized through implementation of measures BIO-1, BIO-3, and BIO-5 as presented in Section 5.1.2.2. Implementation of measure BIO-2, which requires limiting the spread of weeds and maintaining work areas free of trash or pets would avoid and minimize indirect impacts to burrowing owl. Implementation of measure BIO-9,

which maintains foraging habitat and prey base for Swainson's hawk through the implementation of a Vegetation Management Plan would also result in the preservation of burrowing owl habitat. With the implementation of these measures, impacts to burrowing owl would be reduced to less than significant.

Swainson's Hawk

Five active Swainson's hawk nests have been recorded in the BSA (Figure 5a through Figure 5e), and the BSA supports approximately 30 suitable nest trees within the solar facility location. The species also has the potential to nest within 0.5 mile of all Project component locations. All Project component locations in the BSA contain suitable foraging habitat, except the utility switchyard and portions of the gen-tie corridor that contain habitat not suitable for foraging.

Direct Impacts

Potential direct impacts to Swainson's hawk include disturbance or human activity during construction, maintenance or closure that results in nest abandonment or failure, or if an individual is struck or otherwise injured or killed by Project vehicles or equipment. Temporary direct impacts would result from the loss of foraging habitat during construction. Permanent loss of foraging habitat would result from development of Project infrastructure including buildings, facilities, and solar panels. A total of approximately 4,818 acres of moderate quality foraging habitat would be unavailable at completion of Project construction (SBC 2023). However, these direct impacts to foraging habitat would be considered less than significant based on the results of a foraging habitat analysis conducted by SBC (2023).

The SBC analysis identified 41 active Swainson's hawk nests within a study area defined by the Project site and a 10-mile buffer around the Project site (Swainson's hawk study area), and approximately 205,100 acres of suitable foraging habitat within the Swainson's hawk study area (approximately 55 percent of the study area). Accounting for typical home ranges and home range overlaps, those hawks were estimated to required approximately 106,850 acres of habitat to meet their foraging needs, with an estimated 98,250 acres of surplus foraging habitat available within the Swainson's hawk study area. Previous studies (summarized in Estep 2017) recommend a significance threshold that specifies if more than 30 percent of the surplus habitat is removed, the loss of Swainson's hawk foraging habitat is considered significant. As such, up to approximately 29,500 acres of foraging habitat could be impacted (i.e., 30 percent of the available 98,250 acres) before exceeding that 30 percent threshold. The Project would impact up to 4,818 acres of foraging habitat, substantially less than the 29,500 acres of surplus habitat that would constitute a significant impact; therefore, project-level direct impacts to Swainson's hawk foraging habitat would be less than significant (SBC 2023; Appendix Q-8).

Indirect Impacts

The introduction or spread of invasive plants, fugitive dust, erosion, sedimentation, and the runoff of hazardous materials during construction, maintenance or closure could indirectly impact foraging habitat for Swainson's hawk. The Project would impact up to 4,800 acres of foraging habitat, substantially less than the 29,500 acres of surplus habitat that would constitute a significant impact; therefore, project-level indirect impacts to Swainson's hawk foraging habitat would be less than significant (SBC 2023; Appendix Q-7).

Recommended Measures

Direct impacts to nesting Swainson's hawk would be avoided and minimized through implementation of measures BIO-1, BIO-7, BIO-8, and BIO-9 as presented in Section 5.1.2.2. Potential impacts to foraging habitat are considered less than significant without mitigation.

Golden Eagle

The BSA is outside the nesting range of golden eagle. One golden eagle was observed flying over the BSA (Figure 5a through Figure 5e). All Project component locations in the BSA contain suitable foraging habitat for golden eagle; the utility switchyard location provides low-quality foraging habitat.

Direct Impacts

Golden eagles would not be expected to rely on the Project component locations for breeding or wintering habitat, and their occurrence at the Project site would be incidental during migration or dispersal. Loss of foraging habitat would not jeopardize an individual's survival and it would be able to avoid direct impacts during construction activity. The construction, operation, and closure of the project would not result in significant impacts to golden eagle.

Indirect Impacts

No indirect impacts are expected for golden eagle from construction, operation, or closure of the Project as the species is not expected to substantially rely on the Project component locations for nesting or wintering habitat.

White-tailed Kite and Northern Harrier

White-tailed kite has a low potential to nest in suitable trees in the BSA and within 0.5 mile of the solar facility, Options 1 and 2 step-up substation, and gen-tie line corridor component locations; the Options 1 and 2 BESS component locations; and the Options 1 and 2 green hydrogen component and alternate site locations. No nesting kites were documented during the Swainson's hawk nest surveys conducted at the Project site and within a 10-mile radius of the site.

Northern harrier is not expected to nest within any Project component locations, including the alternate green hydrogen component location. All Project component locations contain suitable foraging habitat for both species; however, there is no evidence that a potential reduction in the quality of a comparatively small amount of foraging habitat within the context of an abundance of foraging habitat within the southern San Joaquin Valley would jeopardize a local or regional population of white-tailed kite, and thus, would not be considered significant under CEQA. Therefore, impacts would be less than significant..

Direct Impacts

Direct impacts to white-tailed kite include potential nest abandonment or failure as a result of construction noise and activity during Project construction, maintenance, or closure, or from the removal or trimming of nest trees during any of these project phases.

Direct impacts to northern harriers that may forage in or migrate through the BSA are not expected, as these non-nesting individuals would be able to avoid any sources of disturbance during construction, operation, or closure. White-tailed kite and northern harrier may be directly impacted by loss or degradation of foraging habitat; however, the loss of foraging habitat would not be

expected to jeopardize a local or regional population and would not be considered significant under CEQA, and therefore, impacts would be less than significant.

Indirect Impacts

The introduction or spread of invasive plants, fugitive dust, erosion, sedimentation, and the runoff of hazardous materials from Project construction, maintenance, or closure could indirectly impact foraging habitat for these species; however, the loss of foraging habitat would not be expected to jeopardize a local or regional population and would not be considered significant under CEQA and therefore, impacts would be less than significant.

Recommended Measures

Direct impacts to white-tailed kite would be avoided and minimized through implementation of measures BIO-1, BIO-7, and BIO-8 as presented in Section 5.1.2.2. With the implementation of these measures, impacts to white-tailed kite would be less than significant.

California Condor

The federally and state endangered California condor has a low potential to move through or forage in the BSA, where it may be subject to impacts. Nesting California condors would not be impacted by the Project as no nesting habitat is present in the BSA.

Direct Impacts

California condors would be directly impacted in the unlikely event that an individual occurs in the Project site and is struck or otherwise injured by Project vehicles or equipment during construction, operation, or closure of the Project. The potential for impacts to individuals may be increased by carrion, construction debris, or micro-trash that attracts condors to work areas. Direct impacts to condor would be potentially significant.

Indirect Impacts

There is no evidence that the Project site, or agricultural crop lands in the Central Valley function as important foraging habitat for California condor. No indirect impacts to condor are expected during construction, operation, or closure of the Project.

Recommended Measures

Implementation of measure BIO-2, which includes removal of carrion from the Project site prior to construction and maintaining work areas free of trash would avoid attracting California condors to the Project area. With the implementation of this measure, impacts to California condor would be less than significant.

Ferruginous Hawk, Mountain Plover, and Oregon Vesper Sparrow

The BSA is outside the breeding range of the ferruginous hawk, mountain plover, and Oregon vesper sparrow. All Project component locations contain suitable foraging habitat for these species, except the utility switchyard location.

Direct Impacts

Direct impacts to ferruginous hawk, mountain plover, and Oregon vesper sparrow that may forage in Project work areas are not expected, as these non-nesting individuals would be able to avoid any sources of disturbance. These species may be directly impacted by loss or degradation of foraging habitat resulting from project construction, but those impacts would be reduced to less than significant with the habitat restoration and management to be conducted through the implementation of measure BIO-9.

Indirect Impacts

Project construction activities that introduce invasive plants, fugitive dust, erosion, and runoff during construction, operation, or closure could potentially degrade the quality of foraging habitat for ferruginous hawk, mountain plover, and Oregon vesper sparrow, but those impacts would be reduced to less than significant with the habitat restoration and management to be conducted through the implementation of measure BIO-9.

Recommended Measures

Direct impacts to ferruginous hawk, mountain plover, and Oregon vesper sparrow would be avoided and minimized through implementation of measures BIO-1, BIO-7, and BIO-8. Direct and indirect impacts to foraging habitat would be avoided or minimized by BIO-2, which implements best management practices such as limiting the spread of weeds. With the implementation of these measures, impacts to ferruginous hawk, mountain plover, and Oregon vesper sparrow would be less than significant.

Tricolored Blackbird, California Horned Lark, Prairie Falcon, Loggerhead Shrike, Yellow Warbler, and Yellow-Headed Blackbird

Tricolored blackbird, loggerhead shrike, and yellow warbler are not expected to nest in the BSA due to the absence of sufficient suitable tall, dense vegetation or densely covered shrubs or low trees. The BSA also lacks suitable cliffs and bluffs for nesting prairie falcon. Tricolored blackbird has a low potential to forage within a few kilometers of known and potential roost sites, including the solar facility, Options 1 and 2 step-up substation and the eastern and western ends of the gen-tie line corridor component locations; the Options 1 and 2 BESS component locations; and the Options 1 and 2 green hydrogen component, and alternate site locations. Trees and shrubs within the solar facility provide suitable foraging habitat for yellow warbler; all Project component locations in the BSA contain suitable foraging habitat for prairie falcon and loggerhead shrike.

Yellow-headed blackbird has a moderate potential to nest in vegetation adjacent to a freshwater wetland in the BSA within the solar facility location, and a moderate potential to forage elsewhere within the solar facility location. Open areas and agricultural fields for foraging California horned lark are present in all Project components. California horned lark could potentially nest in open areas that are undisturbed by agricultural activities within the solar facility, Options 1 and 2 step-up substation, Option 1 and 2 BESS, and the Options 1 and 2 and alternate green hydrogen component locations.

Direct Impacts

Direct impacts to tricolored blackbirds, prairie falcons, loggerhead shrikes, or yellow warblers that may forage in Project work areas are not expected, as these non-nesting individuals would be able

to avoid any sources of disturbance. Potential direct impacts to California horned lark and yellow-headed blackbird may include the destruction of nests during construction, maintenance, or closure as a result of vegetation clearing and reduced nesting success due to disturbance from Project activities. Direct impacts would be considered significant under CEQA.

Indirect Impacts

The nesting habitat for California horned lark and yellow-headed blackbird may be subject to indirect impacts from invasive plants, fugitive dust, erosion, and runoff during construction, operation, or closure. Project activities may potentially degrade the quality of foraging habitat for California horned lark and yellow-headed blackbird, tricolored blackbird, prairie falcon, loggerhead shrike, and yellow warbler, but those impacts would be reduced to less than significant with the habitat restoration and management to be conducted through the implementation of measure BIO-9.

Recommended Measures

Direct and indirect impacts to California horned lark, tricolored blackbird, yellow-headed blackbird, prairie falcon, loggerhead shrike, and yellow warbler would be avoided and minimized through implementation of measure BIO-1, which includes a worker environmental awareness training and education program, measure BIO-7, which includes pre-construction surveys for nesting birds and raptors, and measure BIO-8, which requires establishment of avoidance buffers around active nest and monitoring until the nest is no longer active. Direct and indirect impacts to foraging habitat would be avoided or minimized by BIO-2, which requires implementation of best management practices such as limiting the spread of weeds. With the implementation of these measures, impacts to California horned lark, yellow-headed blackbird, tricolored blackbird, prairie falcon, loggerhead shrike, and yellow warbler would be less than significant.

American Badger

American badger is known to occur within the solar facility location (Figure 5a through Figure 5e) and could potentially occur in all other Project component locations in the BSA where prey species are present.

Direct Impacts

If American badgers are present in disturbance areas or on access roads during construction maintenance or closure, there is potential for direct impacts including injury or death resulting from vehicle collision, damage or destruction of occupied burrows, disturbance from construction noise/vibration, entrapment of individuals in excavation areas, and loss or degradation of foraging habitat. Pets (i.e., dogs) brought to work areas may harass or kill American badgers. Direct impacts may occur if disturbance at maternity dens resulting from construction noise/vibration or human presence negatively affects kit-rearing. Direct impacts to American badger would be considered significant under CEQA.

Indirect Impacts

American badgers may be indirectly impacted if the Project disrupts their movement, but such impacts would be temporary and minor. Human-caused food subsidies may attract badgers to disturbance areas during construction, operation, or closure. Dogs in work areas may spread canine distemper to American badger populations. These species may be indirectly impacted by impacts to

their habitat including the spread of invasive plants, fugitive dust, erosion, sedimentation, and runoff of hazardous materials. Additionally, soil compaction in work areas may reduce habitat for prey species, but those impacts would be reduced to less than significant with the habitat restoration and management to be conducted through the implementation of measure BIO-9.

Recommended Measures

Direct impacts to American badger would be avoided and minimized through implementation of measures BIO-1, BIO-3, and BIO-6. Implementation of measure BIO-2, which requires implementation of best management practices such as limiting the spread of weeds and maintaining work areas free of trash or pets; and BIO-9, which maintains foraging habitat and prey base for Swainson's hawk through the implementation of a Vegetation Management Plan, would also benefit American badger.

With the implementation of the measures listed above, direct impacts to American badger would be less than significant.

San Joaquin Kit Fox

San Joaquin kit fox is not expected to occur within any of the Project component locations due to the lack of suitable habitat; however, San Joaquin kit fox may disperse through or forage within moderately suitable habitat in the utility switchyard location and in the portion of the gen-tie line corridor adjacent to the utility switchyard.

Direct Impacts

If San Joaquin kit foxes are present in disturbance areas or on access roads during construction, there is potential for direct impacts including injury or death resulting from vehicle collision or entrapment of individuals in excavation areas. Direct impacts to San Joaquin kit fox would be considered significant under CEQA.

Indirect Impacts

Human-caused food and water subsidies may attract San Joaquin kit foxes to disturbance areas during Project construction, putting individuals at risk of direct impacts. Because the Project site is not occupied and does not provide suitable habitat for San Joaquin kit fox, no other indirect impacts would be expected.

Recommended Measures

Direct impacts to San Joaquin kit fox would be avoided and minimized through implementation of measures BIO- 1, BIO-2, BIO-3, and BIO-4. With the implementation of these measures, direct impacts to San Joaquin kit fox would be less than significant.

Birds Protected by the CFGC and MBTA

Common bird species and their nests were observed throughout the BSA and vicinity (Figure 5a through Figure 5e), including many species that occur as residents and breed in the Central Valley. Native birds protected by the CFGC and the MBTA could potentially nest in all Project areas within the BSA. Construction activity has the potential to directly impact nesting birds through the destruction of nests during vegetation clearing and reduced nesting success due to disturbance from Project activities; or indirectly through impacts to nesting habitat or degradation of foraging habitat

from invasive plants, fugitive dust, erosion, and runoff. Impacts to nesting birds protected under the CFGC and MBTA would be reduced to a less-than-significant level through implementation of measure BIO-7, which includes preconstruction nesting bird surveys and protective nest buffers, and measure BIO-8, which includes establishment of nest buffers. Indirect impacts would be reduced to a less-than-significant level by implementation of BIO-2, which requires implementation of best management practices such as limiting the spread of weeds.

5.1.2.1 Avoidance and Minimization Measures for Special-Status Animal Species

A summary of direct and indirect impacts to each special-status animal species within each Project component is summarized below, followed by a list of measures to avoid, minimize, or mitigate impacts to less-than-significant levels.

Solar Facility, Step-Up Substation, and Gen-Tie

Direct and indirect impacts described in Section 5.1.2 would potentially apply to the solar facility, Options 1 and 2 step-up substation, and gen-tie line corridor component locations for tricolored blackbird, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, northern harrier, white-tailed kite, California condor, California horned lark, prairie falcon, yellow-headed blackbird, loggerhead shrike, Oregon vesper sparrow, yellow warbler, and American badger.

In the gen-tie line corridor specifically, new poles and transmission lines could result in a risk of collisions, line strikes or electrocution to special-status and non-special-status migratory birds in the future. To avoid potential line strikes or electrocution to birds, the Project transmission facilities would be designed consistent with the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006) where feasible. Transmission facilities would also be evaluated for potential collision reduction devices in accordance with *Reducing Avian Collisions with Power Lines: The State of Art in 2012* (APLIC 2012). Design consistency with APLIC would reduce any collision or electrocution impacts to a less-than-significant level.

Measures required to reduce impacts to a less-than-significant level in these Project component locations include:

- BIO-1: worker environmental awareness training and education program
- BIO-2: construction best management practices
- BIO-3: preconstruction surveys for special-status species and construction monitoring where these species have potential to occur
- BIO-5: avoidance and passive relocation measures for burrowing owl
- BIO-6: avoidance and passive relocation measures for American badger
- BIO-7: preconstruction surveys for nesting birds and raptors
- BIO-8: establishment of avoidance buffers around active nests and monitoring until the nest is no longer active
- BIO-9: nest preservation, tree planting, and artificial nest installation for Swainson's hawks; implementation of a Vegetation Management Plan

BESS

Direct and indirect impacts described in Section 5.1.2 would potentially apply to the Options 1 and 2 BESS component locations for tricolored blackbird, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, northern harrier, white-tailed kite, California horned lark, prairie falcon, loggerhead shrike, Oregon vesper sparrow, yellow-headed blackbird, and American badger.

Measures required to reduce impacts to a less-than-significant level in these Project component locations include:

- BIO-1: worker environmental awareness training and education program
- BIO-2: construction best management practices
- BIO-3: preconstruction surveys for special-status species and construction monitoring where these species have potential to occur
- BIO-5: avoidance and passive relocation measures for burrowing owl
- BIO-6: avoidance and passive relocation measures for American badger
- BIO-7: preconstruction surveys for nesting birds and raptors
- BIO-8: establishment of avoidance buffers around active nests and monitoring until the nest is no longer active
- BIO-9: nest preservation, tree planting, and artificial nest installation for Swainson's hawks; implementation of a Vegetation Management Plan

Green Hydrogen Facility

Direct and indirect impacts described in Section 5.1.2 would potentially apply to the Options 1 and 2 green hydrogen component locations for tricolored blackbird, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, northern harrier, white-tailed kite, California condor, California horned lark, prairie falcon, loggerhead shrike, Oregon vesper sparrow, yellow-headed blackbird, and American badger.

Measures required to reduce impacts to a less-than-significant level in these Project component locations include:

- BIO-1: worker environmental awareness training and education program
- BIO-2: construction best management practices
- BIO-3: preconstruction surveys for special-status species and construction monitoring where these species have potential to occur
- BIO-5: avoidance and passive relocation measures for burrowing owl
- BIO-6: avoidance and passive relocation measures for American badger
- BIO-7: preconstruction surveys for nesting birds and raptors
- BIO-8: establishment of avoidance buffers around active nests and monitoring until the nest is no longer active
- BIO-9: nest preservation, tree planting, and artificial nest installation for Swainson's hawks; implementation of a Vegetation Management Plan

Direct and indirect impacts described in Section 5.1.2 would potentially apply to the alternate green hydrogen component location for tricolored blackbird, burrowing owl, ferruginous hawk, Swainson's

hawk, mountain plover, northern harrier, white-tailed kite, California horned lark, prairie falcon, loggerhead shrike, Oregon vesper sparrow, and American badger.

Measures required to reduce impacts to a less-than-significant level in these Project component locations include:

- BIO-1: worker environmental awareness training and education program
- BIO-2: construction best management practices
- BIO-3: preconstruction surveys for special-status species and construction monitoring where these species have potential to occur
- BIO-5: avoidance and passive relocation measures for burrowing owl
- BIO-6: avoidance and passive relocation measures for American badger
- BIO-7: preconstruction surveys for nesting birds and raptors
- BIO-8: establishment of avoidance buffers around active nests and monitoring until the nest is no longer active
- BIO-9: nest preservation, tree planting, and artificial nest installation for Swainson's hawks; implementation of a Vegetation Management Plan

Utility Switchyard

Direct and indirect impacts described in Section 5.1.2 to foraging habitat for prairie falcon would not be considered significant due to the availability of higher quality foraging habitat elsewhere in the BSA. Direct and indirect impacts to San Joaquin coachwhip, American badger and San Joaquin kit fox in the utility switchyard would be reduced to a less-than-significant level through implementation of the following measures:

- BIO-1: worker environmental awareness training and education program
- BIO-2: construction best management practices
- BIO-3: preconstruction surveys for special-status species and construction monitoring where these species have potential to occur
- BIO-4: avoidance measures for San Joaquin kit fox
- BIO-5: avoidance and passive relocation measures for burrowing owl
- BIO-6: avoidance and passive relocation measures for American badger

5.1.2.2 Avoidance and Minimization Measures

BIO-1 Construction Worker Environmental Awareness Training and Education Program

Prior to any activity on-site and for the duration of construction activities, all personnel at the Project area (including laydown areas and/or transmission routes) should attend a Worker Environmental Awareness Program (WEAP) developed and presented by the Qualified Biologist or authorized designee. New personnel should receive WEAP training on the first day of work and prior to commencing work on the site. Any employee responsible for the O&M or decommissioning of the Project facilities should also attend an O&M-specific WEAP training.

1. The program should include information on the life history of the San Joaquin kit fox, Swainson's hawk, burrowing owl, American badger, San Joaquin coachwhip, and nesting birds as well as other wildlife and plant species that may be encountered during construction activities.
2. The program should also discuss the legal protection status of each species, the definition of "take" under the Federal Endangered Species Act and California Endangered Species Act, measures the project proponent is implementing to protect the species, reporting requirements, specific measures that each worker should employ to avoid take of wildlife species, and penalties for violation of the Federal Endangered Species Act or California Endangered Species Act.
3. The program should include the contact information for the project biologist and on-site environmental compliance manager.
4. The program should provide information on how and where to bring injured animals for treatment in the case any animals are injured the Project area.
5. An acknowledgement form signed by each worker indicating that WEAP training has been completed should be kept on record.
6. A sticker should be placed on hard hats indicating that the worker has completed the WEAP training. Construction workers should not be permitted to operate equipment within the construction areas unless they have attended the WEAP training and are wearing hard hats with the required sticker.
7. A copy of the training transcript and/or training video, as well as a list of the names of all personnel who attended the WEAP training and copies of the signed acknowledgement forms will be made available upon agency request.

BIO-2 Construction Best Management Practices

The following best management practices will be implemented during construction:

- Designation of a 15 mile per hour speed limit in all construction areas.
- All vehicles and equipment should be parked on pavement, existing roads, and previously disturbed areas, and clearing of vegetation for vehicle access should be avoided to the greatest extent feasible.
- The number of access routes, number and size of staging areas, and the total area of the activity should be limited to the minimum necessary to achieve the goal of the project.
- Designation of equipment washout and fueling areas to be located within the limits of grading at a minimum of 100 feet from any sensitive resources as identified by a Qualified Biologist. Washout areas should be designed to fully contain polluted water and materials for subsequent removal from the site.
- Drip pans should be placed under all stationary vehicles and mechanical equipment that have leaking or discharging lubricants or other fluid.
- All carrion should be removed from the Project site prior to and during construction.
- All trash, including carrion, should be placed in sealed containers and should be removed from the project site a minimum of once per week.
- No pets are permitted on the Project site during construction.

BIO-3 Preconstruction Surveys for Special-Status Species

Preconstruction surveys for burrowing species should be conducted by a Qualified Biologist for the presence of San Joaquin kit fox, American badger, and burrowing owl prior to commencement of construction activities in all areas with potential to support these species. This survey should be conducted no more than 30 days prior to ground disturbing activities without prior agency approval. The surveys should be conducted in areas of suitable habitat for each species. Surveys should conform to USFWS guidelines for San Joaquin kit fox, CDFW guidelines for burrowing owl, and to industry standards for American badger.

Where special-status species habitat (e.g., burrows or nest trees and vegetation) are known to occur and there is a potential for significant impacts, Qualified Biologist will monitor construction activities to ensure that impacts to special-status species are avoided and minimized.

BIO-4 Measures for San Joaquin Kit Fox

In areas of the Project site where San Joaquin kit fox potentially occur (the utility switchyard location), the following measures will be implemented by a Qualified Biologist:

- Pre-construction surveys for San Joaquin kit fox no more than 30 days prior to ground disturbance
- Construction activity monitoring
  - San Joaquin kit fox dens are not expected to occur in project work areas. If San Joaquin kit fox occurs in the Project site, work within 500 feet of the animal will be halted until the animal leaves the area, as determined by the Qualified Biologist.

BIO-5 Measures for Burrowing Owl

If suitable burrows for burrowing owls are found during preconstruction surveys on the Project site; burrowing owl occupancy shall be determined through up to three additional focused surveys on potential burrows during the morning and/or evening survey windows as defined in the *Staff Report on Burrowing Owl Mitigation* (Appendix B in CDFG 2012). If the burrows are determined to be unoccupied, they shall be hand excavated by a Qualified Biologist in the same manner as described under B-1(g) in CDFG (2012). If occupied burrowing owl burrows are confirmed prior to construction, the avoidance measures described below shall be implemented.

Occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a Qualified Biologist verifies, through noninvasive methods, that either (1) the birds have not begun egg-laying and incubation, (2) a previously active nest has failed and re-nesting is highly unlikely, or (3) all juveniles from the occupied burrow are foraging independently and capable of independent survival. Owls present after February 1 shall be assumed to be nesting unless evidence indicates otherwise. Nest-protection buffers described below shall remain in effect until August 31 or, based upon monitoring evidence, until the nest has failed, or all juvenile owls are foraging independently as determined by a Qualified Biologist.

Site-specific, no-disturbance buffer zones shall be established and maintained between Project activities and occupied burrows, using the distances recommended in the CDFW guidelines (CDFG 2012). Typical avoidance buffer distances for burrowing owl range from 100 meters (330 feet) to 250 meters (825 feet) depending on project activity, line of sight and local topography, during the breeding season (February 1 to August 31). During the non-breeding (winter) season (September 1 to January 31), typical avoidance buffers range from 50 meters (165 feet) to 100 meters (330 feet)

from the burrow. Depending on the level of disturbance, a smaller buffer may be established in consultation with CDFW.

The appropriateness of using reduced buffer distances or burrow-specific buffer distances shall be established on a case-by-case basis by a Qualified Biologist who may consult with CDFW, and shall depend on existing conditions (e.g., vegetation/topographic screening and current disturbance regimes). If necessary, buffer distances shall be carefully reassessed and relaxed or modified, based on future development plans (e.g., increased or intensified construction activities), by a Qualified Biologist who may consult with CDFW. The buffer zones shall be clearly delineated by highly visible orange construction fencing, which shall be maintained in good condition through construction of project or until construction activities are no longer occurring in the vicinity of the burrow.

If burrowing owl burrow avoidance is infeasible during the non-breeding season or during the breeding season (February 1 through August 31) where burrows can be shown as conclusively not an active nesting burrow, a Qualified Biologist may passively relocate burrowing owls found within construction areas. Prior to passively relocating burrowing owls, a Burrowing Owl Exclusion Plan shall be prepared by a Qualified Biologist in accordance with Appendix Q-5 of the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).

The biologist shall accomplish such relocations using one-way burrow doors installed and left in place for at least three nights so owls exiting their burrows will not be able to re-enter. Then, immediately before the start of construction activities, the biologists shall remove all doors and excavate the burrows to ensure that no animals are present in the burrow. The excavated burrows shall then be backfilled. To prevent evicted owls from occupying other burrows in the impact area, the biologist shall, before eviction occurs, (1) install one-way doors and backfill all potentially suitable burrows within the impact area, and (2) install one-way doors in all suitable burrows located within approximately 50 feet of the active burrow, then remove them once the displaced owls have settled elsewhere. When temporary or permanent burrow-exclusion methods are implemented, the following steps shall be taken:

Prior to excavation, a Qualified Biologist shall verify that evicted owls have access to multiple, unoccupied, alternative burrows, located nearby (within 250 feet) and outside of the projected disturbance zone. If no suitable alternative natural burrows are available for the owls, then, for each owl that is evicted, two artificial burrows shall be installed in suitable nearby habitat areas, per the *Users Guide to Installation of Artificial Burrows for Burrowing Owls* (Johnson et al. 2010) referenced in (CDFG 2012). The artificial burrow design and installation shall be described in the Burrowing Owl Exclusion Plan per Appendix Q-5 of the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).

Passive relocation of burrowing owls shall be limited in areas adjacent to Project activities that have a sustained or low-level disturbance regime; this approach shall allow burrowing owls that are tolerant of Project activities to occupy quality, suitable nesting and refuge burrows. The use of passive relocation techniques in a given area shall be determined by a Qualified Biologist based on existing and future conditions (e.g., time of year, vegetation/topographic screening, and disturbance regimes).

BIO-6 Measures for American Badger

- Preconstruction surveys for American badger should be conducted by a Qualified Biologist no more than 30 days prior to ground disturbance.

- If potential American badger dens are observed and avoidance is feasible, buffer distances of 50 feet for occupied dens and 250-foot, no-disturbance buffers for natal dens should be established by the Qualified Biologist prior to construction activities.
- If avoidance of the potential American badger dens is not feasible, the following measures are recommended to minimize potential adverse effects to the American badger:
  - If a Qualified Biologist determines that potential dens are inactive, the biologist should excavate these dens by hand with a shovel and collapse them to prevent American badgers from re-using them during construction.
  - If the Qualified Biologist determines that potential dens may be active, biologist should conduct remote camera monitoring of the burrow for a period of three consecutive days to confirm occupancy status. If the Qualified Biologist determines that a burrow is an active natal burrow, avoidance buffers shall be established to demarcate no-work areas that should be maintained until the burrow is no longer an active natal burrow. Burrows that are determined to be non-natal or are active outside of the breeding season should implement passive eviction procedures through the installation of one-way doors, and the use of remote camera monitoring to document no activity for 3 consecutive days. Dens that are determined to be unoccupied or have become inactive following passive eviction or at the end of breeding season should be hand-excavated with a shovel and collapsed to prevent re-use during construction.

BIO-7 Pre-construction Surveys for Nesting Birds and Common Raptors

If construction is scheduled to commence during the non-breeding season (September 1 to January 31), no pre-construction surveys or additional measures for nesting birds or other raptors would be required. Prior to ground disturbing and vegetation removal activities that are initiated during the breeding season (February 1 to August 31), a Qualified Wildlife Biologist should conduct pre-construction surveys of all potential nesting habitats within the Project area. The raptor survey should focus on potential nest sites (e.g., owl boxes, large trees, windrows, and shrubs) within 500 feet of the site for common raptors. Nesting bird surveys should be conducted within 14 days of the start of ground-disturbing or vegetation removal activities. Surveys need not be conducted for the entire Project area at one time and may be conducted in phases consistent with construction activity schedules. The surveying biologist must be qualified to determine the status and stage of nesting by migratory birds and all locally breeding raptor species without causing intrusive disturbance.

BIO-8 Nest Buffers

If active nests are found, a suitable no-work buffer should be established around active nests. Buffers should be determined by the Qualified Biologist and be established based on the species and nest location, to allow for known species' behavior and environmental factors (e.g., line of sight to nest) when establishing avoidance buffers. Standard buffers are typically 200-500 feet for common raptors and 30-50 feet for most common passerines. No access into buffer areas should be allowed until a Qualified Biologist has determined that the nestlings have fledged and are no longer reliant on the nest or the nest has become otherwise inactive (e.g., depredation). Encroachment into the buffer may occur at the discretion of a Qualified Biologist and with the appropriate biological monitoring; however, for State-listed species, CDFW should be consulted for approval of buffer encroachment or reduction.

BIO-9 Swainson's Hawk Conservation Strategy

The Swainson's Hawk Conservation Strategy developed for the Project (Rincon 2023a) includes the following measures to minimize impacts to Swainson's hawk:

During construction and some O&M activities, temporary disturbance buffers will be established to minimize disruption to nesting Swainson's hawk. Smaller disturbance buffers are proposed for those activities that are substantially similar to agricultural activity that has been occurring at the project site (e.g., site preparation work that would be similar to harvesting and disking). Alternatively, larger disturbance buffers are proposed for activity that differs substantially from that of agricultural activity (e.g., pile driving and other high-decibel construction activity). We have further categorized construction activity by the duration of time spent within proximity (as defined by the associated buffer) to a nest and assigned an intensity level (low, medium, heavy) to each definable construction activity The following outlines proposed disturbance buffers for each **intensity** at each **duration** for construction-related and O&M-related activity (see Table 3). Work completed outside the 0.25-mile buffer of an active nest would require no monitoring. All work conducted outside of reduced buffers, but within 0.25 miles of an active nest would be monitored by a Qualified Biologist to ensure work activity was not causing a disruption to Swainson's hawk normal behavior. Biological monitoring for any given activity can be reduced or discontinued once it can be demonstrated that the hawks are not disturbed by the activity.

Categories of Construction Activity Duration:

Short: Less than 2 hours

Medium: Less than 1 day

Long: 2 days to 2 weeks

Extended: More than 2 weeks

Categories of Construction Activity Intensity:

Heavy	Medium	Low
Aerial lift	Excavation (backhoe)	Geotech
Crane work	Grading (grader)	Hand work (shovel, rake, etc.)
Helicopter	Boring/drilling	Surveying
Pile driving	Clearing (mower/roller)	Staking
	Hauling (tractors, loaders, forklift)	Water truck
	Loaders (piles)	General travel (Trucks, trailers, UTV)
	Welding	
	Trenching	

Table 3 Temporary Construction Buffers (feet)

		Construction Activity Intensity		
		Low	**Moderate**	**Heavy**
Construction Activity Duration	Short	50’	100’	150’
	Medium	100’	250’	600’
	Long	150’	500’	1,000’
	Extended	250’	750’	1,320’

The conservation strategy will further minimize any impacts through the following conservation actions:

- Preservation of existing nest trees
- Temporary nest structure establishment
- Establishment of new nest trees
- Habitat restoration and promotion of prey species through implementation of a Vegetation Management Plan (Rincon 2023b)
- Pre- and Post Construction research program designed to evaluate habitat management practices and evaluate conservation strategy success criteria

5.2 Sensitive Natural Communities and Critical Habitat

The Project would have a significant effect on biological resources if it would:

b) Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

No sensitive natural communities or riparian habitat was recorded in the Project site. Therefore, there would be *no impact* from construction, operation or closure activities associated with any Project components and no mitigation is recommended.

5.3 Jurisdictional Waters and Wetlands

The Project would have a significant effect on biological resources if it would:

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

With the exception of the California Aqueduct, Cantua Creek, ephemeral swales ES-1 through ES-5, and Impoundments 1 and 2, all other aquatic resource features mapped within the JSA are artificial and used for agricultural purposes, meeting exemptions and exclusions laid out by the resource agencies.

None of the Project components include construction, operation or closure activities within the California Aqueduct or Cantua Creek, and the project has been designed to avoid all other potentially jurisdictional aquatic resources. Therefore, the Project would have *no impact* on jurisdictional waters and wetlands.

5.4 Wildlife Movement

The Project would have a significant impact on biological resources if it would:

d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.

No regional wildlife linkages or corridors are mapped within the BSA. The BSA is bordered to the north, east, and south by agriculture and to the west by the Ciervo Hills and Diablo Range. Local wildlife likely use the natural habitats in the Ciervo Hills to the west of the Project site and Cantua Creek south of the Project site for movement; however, none of the Project component locations overlap these areas and construction and operation of the Project would not create a significant barrier for wildlife movement therein. The Project site does not occur within a corridor that links between or among larger habitat areas on a regional basis and is not within any areas mapped as Essential Connectivity Areas by the California Essential Habitat Connectivity Project. Therefore, Project construction, operation and closure activities would not impact wildlife movement.

5.5 Resources Protected by Local Policies and Ordinances

The Project would have a significant impact on biological resources if it would:

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

Fresno County General Plan Policy OS-A.18 requires that natural watercourses be integrated into new development and the buffer areas between waterways and urban development be provided. None of the Project component locations contain any natural watercourses and the proposed Project is not “urban”; therefore, resources protected by local policies and ordinances are not present within the Project component locations and Project construction, operation and closure activities would not conflict with OS-A.18. Section E of the Fresno County General Plan Open Space and Conservation Element includes Goal OS-E: To help protect, restore, and enhance habitats in Fresno County that support fish and wildlife species so that populations are maintained at viable levels, and 18 applicable policies related to the preservation of natural vegetation communities, wildlife habitat, migration and wildlife corridors and the management of such habitat. The Project site does not support any natural vegetation communities and is devoid of suitable habitat for most species. Implementation of the APM BIO-1 would protect and enhance habitat for all special status species with potential to breed or forage within the Project site. As such, the Project would not conflict with Goal OS-E, its policies or any local policies or ordinances.

5.6 Habitat Conservation Plans

The Project would have a significant impact on biological resources if it would:

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

The Project site is not located within any local, regional, or state conservation planning areas. Therefore, construction, operation and closure of Project components would not conflict with any

adopted HCP, NCCP, or other approved local, regional, or state HCPs. The Project would have no impact on HCPs.

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6 Limitations, Assumptions, and Use Reliance

This BRA has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The biological investigation is limited by the scope of work performed. Reconnaissance biological surveys for certain taxa may have been conducted as part of this assessment but may not have been performed during a particular blooming period, nesting period, or particular portion of the season when positive identification would be expected if present, and therefore, cannot be considered definitive unless protocol surveys were completed. The biological surveys are limited also by the environmental conditions present at the time of the surveys. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and will not be discovered in the future within the site. In particular, mobile wildlife species could occupy the site on a transient basis, or re-establish populations in the future. Our field studies were based on current industry practices, which change over time and may not be applicable in the future. No other guarantees or warranties, expressed or implied, are provided. The findings and opinions conveyed in this report are based on findings derived from site reconnaissance, jurisdictional areas, review of CNDDB RareFind5, and specified historical and literature sources. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

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Appendix Q-1

Regulatory Framework

Regulatory Framework

The following is a brief summary of the regulatory context under which biological resources are managed at the federal, state, and local levels. A number of federal and state statutes provide a regulatory structure that guides the protection of biological resources. Agencies with the responsibility for protection of biological resources within the Project site include the following:

- California Energy Commission (CEC)
- United States Army Corps of Engineers (USACE; wetlands and other waters of the United States)
- United States Fish and Wildlife Service (USFWS; federally listed species and migratory birds)
- National Marine Fisheries Service (NMFS; marine wildlife and anadromous fishes)
- Central Valley Regional Water Quality Control Board (RWQCB; waters of the State)
- California Department Fish and Wildlife (CDFW; riparian areas, streambeds, and lakes; state-listed species; nesting birds, marine resources)
- California Coastal Commission
- County of Fresno

California Energy Commission

The CEC has been authorized under Assembly Bill (AB) 205 (Chapter 61, 2022) to establish a new certification program for eligible non-fossil-fueled power plants and related facilities to optionally seek certification from the CEC, using emergency rulemaking authority provided by AB 205. Per the Notice of Approval of Emergency Regulatory Action for Opt-in Regulations Section 1877, Opt-In applications are required to include all the information specified by California Code of Regulations (CCR) Title 20 Division 2 Section 1704(a) Appendix B that is relevant to the Project. As per Appendix B (g) (2) of Title 20 CCR Division 2, this assessment must include:

(A) A regional overview and discussion of terrestrial and aquatic biological resources, with particular attention to sensitive biological resources within ten (10) miles of the project. Include a map at a scale of 1:100,000 (or other suitable scale) showing sensitive biological resource location(s) in relation to the project site and related facilities and any boundaries of a local Habitat Conservation Plan or similar open space land use plan or designation. Sensitive biological resources include the following:

  (i) species listed under state or federal Endangered Species Acts;

  (ii) resources defined in sections 1201(d) and (u) of Title 20 of the California Code of Regulations;

  (iii) species identified as state Fully Protected;

  (iv) species covered by Migratory Bird Treaty Act (MBTA);

  (v) species and habitats identified by local, state, and federal agencies as needing protection, including but not limited to those identified by the California Natural Diversity Database, or where applicable, in Local Coastal Programs or in relevant decisions of the California Coastal Commission; and

  (vi) fish and wildlife species that have commercial and/or recreational value.

(B) Include a list of the species actually observed and those with a potential to occur within 1 mile of the project site and 1,000 feet from the outer edge of linear facility corridors.

Maps or aerial photographs shall include the following:

(i) Detailed maps at a scale of 1:6,000 or color aerial photographs taken at a recommended scale of 1 inch equals 500 feet (1:6,000) with a 30 percent overlap that show the proposed project site and related facilities, biological resources including, but not limited to, those found during project-related field surveys and in records from the California Natural Diversity Database, and the associated areas where biological surveys were conducted. Label the biological resources and survey areas as well as the project facilities.

(ii) A depiction of the extent of the thermal plume at the surface of the water if cooling water is proposed to be discharged to a water source. Provide the location for the intake and discharge structures on an aerial photograph(s) or detailed maps. Water sources include, but are not limited to, waterways, lakes, impoundments, oceans, bays, rivers, and estuaries. 564.

(iii) An aerial photo or wetlands delineation maps at a scale of (1:2,400) showing any potential jurisdictional and non-jurisdictional wetlands delineated out to 250 feet from the edge of disturbance if wetlands occur within 250 feet of the project site and/or related facilities that would be included with the US Army Corps of Engineers Section 404 Permit application. For projects proposed to be located within the coastal zone, also provide aerial photographs or maps as described above that identify wetlands as defined by the Coastal Act.

(C) A discussion of the biological resources at the proposed project site and related facilities. Related facilities include, but are not limited to, laydown and parking areas, gas and water supply pipelines, transmission lines, and roads. The discussion shall address the distribution of vegetation community types, denning or nesting sites, population concentrations, migration corridors, breeding habitats, and other appropriate biological resources including the following:

(i) A list of all the species actually observed.

(ii) A list of sensitive species and habitats with a potential to occur (as defined in (A) above).

(iii) If cooling water is taken directly from or discharged to a surface water feature source, include a description of the intake structure, screens, water volume, intake velocity hydraulic zone field of influence, and the thermal plume dispersion area as depicted in response to B(ii) above. Describe the thermal plume size and dispersion under high and low tides, and in response to local currents and seasonal changes. Provide a discussion of the aquatic habitats, biological resources, and critical life stages found in these affected waters. For repower projects that anticipate no change in cooling water flow, this information shall be provided in the form of the most recent federal Clean Water Act 316(a) and (b) studies of entrainment and impingement impacts that has been completed within the last five (5) years. For new projects or repower projects proposing to use once-through cooling and anticipating an increase in cooling water flow, provide a complete impingement and entrainment analysis per guidance in (D)(ii), below.

(D) A description and results of all field studies and seasonal surveys used to provide biological baseline information about the project site and associated facilities. Include copies of the California Natural Diversity Database records and field survey forms completed by the applicant's biologist(s). Identify the date(s) the surveys were completed, methods used to

complete the surveys, and the name(s) and qualifications of the biologists conducting the surveys. Include:

(i) Current biological resources surveys conducted using appropriate field survey protocols during the appropriate season(s). State and federal agencies with jurisdiction shall be consulted for field survey protocol guidance prior to surveys if a protocol exists.

(ii) If cooling water is proposed to be taken directly from or discharged to a surface water feature source, seasonal aquatic resource studies and surveys shall be conducted. Aquatic resource survey data shall include, but is not limited to, fish trawls, ichthyoplankton and benthic sampling, and related temperature and water quality samples. For new projects or repower projects anticipating a change in cooling water flows, sampling protocols shall be provided to the Energy Commission staff for review and concurrence prior to the start of sampling. For repower projects not anticipating a change in cooling water flows, this information shall be provided in the form of the most recent federal Clean Water Act 316(b) impingement and entrainment impact study completed within five (5) years of the AFC filing date.

(iii) If the project or any related facilities could impact a jurisdictional or nonjurisdictional wetland, provide completed Army Corps of Engineers wetland delineation forms and/or determination of wetland status pursuant to Coastal Act requirements, name(s) and qualifications of biologist(s) completing the delineation, the results of the delineation and a table showing wetland acreage amounts to be impacted.

(E) Impacts discussion of the following:

(i) all impacts (direct, indirect, and cumulative) to biological resources from project site preparation, construction activities, plant operation, maintenance, and closure. Discussion shall also address sensitive species habitat impacts from cooling tower drift and air emissions.

(ii) facilities that propose to take water directly from, and/or discharge water to surface water features, daytime and nighttime impacts from the intake and discharge of water during operation, water velocity at the intake screen, the intake field of influence, impingement, entrainment, and thermal discharge. Provide a discussion of the extent of the thermal plume, effluent chemicals, oxygen saturation, intake pump operations, and the volume and rate of cooling water flow at the intake and discharge location.

(iii) Methods to control biofouling and chemical concentrations, and temperatures that are currently being discharged or will be discharged to receiving waters.

(F) following: A discussion of all feasible mitigation measures including, but not limited to the

(i) resources. All measures proposed to avoid and/or reduce adverse impacts to biological

(ii) All off-site habitat mitigation and habitat improvement or compensation, and an identification of contacts for compensation habitat and management.

(iii) Design features to better disperse or eliminate a thermal discharge.

(iv) All measures proposed to avoid or minimize adverse impacts of cooling water intake. This shall include a Best Technology Available (BTA) discussion. If BTA is not being proposed, the rationale for not selecting BTA must be provided. (v) Educational programs to enhance employee awareness during construction and operation to protect biological resources.

(G) A discussion of compliance and monitoring programs to ensure the effectiveness of impact avoidance and mitigation measures incorporated into the project.

(H) Submit copies of any preliminary correspondence between the project applicant and state and federal resource agencies regarding whether federal or state permits from other agencies such as the USFWS, the NMFS, the USACE, the California Department of Fish and Game, and the RWQCB will be required for the proposed project.

United States Army Corps of Engineers

The USACE is responsible for administering several federal programs related to ensuring the quality and navigability of the nation's waters.

Clean Water Act Section 404

Congress enacted the Clean Water Act (CWA) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 of the CWA authorizes the Secretary of the Army, acting through the USACE, to issue permits regulating the discharge of dredged or fill materials into the "navigable waters at specified disposal sites." Section 502 of the CWA further defines "navigable waters" as "waters of the United States, including the territorial seas."

"Waters of the United States" are broadly defined at 33 CFR Part 328.3 to include navigable waters, perennial and intermittent streams, lakes, rivers, ponds, as well as wetlands, marshes, and wet meadows. Specifically, the USACE's regulations define "waters of the United States" as follows, though some exceptions apply:

(1) Waters which are:

(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) The territorial seas; or

(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

(3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds, not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

The term "Adjacent" means "having a continuous surface connection" (33 CFR 328.3(c)(2)).

Authorization from with the USACE is required for any project that discharges dredge or fill into USACE jurisdictional waters of the U.S.

Waters of the U.S.

In summary, USACE and USEPA regulations define "waters of the United States" as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States;
5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
6. The territorial sea; or
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in items 1-6 above.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the USEPA.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the United States.

The lateral limits of USACE jurisdiction in non-tidal waters is defined by the "ordinary high-water mark" (OHWM) unless adjacent wetlands are present. The OHWM is a line on the shore or edge of a channel established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed upon the bank, shelving, changes in the character of soil, destruction of vegetation, or the presence of debris (33 CFR 328.3(e)). As such, waters are recognized in the field by the presence of a defined watercourse with appropriate physical and topographic features. If wetlands occur within, or adjacent to, waters of the United States, the lateral limits of USACE jurisdiction extend beyond the OHWM to the outer edge of the wetlands (33 CFR 328.4 (c)). The upstream limit of jurisdiction in the absence of adjacent wetlands is the point beyond which the OHWM is no longer perceptible (33 CFR 328.4; see also 51 FR 41217).

Wetlands

The USACE defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3). The USACE's delineation procedures identify wetlands in the field based

on indicators of three wetland parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. The following is a discussion of each of these parameters.

Hydrophytic Vegetation

Hydrophytic vegetation dominates areas where frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of their occurring in wetlands. More than fifty percent of the dominant plant species must have a wetland indicator status to meet the hydrophytic vegetation criterion. The USACE published the National Wetland Plant List (USACE 2018), which separates vascular plants into the following four basic categories based on plant species frequency of occurrence in wetlands:

- **Obligate Wetland (OBL).** Almost always occur in wetlands
- **Facultative Wetland (FACW).** Usually occur in wetlands, but occasionally found in non-wetlands
- **Facultative (FAC).** Occur in wetlands or non-wetlands
- **Facultative Upland (FACU).** Usually occur in non-wetlands, but may occur in wetlands
- **Obligate Upland (UPL).** Almost never occur in wetlands

The USACE considers OBL, FACW and FAC species to be indicators of wetlands. An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) fall within these categories. Any species not appearing on the USFWS's list is assumed to be an upland species, almost never occurring in wetlands. In addition, an area needs to contain at least 5 percent vegetative cover to be considered as a vegetated wetland.

Hydric Soils

Hydric soils are saturated or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions that favor the growth and regeneration of hydrophytic vegetation. Field indicators of wetland soils include observations of ponding, inundation, saturation, dark (low chroma) soil colors, bright mottles (concentrations of oxidized minerals such as iron), gleying (indicates reducing conditions by a blue-grey color), or accumulation of organic material. Additional supporting information includes documentation of soil as hydric or reference to wet conditions in the local soils survey, both of which must be verified in the field.

Wetland Hydrology

Wetland hydrology is inundation or soil saturation with a frequency and duration long enough to cause the development of hydric soils and plant communities dominated by hydrophytic vegetation. If direct observation of wetland hydrology is not possible (as in seasonal wetlands), or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by field indicators, such as water marks, drift lines, sediment deposits, or drainage patterns in wetlands.

Limitations on Jurisdiction Based on Sackett v. Environmental Protection Agency

On May 25, 2023, the Supreme Court issued its decision on the petition from the Sacketts, a family in Idaho that was subject to a compliance order from the USEPA for backfilling their lot near Priest Lake, which the USEPA claimed contained federally regulated wetlands. The wetlands in question were adjacent to a ditch that fed a creek that ultimately drained into Priest Lake, a navigable water body. The USEPA asserted that the Sacketts had violated the law by filling the wetlands on their property without a permit. The Court's decision addressed controversy over whether, and under what conditions, the CWA reaches navigable waters' tributaries or adjacent wetlands. The Supreme Court's decision in Sackett provides definitive guidance to the agencies in determining the limits of their CWA authority. Prioritizing a need for clarity and regulatory certainty, the Court set forth an interpretation of CWA jurisdiction that can be applied without the need for lengthy case-by-case evaluations. This interpretation will have the effect of reducing the CWA's geographic reach.

The Court decided:

- "Adjacent wetlands" are waters of the United States only if there is a continuous surface connection between the wetland and a navigable or relatively permanent water body, such that it is difficult to determine the boundary between the wetland and the water body. The opinion notes that "temporary interruptions to surface connection may sometimes occur because of phenomena like low tides or dry spells."
- The Significant Nexus Standard, introduced by the Court in prior decisions, is not mentioned in the CWA and should not be used. Additionally, the standard includes ecological factors whose use in determining jurisdiction is not supported by the statute.
- Although jurisdiction over tributaries was not addressed by the Court, current agency guidance relies upon the Significant Nexus Standard to establish jurisdiction over tributaries that flow infrequently. In disallowing the use of that standard the decision suggests that non-relatively permanent tributaries will be non-jurisdictional going forward, stating, "…the [CWA's] use of "waters" encompasses only those relatively permanent, standing or continuously flowing bodies of water forming geographical features that are described in ordinary parlance as streams, oceans, rivers, and lakes."

Rivers and Harbors Act Section 10

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the USACE for the construction of any structure in or over any navigable water of the United States. Structures or work outside the limits defined for navigable waters of the United States require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, re-channelization, or any other modification of a navigable water of the United States and applies to all structures and work. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (e.g., riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent obstacle or obstruction. It is important to note that Section 10 applies only to navigable waters, and thus does not apply to work in non-navigable wetlands or tributaries. In some cases, Section 10 authorization is issued by the USACE concurrently with CWA Section 404 authorization, such as when certain Nationwide Permits are used.

Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and nine RWQCBs have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code Section 13050(e)). These agencies also have responsibilities for administering portions of the CWA.

Clean Water Act Section 401

Section 401 of the CWA requires an applicant requesting a federal license or permit for an activity that may result in any discharge into navigable waters (such as a Section 404 Permit) to provide state certification that the proposed activity will not violate state and federal water quality standards. In California, CWA Section 401 Water Quality Certification (Section 401 Certification) is issued by the RWQCBs and by the SWRCB for multi-region projects. The process begins when an applicant requests a pre-application meeting with the RWQCB, waits no less than 30 days, and then submits an application to the RWQCB and informs the USACE (or the applicable agency from which a license or permit was requested) that an application has been submitted. The USACE will then determine a "reasonable period of time" for the RWQCB to act on the application; this is typically 60 days for routine projects and longer for complex projects but may not exceed one year. Under current regulations, once initiated, the reasonable period of time cannot be stopped or paused. When the period has elapsed, if the RWQCB has not either issued or denied the application for Section 401 Certification, the USACE may determine that Certification has been waived and issue the requested permit. If a Section 401 Certification is issued it may include binding conditions, imposed either through the Certification itself or through the requested federal license or permit.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and ground water and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act (California Water Code section 13000 et seq.), the policy of the State is as follows:

- The quality of all the waters of the State shall be protected.
- All activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason.
- The State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the state from degradation.

The Porter-Cologne Act established nine RWQCBs (based on watershed boundaries) and the SWRCB, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The SWRCB provides program guidance and oversight, allocates funds, and reviews RWQCB decisions. In addition, the SWRCB allocates rights to the use of surface water. The RWQCBs have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions. The SWRCB and RWQCBs have numerous nonpoint source related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

Section 13260 of the Porter-Cologne Act requires any person discharging or proposing to discharge waste that could affect the quality of waters of the State to file a Report of Waste Discharge with the appropriate RWQCB. The RWQCB may then authorize the discharge, subject to conditions, by issuing Waste Discharge Requirements (WDRs). The SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* establish a process for permitting for dredging and fill activities *(Procedures)*. The *Procedures* state that they are to be used in issuing CWA Section 401 Certifications and WDRs, and largely mirror the existing review requirements for CWA Section 404 Permits and Section 401 Certifications, incorporating most elements of the USEPA's *Section 404(b)(1) Guidelines*. Following issuance of the *Procedures*, the SWRCB produced a consolidated application form for dredge/fill discharges that can be used to obtain a CWA Section 401 Water Quality Certification, WDRs, or both.

Non-Wetland Waters of the State

The SWRCB and RWQCBs have not established regulations for field determinations of waters of the State except for wetlands currently. In many cases the RWQCBs interpret the limits of waters of the State to be bounded by the OHWM unless isolated conditions or ephemeral waters are present. However, in the absence of statewide guidance each RWQCB may interpret jurisdictional boundaries within their region and the SWRCB has encouraged applicants to confirm jurisdictional limits with their RWQCB before submitting applications. As determined by the RWQCB, waters of the State may include riparian areas or other locations outside the OHWM, leading to a larger jurisdictional area over a given water body compared to the USACE.

Wetland Waters of the State

Procedures for defining wetland waters of the State pursuant to the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* went into effect May 28, 2020. The SWRCB defines an area as wetland if, under normal circumstances:

(i) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both

(ii) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate

(iii) the area's vegetation is dominated by hydrophytes or the area lacks vegetation

The SWRCB's *Implementation Guidance for the Wetland Definition and Procedures for Discharges of Dredge and Fill Material to Waters of the State* (2020), states that waters of the United States and waters of the State should be delineated using the standard USACE delineation procedures, taking into consideration that the methods shall be modified only to allow for the fact that a lack of vegetation does not preclude an area from meeting the definition of a wetland.

United States Fish and Wildlife Service

The USFWS implements several laws protecting the nation's fish and wildlife resources, including the Endangered Species Act (ESA; 16 United States Code [USC] Sections 153 et seq.), the MBTA (16 USC Sections 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668).

Endangered Species Act

The USFWS and NMFS share responsibility for implementing the ESA. Generally, the USFWS implements the ESA for terrestrial and freshwater species, while the NMFS implements the ESA for marine and anadromous species. Projects that would result in "take" of any threatened or endangered wildlife species, or a threatened or endangered plant species if occurring on federal land, are required to obtain permits from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of the ESA, depending on the involvement by the federal government in funding, authorizing, or carrying out the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. "Take" under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of the ESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time.

Migratory Bird Treaty Act

The MBTA of 1918 implements four international conservation treaties that the United States entered into with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. It is intended to ensure the sustainability of populations of all protected migratory bird species. The law has been amended with the signing of each treaty, as well as when any of the treaties were amended, such as with Mexico in 1976 and Canada in 1995. The MBTA prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS.

The list of migratory bird species protected by the law, in regulations at 50 CFR Part 10.13, is primarily based on bird families and species included in the four international treaties. A migratory bird species is included on the list if it meets one or more of the following criteria:

1. It occurs in the United States or United States territories as the result of natural biological or ecological processes and is currently, or was previously listed as, a species or part of a family protected by one of the four international treaties or their amendments.
2. Revised taxonomy results in it being newly split from a species that was previously on the list, and the new species occurs in the United States or United States territories as the result of natural biological or ecological processes.
3. New evidence exists for its natural occurrence in the United States or United States territories resulting from natural distributional changes and the species occurs in a protected family.

In 2004, the Migratory Bird Treaty Reform Act limited the scope of the MBTA by stating the MBTA applies only to migratory bird species that are native to the United States or United States territories, and that a native migratory bird species is one that is present as a result of natural biological or ecological processes. The MBTRA requires the USFWS to publish a list of all nonnative, human-introduced bird species to which the MBTA does not apply, and an updated list was published in 2020. The 2020 update identifies species belonging to biological families referred to in treaties the MBTA implements but are not protected because their presence in the United States or United States territories is solely the result of intentional or unintentional human-assisted introductions.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits anyone, without a permit issued by the USFWS, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

"Disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

California Department of Fish and Wildlife

The CDFW derives its authority from the Fish and Game Code of California and administers several State laws protecting fish and wildlife resources and the habitats upon which they depend.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et. seq.) prohibits take of state-listed threatened or endangered. Take under CESA is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (Fish and Game Code Section 86). This definition does not prohibit indirect harm by way of habitat modification, except where such harm is the proximate cause of death of a listed species. Where incidental take would occur during construction or other lawful activities, CESA allows the CDFW to issue an Incidental Take Permit upon finding, among other requirements, that impacts to the species have been minimized and fully mitigated. Unlike the federal ESA, CESA's protections extend to candidate species during the period (typically 1 year) while the California Fish and Game Commission decides whether the species warrants CESA listing.

Native Plant Protection Act

The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (Fish and Game Code Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare, and regulates the take of listed plant species. Effective in 2015, CDFW promulgated regulations (14 CCR 786.9) under the authority of the NPPA, establishing that the CESA's permitting procedures would be applied to plants listed under the NPPA as "Rare."

Fully Protected Species Laws

The CDFW enforces Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code, which prohibits take of species designated as Fully Protected. Under Senate Bill 147, effective July 1, 2023, the CDFW is allowed to issue an Incidental Take Permit for Fully Protected species under CESA through December 31, 2033, or take can be authorized by a Natural Community Conservation Plan which is in place that authorizes take of the Fully Protected species.

Avian Protection Laws

California Fish and Game Code sections 3503, 3503.5, and 3513 describe unlawful take, possession, or destruction of native birds, nests, and eggs. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. Section 3513 makes it a state-level offense to take any bird in violation of the federal MBTA.

Protection of Lakes and Streambeds

California Fish and Game Code section 1602 states that it is unlawful for any person to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake" without first notifying the CDFW of that activity. Thereafter, if CDFW determines and informs the entity that the activity will not substantially adversely affect any existing fish or wildlife resources, the entity may commence the activity. If, however, CDFG determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity may be required to obtain from CDFW a Streambed Alteration Agreement (SAA), which will include reasonable measures necessary to protect the affected resource(s), before the entity may conduct the activity described in the notification. Upon receiving a complete Notification of Lake/Streambed Alteration, CDFW has 60 days to present the entity with a Draft SAA. Upon review of the Draft SAA by the applicant, any problematic terms are negotiated with CDFW, and a final SAA is executed.

The CDFW has not defined the term "stream" for the purposes of implementing its regulatory program under Section 1602, and the agency has not promulgated regulations directing how jurisdictional streambeds may be identified, or how their limits should be delineated. However, four relevant sources of information offer insight as to the appropriate limits of CDFW jurisdiction as discussed below.

- **The plain language of Section 1602 of the California Fish and Game Code** establishes the following general concepts:
  - References "river," "stream," and "lake"
  - References "natural flow"
  - References "bed," "bank," and "channel"
- **Applicable court decisions**, in particular *Rutherford v. State of California* (188 Cal App. 3d 1276 (1987), which interpreted Section 1602's use of "stream" to be as defined in common law. The Court indicated that a "stream" is commonly understood to:
  - Have a source and a terminus
  - Have banks and a channel
  - Convey flow at least periodically, but need not flow continuously and may at times appear outwardly dry

  - Represent the depression between the banks worn by the regular and usual flow of the water
  - Include the area between the opposing banks measured from the foot of the banks from the top of the water at its ordinary stage, including intervening sand bars
  - Include the land that is covered by the water in its ordinary low stage
  - Include lands below the OHWM

- **CDFW regulations** defining "stream" for other purposes, including sport fishing (14 CCR 1.72) and streambed alterations associated with cannabis production (14 CCR 722(c)(21)), which indicate that a stream:
  - Flows at least periodically or intermittently
  - Flows through a bed or channel having banks
  - Supports fish or aquatic life
  - Can be dry for a period of time
  - Includes watercourses where surface or subsurface flow supports or has supported riparian vegetation

- **Guidance documents**, including *A Field Guide to Lake and Streambed Alteration Agreements* (CDFG 1994) and *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (Brady and Vyverberg 2013), which suggest the following:
  - A stream may flow perennially or episodically.
  - A stream is defined by the course in which water currently flows, or has flowed during the historic hydrologic course regime (approximately the last 200 years).
  - Width of a stream course can reasonably be identified by physical or biological indicators.
  - A stream may have one or more channels (single thread vs. compound form).
  - Features such as braided channels, low-flow channels, active channels, banks associated with secondary channels, floodplains, islands, and stream-associated vegetation, are interconnected parts of the watercourse.
  - Canals, aqueducts, irrigation ditches, and other means of water conveyance can be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife.
  - Biologic components of a stream may include aquatic and riparian vegetation, all aquatic wildlife including fish, amphibians, reptiles, invertebrates, and terrestrial species which derive benefits from the stream system.
  - The lateral extent of a stream can be measured in different ways depending on the particular situation and the type of fish or wildlife resource at risk.

The tenets listed above, among others, are applied to establish the boundaries of streambeds in various environments. Importance of each factor may be weighted based on-site-specific considerations and the applicability of the indicators to the streambed at hand.

Local Jurisdiction

Fresno County General Plan

The Fresno County General Plan (2000) contains policies concerned with protecting and preserving natural resources and open space areas. These natural resources and open space areas include wetland and riparian areas, fish and wildlife habitat, and vegetation. The following policies are related to the Project.

- **Policy OS-A.2:** The County shall provide active leadership in the regional coordination of water resource management efforts affecting Fresno County and shall continue to monitor and participate in, as appropriate, regional activities affecting water resources, groundwater, and water quality.
- **Policy OS-A.18:** The County shall require that natural watercourses are integrated into new development in such a way that they are accessible to the public and provide a positive visual element and a buffer area between waterways and urban development in an effort to protect water quality and riparian areas.
- **Policy OS-A.19:** Floodplain Protection. The County shall require the protection of floodplain lands and, where appropriate, acquire public easements for purposes of flood protection, public safety, wildlife preservation, groundwater recharge, access, and recreation.
- **Policy OS-A.24:** The County shall require new development near rivers, creeks, reservoirs, or substantial aquifer recharge areas to mitigate any potential impacts of release of pollutants in storm waters, flowing river, stream, creek, or reservoir waters.
- **Policy OS-A.25:** The County shall minimize sedimentation and erosion through control of grading, cutting of trees, removal of vegetation, placement of roads and bridges, and use of off-road vehicles. The County shall discourage grading activities during the rainy season unless adequately mitigated to avoid sedimentation of creeks and damage to riparian habitat.
- **Policy OS-A.26:** Policy OS-A.26 The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff.
- **Policy OS-E.1:** The County shall support efforts to avoid the “net” loss of important wildlife habitat where practicable. In cases where habitat loss cannot be avoided, the County shall impose adequate mitigation for the loss of wildlife habitat that is critical to supporting special-status species and/or other valuable or unique wildlife resources. Mitigation shall be at sufficient ratios to replace the function, and value of the habitat that was removed or degraded. Mitigation may be achieved through any combination of creation, restoration, conservation easements, and/or mitigation banking. Conservation easements should include provisions for maintenance and management in perpetuity. The County shall recommend coordination with the US Fish and Wildlife Service and the California Department of Fish and Game to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed. Important habitat and habitat components include nesting, breeding, and foraging areas, important spawning grounds, migratory routes, migratory stopover areas, oak woodlands, vernal pools, wildlife movement corridors, and other unique wildlife habitats (e.g., alkali scrub) critical to protecting and sustaining wildlife populations.

- **Policy OS-E.2:** The County shall require adequate buffer zones between construction activities and significant wildlife resources, including both onsite habitats that are purposely avoided and significant habitats that are adjacent to the project site, in order to avoid the degradation and disruption of critical life cycle activities such as breeding and feeding. The width of the buffer zone should vary depending on the location, species, etc. A final determination shall be made based on informal consultation with the US Fish and Wildlife Service and/or the California Department of Fish and Game.
- **Policy OS-E.3:** The County shall require development in areas known to have particular value for wildlife to be carefully planned and, where possible, located so that the value of the habitat for wildlife is maintained.
- **Policy OS-E.6:** The County shall ensure the conservation of large, continuous expanses of native vegetation to provide suitable habitat for maintaining abundant and diverse wildlife populations, as long as this preservation does not threaten the economic well-being of the county.
- **Policy OS-E.9:** Prior to approval of discretionary development permits, the County shall require, as part of any required environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant resources and/or special-status plants or animals. Such evaluation will consider the potential for significant impact on these resources and will either identify feasible mitigation measures or indicate why mitigation is not feasible.
- **Policy OS-E.17:** Endangered Species Habitat. The County should preserve, to the maximum possible extent, areas defined as habitats for rare or endangered animal and plant species in a natural state consistent with State and Federal endangered species laws.
- **Policy OS-F.5:** Rare, Threatened, and Endangered Species. The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects. As part of this process, the County shall require, as part of the environmental review process, a biological resources evaluation of the project site by a qualified biologist. The evaluation shall be based on field reconnaissance performed at the appropriate time of year to determine the presence or absence of significant plant resources and/or special-status plant species. Such evaluation shall consider the potential for significant impact on these resources and shall either identify feasible mitigation measures or indicate why mitigation is not feasible.
- **Policy OS-F.8:** The County should encourage landowners to maintain natural vegetation or plant suitable vegetation along fence lines, drainage and irrigation ditches and on unused or marginal land for the benefit of wildlife.

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Appendix Q-2

Special-Status Species Evaluation Table

Special-status Species Evaluation Table

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Plants and Lichens				
Acanthomintha lanceolata Santa Clara thorn-mint	None/None G4/S4 4.2	Annual herb. Chaparral, cismontane woodland, coastal scrub. Rocky. Elevations: 260-3935 ft. (80-1200 m.) Blooms Mar-Jun.	No Potential	Suitable chaparral, cismontane woodland, coastal scrub does not occur within the BSA.
Acanthomintha obovata ssp. *obovata* San Benito thorn-mint	None/None G4T3T4/S3S4 4.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Alkaline, clay, serpentinite. Elevations: 1295-4920 ft. (395-1500 m.) Blooms Apr-Jul.	No Potential	Suitable chaparral, cismontane woodland, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Allium howellii var. *sanbenitense* San Benito onion	None/None G3G4T3/S3 1B.3	Perennial bulbiferous herb. Chaparral, valley and foothill grassland. Clay, slopes (often). Elevations: 1280-4480 ft. (390-1365 m.) Blooms Apr-May.	No Potential	Suitable chaparral, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Amsinckia furcata forked fiddleneck	None/None G4/S4 4.2	Annual herb. Cismontane woodland, valley and foothill grassland. Often on shale outcrops in disturbed, rather open sites. Often in gypsum-affected soils. Elevations: 165-3280 ft. (50-1000 m.) Blooms Feb-May.	No Potential	Suitable cismontane woodland, valley and foothill grassland does not occur within the BSA.
Androsace elongata ssp. *acuta* California androsace	None/None G5?T3T4/S3S4 4.2	Annual herb. Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Highly localized and often overlooked little plant. Elevations: 490-4280 ft. (150-1305 m.) Blooms Mar-Jun.	No Potential	Suitable chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland does not occur within the BSA.
Atriplex cordulata var. *cordulata* heartscale	None/None G3T2/S2 1B.2	Annual herb. Chenopod scrub, meadows and seeps, valley and foothill grassland. Alkaline (sometimes). Elevations: 0-1835 ft. (0-560 m.) Blooms Apr-Oct.	No Potential	Suitable chenopod scrub, meadows and seeps, valley and foothill grassland does not occur within the BSA.
Atriplex cordulata var. *erecticaulis* Earlimart orache	None/None G3T1/S1 1B.2	Annual herb. Valley and foothill grassland. Elevations: 130-330 ft. (40-100 m.) Blooms Aug-Sep (Nov).	No Potential	Suitable valley and foothill grassland does not occur within the BSA.
Atriplex coronata var. *coronata* crownscale	None/None G4T3/S3 4.2	Annual herb. Chenopod scrub, valley and foothill grassland, vernal pools. Alkaline, clay (often). Elevations: 5-1935 ft. (1-590 m.) Blooms Mar-Oct.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Atriplex coronata var. *vallicola* Lost Hills crownscale	None/None G4T3/S3 1B.2	Annual herb. Chenopod scrub, valley and foothill grassland, vernal pools. Alkaline. Elevations: 165-2085 ft. (50-635 m.) Blooms Apr-Sep.	Low Potential	Suitable chenopod scrub, valley and foothill grassland does occur within the BSA but does not occur within 200 ft. of the Project Site (utility switchyard). Additionally, areas closest to adjacent potentially suitable habitat have been tilled and planted since or before July of 2020.
Atriplex depressa brittlescale	None/None G2/S2 1B.2	Annual herb. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Alkaline, clay. Elevations: 5-1050 ft. (1-320 m.) Blooms Apr-Oct.	No Potential	Suitable chenopod scrub, meadows and seeps, playas, valley and foothill grassland do not occur within the BSA. The nearest recorded occurrence within the BSA is from 1937.
Atriplex minuscula lesser saltscale	None/None G2/S2 1B.1	Annual herb. Chenopod scrub, playas, valley and foothill grassland. Alkaline, sandy. Elevations: 50-655 ft. (15-200 m.) Blooms May-Oct.	No Potential	Suitable chenopod scrub, playas, valley and foothill grassland does not occur within the BSA.
Atriplex subtilis subtle orache	None/None G1/S1 1B.2	Annual herb. Valley and foothill grassland. Alkaline. Elevations: 130-330 ft. (40-100 m.) Blooms (Apr) Jun-Sep (Oct).	No Potential	Suitable valley and foothill grassland does not occur within the BSA. The nearest recorded occurrence within the BSA is from 1937.
Benitoa occidentalis western lessingia	None/None G3G4/S3S4 4.3	Annual herb. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Clay (sometimes), serpentinite (sometimes). Elevations: 1475-3510 ft. (450-1070 m.) Blooms May-Nov.	No Potential	Suitable chaparral, cismontane woodland, coastal scrub, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Calystegia collina ssp. *venusta* South Coast Range morning-glory	None/None G4T4/S4 4.3	Perennial rhizomatous herb. Chaparral, cismontane woodland, valley and foothill grassland. Serpentinite (sometimes). Elevations: 885-4890 ft. (270-1490 m.) Blooms Apr-Jun.	No Potential	Suitable chaparral, cismontane woodland, valley and foothill grassland does not occur within the BSA.
Camissonia benitensis San Benito evening-primrose	FD/None G2/S2 1B.1	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Carbonate (sometimes), gravelly (sometimes). Elevations: 1970-4200 ft. (600-1280 m.) Blooms Apr-Jun.	No Potential	Suitable chaparral, cismontane woodland, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Campanula exigua chaparral harebell	None/None G2/S2 1B.2	Annual herb. Chaparral. Rocky sites, usually on serpentine in chaparral. Elevations: 900-4100 ft. (275-1250 m.) Blooms May-Jun.	No Potential	Suitable chaparral or serpentine rock does not occur within the BSA. The BSA is out of the known elevation range of this species.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Chloropyron palmatum palmate-bracted bird's-beak	FE/SCE G1/S1 1B.1	Annual herb (hemiparasitic). Chenopod scrub, valley and foothill grassland. Alkaline. Elevations: 15-510 ft. (5-155 m.) Blooms May-Oct.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA.
Clarkia breweri Brewer's clarkia	None/None G4/S4 4.2	Annual herb. Chaparral, cismontane woodland, coastal scrub. Serpentinite (often). Elevations: 705-3660 ft. (215-1115 m.) Blooms Apr-Jun.	No Potential	Suitable chaparral, cismontane woodland, coastal scrub does not occur within the BSA.
Chloropyron palmatum palmate-bracted bird's-beak	FE/SE G1/S1 1B.1	Annual herb (hemiparasitic). Chenopod scrub, valley and foothill grassland. Alkaline. Elevations: 15-510 ft. (5-155 m.) Blooms May-Oct.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA.
Deinandra halliana Hall's tarplant	None/None G3/S3 1B.1	Annual herb. Chenopod scrub, cismontane woodland, valley and foothill grassland. Reported from a variety of substrates including clay, sand, and alkaline soils. Elevations: 855-3115 ft. (260-950 m.) Blooms (Mar) Apr-May.	No Potential	Suitable chenopod scrub, cismontane woodland, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Delphinium recurvatum recurved larkspur	None/None G2?/S2? 1B.2	Perennial herb. Chenopod scrub, cismontane woodland, valley and foothill grassland. Alkaline. Elevations: 10-2590 ft. (3-790 m.) Blooms Mar-Jun.	No Potential	Suitable chenopod scrub, cismontane woodland, valley and foothill grassland does not occur within the BSA. The nearest recorded occurrence within the BSA is from April 2001.
Eriastrum hooveri Hoover's eriastrum	FD/None G3/S3 4.2	Annual herb. Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland. On sparsely vegetated alkaline alluvial fans; also in the Temblor Range on sandy soils. Elevations: 165-3000 ft. (50-915 m.) Blooms Mar-Jul.	No Potential	Suitable pinyon and juniper woodland, valley and foothill grassland does not occur within the BSA.
Eriastrum sparsiflorum few-flowered eriastrum	None/None G5/S4 4.3	Annual herb. Chaparral, cismontane woodland, great basin scrub, joshua tree woodland, mojavean desert scrub, pinyon and juniper woodland. Granitic soils; mostly in openings. Elevations: 3525-5610 ft. (1075-1710 m.) Blooms May-Sep.	No Potential	Suitable chaparral, cismontane woodland, great basin scrub, joshua tree woodland, mojavean desert scrub, pinyon and juniper woodland does not occur within the BSA. The BSA is outside of the known elevation range of this species.
Eriogonum gossypinum cottony buckwheat	None/None G3G4/S3S4 4.2	Annual herb. Chenopod scrub, valley and foothill grassland. Clay soil. Elevations: 330-1805 ft. (100-550 m.) Blooms Mar-Sep.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Eriogonum nudum var. *indictum* protruding buckwheat	None/None G5T4/S4 4.2	Perennial herb. Chaparral, chenopod scrub, cismontane woodland. Barren slopes; clay, serpentine. Elevations: 490-4800 ft. (150-1463 m.) Blooms (Apr) May-Oct (Dec).	No Potential	Suitable chaparral, chenopod scrub, cismontane woodland does not occur within the BSA.
Eriogonum vestitum Idria buckwheat	None/None G3/S3 4.3	Annual herb. Valley and foothill grassland. Semi-siliceous diatomaceous shale; barren, clay places. Elevations: 770-2955 ft. (235-900 m.) Blooms Apr-Aug.	No Potential	Suitable valley and foothill grassland does not occur within the BSA.
Eschscholzia hypecoides San Benito poppy	None/None G4/S4 4.3	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Serpentine clay. Elevations: 655-4920 ft. (200-1500 m.) Blooms Mar-Jun.	No Potential	Suitable chaparral, cismontane woodland, valley and foothill grassland does not occur within the BSA.
Extriplex joaquinana San Joaquin spearscale	None/None G2/S2 1B.2	Annual herb. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with Distichlis spicata, Frankenia, etc. Elevations: 5-2740 ft. (1-835 m.) Blooms Apr-Oct.	No Potential	Suitable chenopod scrub, meadows and seeps, playas, valley and foothill grassland does not occur within the BSA.
Fritillaria agrestis stinkbells	None/None G3/S3 4.2	Perennial bulbiferous herb. Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Sometimes on serpentine; mostly found in nonnative grassland or in grassy openings in clay soil. Elevations: 35-5100 ft. (10-1555 m.) Blooms Mar-Jun.	No Potential	Suitable chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland does not occur within the BSA.
Fritillaria viridea San Benito fritillary	None/None G2/S2 1B.2	Perennial bulbiferous herb. Chaparral, cismontane woodland. Serpentine slopes. Sometimes on rocky streambanks. Elevations: 655-5005 ft. (200-1525 m.) Blooms Mar-May.	No Potential	Suitable chaparral, cismontane woodland, rocky streambanks and serpentine slopes do not occur within the BSA. The BSA is out of the known elevation range of this species.
Galium andrewsii ssp. *gatense* phlox-leaf serpentine bedstraw	None/None G5T3/S3 4.2	Perennial herb. Chaparral, cismontane woodland, lower montane coniferous forest. Dry, rocky places in serpentine soil. Elevations: 490-4755 ft. (150-1450 m.) Blooms Apr-Jul.	No Potential	Suitable chaparral, cismontane woodland, lower montane coniferous forest does not occur within the BSA.
Goodmania luteola golden goodmania	None/None G3/S3 4.2	Annual herb. Meadows and seeps, mojavean desert scrub, playas, valley and foothill grassland. Alkaline or clay soils. Elevations: 65-7220 ft. (20-2200 m.) Blooms Apr-Aug.	No Potential	Suitable meadows and seeps, mojavean desert scrub, playas, valley and foothill grassland does not exist within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Hordeum intercedens vernal barley	None/None G3G4/S3S4 3.2	Annual herb. Coastal dunes, coastal scrub, valley and foothill grassland, vernal pools. Vernal pools, dry, saline streambeds, alkaline flats. 5-. Elevations: 15-3280 ft. (5-1000 m.) Blooms Mar-Jun.	No Potential	Suitable coastal dunes, coastal scrub, valley and foothill grassland does not exist within the BSA.
Lasthenia chrysantha alkali-sink goldfields	None/None G2/S2 1B.1	Annual herb. Vernal pools. Alkaline. Elevations: 0-655 ft. (0-200 m.) Blooms Feb-Apr.	No Potential	The nearest recorded occurrence within the BSA is from 1975.
Lasthenia ferrisiae Ferris' goldfields	None/None G3/S3 4.2	Annual herb. Vernal pools. Alkaline, clay soils. Elevations: 65-2295 ft. (20-700 m.) Blooms Feb-May.	No Potential	There are no recorded occurrences of this species within 10 miles of the BSA.
Layia discoidea rayless layia	None/None G2/S2 1B.1	Annual herb. Chaparral, cismontane woodland, lower montane coniferous forest. On serpentine alluvium and serpentine talus. Elevations: 2610-5200 ft. (795-1585 m.) Blooms May.	No Potential	Suitable chaparral, cismontane woodland, lower montane coniferous forest, serpentine alluvium and serpentine talus does not occur within the BSA. The BSA is out of the known elevation range of this species.
Layia heterotricha pale-yellow layia	None/None G2/S2 1B.1	Annual herb. Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland. Alkaline or clay soils; open areas. Elevations: 985-5595 ft. (300-1705 m.) Blooms Mar-Jun.	No Potential	Suitable cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species. The nearest recorded occurrence within the BSA is from April of 2010 (in foothills west of BSA).
Layia munzii Munz's tidy-tips	None/None G2/S2 1B.2	Annual herb. Chenopod scrub, valley and foothill grassland. Hillsides, in white-grey alkaline clay soils, w/grasses and chenopod scrub associates. Elevations: 490-2295 ft. (150-700 m.) Blooms Mar-Apr.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA. Hillsides are minimal to none, and the BSA is out of the known elevation range of this species. The nearest recorded occurrence within the BSA is from 1937.
Lepidium jaredii ssp. *album* Panoche pepper-grass	None/None G2G3T2T3/S2S3 1B.2	Annual herb. Valley and foothill grassland. White or grey clay lenses on steep slopes; incidental in alluvial fans and washes. Clay and gypsum-rich soils. Elevations: 605-2445 ft. (185-745 m.) Blooms Feb-Jun.	No Potential	Suitable valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Leptosiphon ambiguus serpentine leptosiphon	None/None G4/S4 4.2	Annual herb. Cismontane woodland, coastal scrub, valley and foothill grassland. Grassy areas on serpentine soil. Elevations: 395-3710 ft. (120-1130 m.) Blooms Mar-Jun.	No Potential	Suitable cismontane woodland, coastal scrub, valley and foothill grassland does not occur within the BSA.
Madia radiata showy golden madia	None/None G3/S3 1B.1	Annual herb. Cismontane woodland, valley and foothill grassland. Mostly on adobe clay in grassland or among shrubs. Elevations: 80-3985 ft. (25-1215 m.) Blooms Mar-May.	No Potential	Suitable cismontane woodland, valley and foothill grassland does not occur within the BSA.
Malacothamnus aboriginum Indian Valley bush-mallow	None/None G3/S3 1B.2	Perennial deciduous shrub. Chaparral, cismontane woodland. Granitic outcrops and sandy bare soil, often in disturbed soils. Elevations: 490-5580 ft. (150-1700 m.) Blooms Apr-Oct.	No Potential	Suitable chaparral, cismontane woodland, granitic outcrops do not occur within the BSA. The BSA is out of the known elevation range of this species.
Microseris sylvatica sylvan microseris	None/None G4/S4 4.2	Perennial herb. Chaparral, cismontane woodland, great basin scrub, pinyon and juniper woodland, valley and foothill grassland. Serpentinite (rarely).Elevations: 150-4920 ft. (45-1500 m.) Blooms Mar-Jun.	No Potential	Suitable chaparral, cismontane woodland, great basin scrub, pinyon and juniper woodland, valley and foothill grassland does not occur within the BSA.
Monardella antonina ssp. *benitensis* San Benito monardella	None/None G4T3/S3 4.3	Perennial rhizomatous herb. Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Serpentine barrens. Elevations: 1640-5150 ft. (500-1570 m.) Blooms Jun-Jul.	No Potential	Suitable chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Monolopia congdonii San Joaquin woollythreads	FE/None G2/S2 1B.2	Annual herb. Chenopod scrub, valley and foothill grassland. Alkaline or loamy plains; sandy soils, often with grasses and within chenopod scrub. Elevations: 195-2625 ft. (60-800 m.) Blooms Feb-May.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA. The nearest recorded occurrence within the BSA is from 1938.
Navarretia nigelliformis ssp. *radians* shining navarretia	None/None G4T2/S2 1B.2	Annual herb. Cismontane woodland, valley and foothill grassland, vernal pools. Apparently in grassland, and not necessarily in vernal pools. Elevations: 215-3280 ft. (65-1000 m.) Blooms (Mar)Apr-Jul.	No Potential	Suitable cismontane woodland, valley and foothill grassland does not occur within the BSA.
Navarretia panochensis Panoche navarretia	None/None G3/S3 1B.3	Annual herb. Chenopod scrub, valley and foothill grassland. Clay, Gravelly (often). Elevations: 1085-2820 ft. (330-860 m.) Blooms Apr-Aug.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Navarretia prostrata prostrate vernal pool navarretia	None/None G2/S2 1B.2	Annual herb. Coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Alkaline soils in grassland, or in vernal pools. Mesic, alkaline sites. Elevations: 10-3970 ft. (3-1210 m.) Blooms Apr-Jul.	No Potential	Suitable coastal scrub, meadows and seeps, valley and foothill grassland does not occur within the BSA.
Puccinellia simplex California alkali grass	None/None G3/S2 1B.2	Annual herb. Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools. Alkaline, vernally mesic. Sinks, flats, and lake margins. Elevations: 5-3050 ft. (2-930 m.) Blooms Mar-May.	No Potential	Suitable chenopod scrub, meadows and seeps, valley and foothill grasslands do not occur within the BSA.
Sagittaria sanfordii Sanford's arrowhead	None/None G3/S3 1B.2	Perennial rhizomatous herb (emergent). Marshes and swamps. In standing or slow-moving freshwater ponds, marshes, and ditches. Elevations: 0-2135 ft. (0-650 m.) Blooms May-Oct (Nov).	No Potential	Suitable marshes and swamps do not occur within the BSA. Potentially suitable irrigation ditches were observed throughout the BSA during the reconnaissance survey in December 2022; however, this species has not been documented within 10 miles of the BSA.
Senecio aphanactis chaparral ragwort	None/None G3/S2 2B.2	Annual herb. Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. Elevations: 50-2625 ft. (15-800 m.) Blooms Jan-Apr (May).	No Potential	Suitable alkaline flats, chaparral, cismontane woodland and coastal scrub does not occur within the BSA. The BSA is out of the known elevation range of this species.
Solidago guiradonis Guirado's goldenrod	None/None G3/S3 4.3	Perennial rhizomatous herb. Cismontane woodland, valley and foothill grassland. Near serpentine streams or seeps in asbestos-laden soils; serpentine. Elevations: 1970-4495 ft. (600-1370 m.) Blooms Sep-Oct.	No Potential	Suitable cismontane woodland, valley and foothill grassland does not occur within the BSA. The BSA is out of the known elevation range of this species.
Trichostema ovatum San Joaquin bluecurls	None/None G3/S3 4.2	Annual herb. Chenopod scrub, valley and foothill grassland. Sandy alluvial soil. In grassland, and disturbed sites. 65. Elevations: 215-1050 ft. (65-320 m.) Blooms (Apr-Jun) Jul-Oct.	No Potential	Suitable chenopod scrub, valley and foothill grassland does not occur within the BSA.
Trichostema rubisepalum Hernandez bluecurls	None/None G4/S4 4.3	Annual herb. Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, vernal pools. Volcanic or serpentine substrates. Elevations: 985-4710 ft. (300-1435 m.) Blooms Jun-Aug.	No Potential	Suitable broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest does not occur within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Animals				
Invertebrates				
Aegialia concinna Ciervo aegilian scarab beetle	None/None G1/S1	Known only from Fresno County in sandy substrates.	No Potential	No suitable loose sandy substrate associated with dunes habitats occur within the BSA. The nearest recorded occurrence is approximately 10 miles from the BSA and is from 2009.
Bombus crotchii Crotch bumble bee	None/None G2/S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	No Potential	No suitable vegetated habitat with appropriate food plant species occurs within the BSA. The nearest recorded occurrence within the BSA is from 1964.
Branchinecta longiantenna longhorn fairy shrimp	FE/None G1/S1S2	Endemic to the eastern margin of the Central Coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	No Potential	Vernal pools do not occur within the BSA; however, the cysts of this species can persist for years within the soils and can move great distances during flood events. The nearest recorded occurrence to the BSA is greater than 10 miles away.
Branchinecta lynchi vernal pool fairy shrimp	FT/None G3/S3	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	No Potential	Vernal pools do not occur within the BSA; however, the cysts of this species can persist for years within the soils and can move great distances during flood events. The nearest recorded occurrence to the BSA is greater than 10 miles away.
Danaus plexippus monarch butterfly	FC/None G4T1T2Q/S2	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	No Potential (over-wintering)	Several stands of eucalyptus trees are present within the BSA; however, this species is only known to overwinter in coastal California.
Lepidurus packardi vernal pool tadpole shrimp	FE/None G3/S3	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	No Potential	No suitable unplowed grasslands occur within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Coelus gracilis San Joaquin dune beetle	None/None G1/S1	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality). Inhabits sites containing sandy substrates.	No Potential	No suitable dunes habitat occurs within the BSA. The nearest recorded occurrence is approximately 10 miles from the BSA and is from 2009.
Linderiella occidentalis California linderiella	None/None G2G3/S2S3	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and total dissolved solids.	No Potential	No suitable seasonal wetlands in unplowed grasslands occur within the BSA.
Lytta molesta molestan blister beetle	None/None G2/S2	Inhabits the Central Valley of California, from Contra Costa to Kern and Tulare counties.	No Potential	Although information is limited on this species range, known food plants for the species including *Lupinus* sp., *Trifolium wormskioldii*, and *Erodium* sp. are absent from the BSA. Additionally, this species has been associated with dried up vernal pool habitats, which are also absent from within the BSA.
Metapogon hurdi Hurd's metapogon robberfly	None/None G1G2/S1S2	Known only from Antioch Dunes and Fresno.	No Potential	No suitable loose sandy substrate associated with dunes habitats occur within the BSA. The nearest recorded occurrence is approximately 10 miles from the BSA and is from 1977.
Protodufourea wasbaueri Wasbauer's protodufourea bee	None/None G1/S1	Chaparral and desert scrub. Nests in the ground. Oligolectic on *Emmenanthe* sp., a plant that blooms in profusion after fires, then declines.	No Potential	No suitable chaparral or desert scrub occurs within the BSA. Suitable host plants also do not occur within the BSA.
Amphibians				
Ambystoma californiense California tiger salamander	FT/ST G2G3/S2S3	Central California DPS federally listed as threatened. Santa Barbara and Sonoma counties DPS federally listed as endangered. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	No Potential	A perennial pond for grazing cattle with nearby ground squirrel burrows occurs west of the utility switchyard within the BSA. However, there is no suitable habitat in the BSA within the 1.2-mile dispersal distance of this species, and no occurrences were documented within 10 miles of the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	FPT/SE G3TNRQ/S2	San Francisco Peninsula and Diablo Range south of San Francisco Bay Estuary, and south through the Santa Cruz and Gabilan Mountains east of the Salinas River in the southern inner Coast Ranges. Partly shaded shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying and at least 15 weeks to attain metamorphosis.	No Potential	Suitable shaded shallow streams and cobble substrate does not occur within this BSA.
Spea hammondii western spadefoot	None/None G2G3/S3 SSC	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	No Potential	Vernal pools do not occur within this BSA, but some irrigation drainages are present throughout the BSA. This species has not been documented within 10 miles of the BSA.
Reptiles				
Anniella pulchra Northern California legless lizard	None/None G3/S3 SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	No Potential	Suitable sandy or loose loamy soils with high moisture content do not occur within the BSA. The closest record for this species was approximately 3 miles from the western end of the BSA in 1940.
Arizona elegans occidentalis California glossy snake	None/None G5T2/S2 SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	No Potential	Suitable scrub and grasslands habitats do not occur within the BSA. The nearest recorded occurrence is greater than 10 miles from the BSA.
Emys marmorata western pond turtle	None/None G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft. elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometer from water for egg-laying.	No Potential	Suitable ponds, marshes, rivers and streams do not occur within the BSA.
Gambelia sila blunt-nosed leopard lizard	FE/SE G1/S1 FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.	No Potential	The nearest recorded occurrence within the BSA is from 1980. The BSA does not contain suitable alkali and desert scrub habitats.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Masticophis flagellum ruddocki San Joaquin coachwhip	None/None G5T2T3/S2? SSC	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Needs mammal burrows for refuge and oviposition sites.	Low Potential	An area of suitable open dry habitat with nearby ground squirrel burrows occurs west of the switch yard within the BSA. The nearest documented occurrence of this species was approximately 8 miles from the BSA.
Phrynosoma blainvillii coast horned lizard	None/None G3G4/S3S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	No Potential	Suitable sandy washes and scattered low bushes do not occur within the BSA.
Thamnophis gigas giant gartersnake	FT/ST G2/S2	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	No Potential	Suitable streams and freshwater marshes do not occur within this BSA, although irrigation ditches are present. The nearest recorded occurrence within the BSA is from 1976.
Thamnophis hammondii two-striped gartersnake	None/None G4/S3S4 SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft. elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	No Potential	Suitable fresh water, streams and riparian growth does not occur within the BSA.
Birds				
Agelaius tricolor tricolored blackbird	None/ST G1G2/S1S2 SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, and emergent wetland vegetation including cattails and tules, trees and shrub for cover; dense, tall wetland vegetation/thickets near freshwater for nesting; and open foraging area (croplands, grasslands, pond edges) with insect prey within a few km of the colony.	Low to Moderate Potential (foraging), No Potential (nesting)	Suitable cover for a nesting colony does not occur within the BSA. Cropland foraging habitat occurs within the BSA within a few kilometers of recent eBird records on the west end of the site, and within a few kilometers of low-quality roosting habitat within the solar facility.
Asio flammeus short-eared owl	None/None G5/S3 SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	No Potential	Short-eared owls do not breed and nest in central California. Lowland meadows and swamps do not occur within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Aquila chrysaetos Golden eagle	None/None G5/S4 FP	Found in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Present (foraging), No Potential (nesting)	This species was observed flying over the solar array on May 11, 2023. The BSA is outside the nesting range of this species.
Athene cunicularia burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Present (foraging, nesting)	This species was documented throughout the BSA during the reconnaissance surveys in December 2022. Suitable foraging habitat is present in retired and managed agricultural fields, and breeding habitat is present in areas that are not disked along field edges, roads, drainage berms and open pipes across the BSA.
Buteo regalis ferruginous hawk	None/None G4/S3S4 WL	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Present (foraging), No Potential (nesting)	This species was documented actively foraging on December 16, 2022, within the solar array facility. Sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats do not occur within the BSA. However, open agricultural fields suitable for foraging does occur across the BSA.
Buteo swainsoni Swainson's hawk	None/ST G5/S3	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Present (foraging, nesting)	Agricultural field suitable for foraging occur throughout the BSA. Groves and lines of trees occur adjacent to and within the BSA. Several foraging Swainson’s hawks were observed during site inspections conducted in January through July. Six active nests were observed within the BSA during March through July 2023.
Circus hudsonius northern harrier	None/None G5/S3 SSC	Occurs from annual grasslands to lodgepole pine and alpine meadow habitats as high as 3,000 m. in elevation. Nests on ground in shrubby vegetation, usually in emergent wetlands or along rivers or lakes, but may nest in grasslands, grain fields, or on sagebrush flats several miles from water.	Present (foraging), No Potential (nesting)	An adult male norther harrier was documented foraging in the solar array within the BSA during a site inspection conducted on April 5, 2023. Grain fields within the solar array provide suitable nesting habitat; however, these field are frequently disturbed by agricultural activities during the nesting season.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Charadrius montanus mountain plover	None/None G3/S2S3 SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Present (foraging), No Potential (nesting)	This species was documented throughout the BSA during the reconnaissance surveys in December 2022 across the most northern portion of BSA in freshly disked/flooded agricultural fields. This species does not breed in the western U.S.
Elanus luecurus white-tailed kite	None/None G5/S3S4 FP	Occurs in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Present (foraging), Low Potential (nesting)	This species was observed foraging along a canal within the solar array within the BSA during a site inspection conducted on May 24, 2023. Suitable nest trees occur within the solar array; however, nesting has not been documented for this species within 10 miles of the BSA.
Eremophila alpestris actia California horned lark	None/None G5T4Q/S4 WL	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Present (foraging), Moderate Potential (nesting)	This species was documented within the BSA during the reconnaissance surveys in December 2022; five observations in eBird are approximately 1,000 feet south of the gen-tie west of the California Aqueduct, the most recent in June 2022. Suitable foraging habitat is present in agricultural fields, and breeding habitat is present in fields that are not disked and other open and barren lands across the BSA.
Falco columbarius merlin	None/None G5/S3S4 WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.	No Potential	Suitable seacoast, tidal estuaries, open woodlands, savannahs, or edges of grasslands and deserts are present within the BSA. There are no occurrences documented within 10 miles of the BSA.
Falco mexicanus prairie falcon	None/None G5/S4 WL	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Present (foraging), No Potential (nesting)	This species was documented within the BSA during the reconnaissance surveys in December 2022 and a site investigation in April 2023. Suitable breeding sites along cliffs do not occur within the BSA. Suitable foraging habitat is present in the retired and managed agricultural fields within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Plegadis chihi white-faced ibis	None/None G5/S3S4 WL	Shallow freshwater marsh. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	No Potential	No suitable shallow freshwater marsh habitat with dense tule thickets for nesting within the BSA.
Gymnogyps californianus California condor	FE/SE G1/S2	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude.	Low Potential (foraging), No Potential (nesting)	This species feeds on the carcasses or large mammals. Cattle grazing is present west of the switching yard and old sheep carcasses were present in ditches throughout the solar facility. No other signs of large mammals suitable for prey were observed. No suitable cliffs for nesting occur within the BSA.
Lanius ludovicianus loggerhead shrike	None/None G4/S4 SSC	Inhabits broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense, often thorny shrubs and brush for nesting.	Present (foraging), No potential (nesting)	This species was observed foraging within the solar array during the reconnaissance survey in December 2022 and during a site inspection on February 22, 2023. There is no suitable shrub habitat for nesting within the BSA.
Pooecetes gramineus affinis Oregon vesper sparrow	None/None G5T2/S2 SSC	Winters in California in grasslands and other open areas with low-growing and/or sparse vegetation, including alfalfa and other agricultural fields, stubble fields, and roadsides.	Present (wintering)	This species was observed within the solar facilities during a site inspection on April 5, 2023. Retired and managed fields throughout the BSA provide suitable foraging habitat.
Setophaga petechia yellow warbler	None/None G5/S3 SSC	Associated with riparian plant associations in close proximity to water. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders, also in open conifer forests.	Present (migration)	This species was observed within the solar facilities during a site inspection on May 8, 2023. There is no suitable woodland/shrub nesting habitat within the BSA.
Xanthocephalus xanthocephalus yellow-headed blackbird	None/None G5/S3 SSC	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds. Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.	Moderate Potential (foraging, nesting)	One freshwater wetland potentially suitable for nesting and roosting occurs within the BSA, suitable foraging habitat within the vicinity of nesting and roosting habitat is present in the solar facility.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Mammals				
Ammospermophilus nelsoni Nelson's (=San Joaquin) antelope squirrel	None/ST G2G3/S2S3	Occurs in Western San Joaquin Valley from 200-1200 ft. elevation. Uses dry, sparsely vegetated areas with a variety of soils suitable for digging. Digs burrows or uses kangaroo rat or other small mammal burrows. Needs widely scattered shrubs, forbs, and grasses in broken terrain, often with gullies and washes.	No Potential	The nearest recorded occurrence within the BSA is from 1932. The BSA does not provide scattered shrubs.
Dipodomys ingens giant kangaroo rat	FE/SE G1G2/S1S2	Found in annual grasslands on the western side of the San Joaquin Valley. Occasionally occurs in alkali scrub. Prefers areas with sparse cover, can be found in areas of cattle grazing. Requires level or slightly sloping terrain and friable soils for burrowing.	No Potential	Suitable grasslands or alkali scrub do not occur within the BSA.
Dipodomys nitratoides exilis Fresno kangaroo rat	FE/SE G3TH/SH	Alkali sink-open grassland habitats in western Fresno County. Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs and grasses.	No Potential	Suitable alkali sink-open grassland habitats do not occur within the BSA. The nearest recorded occurrence within the BSA is from September 1990.
Dipodomys nitratoides nitratoides Tipton kangaroo rat	FE/SE G3T1T2/S2	Found in saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils for burrowing which do not experience seasonal flooding. Often digs burrows in elevated mounds, including the base of shrubs in densely vegetated areas.	No Potential	Suitable saltbush scrub or sink scrub communities do not occur within the BSA. The BSA is outside of the known region for this species.
Dipodomys venustus elephantinus big-eared kangaroo rat	None/None G4T2/S3 SSC	Chaparral-covered slopes of the southern part of the Gabilan Range, in the vicinity of the Pinnacles. Forages under shrubs and in the open. Burrows for cover and for nesting.	No Potential	Suitable chaparral slopes do not occur within the BSA.
Eumops perotis californicus western mastiff bat	None/None G4G5T4/S3S4 SSC	Occurs in open, semi-arid to arid habitats, including coniferous and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces and caves, and buildings. Roosts typically occur high above ground.	No Potential	Suitable roosting habitat, coniferous and deciduous woodlands, coastal scrub, grasslands and chaparral does not occur within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Onychomys torridus tularensis Tulare grasshopper mouse	None/None G5T1T2/S1S2 SSC	Hot, arid valleys and scrub deserts in the southern San Joaquin Valley. Diet almost exclusively composed of arthropods, therefore needs abundant supply of insects.	No Potential	Suitable scrub desert habitats do not occur within the BSA.
Taxidea taxus American badger	None/None G5/S3 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Present	Burrows of this species were observed during the reconnaissance surveys conducted in December 2022.The nearest recorded occurrence within the BSA is from August 2008.
Vulpes macrotis mutica San Joaquin kit fox	FE/ST G4T2/S2	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Moderate Potential	Suitable grasslands or open stages with scattered shrubby vegetation does not occur within the BSA. However, this species was evaluated by H.T. Harvey and Associates and determined to have moderately suitable habitat within the utility switchyard where the species has potential to occur.
Sensitive Natural Communities				
Coastal and Valley Freshwater Marsh	None/None G3/S2.1		Not Present	Not present within the BSA.
Monvero Residual Dunes	None/None G1/S1.2		Not Present	Not present within the BSA.
North Central Coast Drainage Sacramento Sucker/Roach River	None/None GNR/SNR		Not Present	Not present within the BSA.
Northern Claypan Vernal Pool	None/None G1/S1.1		Not Present	Not present within the BSA.
Northern Vernal Pool	None/None G2/S2.1		Not Present	Not present within the BSA.
Valley Needlegrass Grassland	None/None G3/S3.1		Not Present	Not present within the BSA.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Project Area	Habitat Suitability/Observations
Valley Sink Scrub	None/None G1/S1.1		Not Present	Not present within the BSA.

BSA = Biological Study Area; ft. = feet; m. = meter

Regional Vicinity refers to within a 18-quad search radius of site.

Status (Federal/State)

FE = Federal Endangered
FT = Federal Threatened
FPE = Federal Proposed Endangered
FPT = Federal Proposed Threatened
FD = Federal Delisted
FC = Federal Candidate
SE = State Endangered
ST = State Threatened
SCE = State Candidate Endangered
SCT = State Candidate Threatened
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected

CRPR (CNPS California Rare Plant Rank)

1A = Presumed extirpated in California, and rare or extinct elsewhere
1B = Rare, Threatened, or Endangered in California and elsewhere
2A = Presumed extirpated in California, but common elsewhere
2B = Rare, Threatened, or Endangered in California, but more common elsewhere
3 = Plants about which more information is needed
4 = Plants of limited distribution

CRPR Threat Code Extension

.1 = Seriously endangered in California (>80 percent of occurrences threatened/high degree and immediacy of threat)
.2 = Moderately threatened in California (20-80 percent of occurrences threatened/moderate degree and immediacy of threat)
.3 = Not very endangered in California (<20 percent of occurrences threatened/low degree and immediacy of threat)

Other Statuses

G1 or S1 Critically Imperiled Globally or Subnationally (state)
G2 or S2 Imperiled Globally or Subnationally (state)
G3 or S3 Vulnerable to extirpation or extinction Globally or Subnationally (state)
G4/5 or S4/5 Apparently secure, common and abundant

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Appendix Q-3

Field Forms

Biological Site Inspections

Field Forms

Biological Inspections Monthly Species List

Month	January 2023
Special Status Species Observed	northern harrier (flyover outside of the work area)
Common Species Observed	American crow horned lark house finch killdeer

Biological Inspections Monthly Species List

Month	February 2023
Special Status Species Observed	burrowing owl (in a field in the center of the project site) loggerhead shrike (perching on a powerline towards the eastern edge of the project site) mountain plover (foraging in fields all over the eastern portion of the project site)
Common Species Observed	American crow American kestrel black-crowned night heron black phoebe brewer's blackbird California ground squirrel common raven coyote horned lark house finch killdeer mourning dove red-tailed hawk pocket gopher sagebrush sparrow tree swallow western meadowlark white-crowned sparrow

Biological Inspections Monthly Species List

Month	March 2023
Special Status Species Observed	burrowing owl (in adjacent field) loggerhead shrike (perched on a telephone pole, flying over the site) Swainson's hawk (foraging in an adjacent field)
Common Species Observed	American crow barn swallow coyote horned lark mourning dove red-winged blackbird western kingbird western meadowlark

Biological Inspections Monthly Species List

Month	April 2023
Special Status Species Observed	loggerhead shrike (perched on telephone poles & one in the eucalyptus grove) Swainson's hawk (foraging in a field on site, foraging in and flying over agricultural fields, perching in eucalyptus trees, kettle hunting) northern harrier (foraging on the site) Oregon vesper sparrow (vocalization heard on-site)
Common Species Observed	American crow American goshawk American kestrel Brewer's blackbird common raven desert cottontail Eurasian collared dove European starling great horned owl great-tailed grackle horned lark house finch killdeer mourning dove northern mockingbird orange-crowned warbler prairie falcon red-tailed hawk red-winged blackbird ruby-crowned kinglet sagebrush sparrow savannah sparrow Say's phoebe turkey vulture western kingbird western meadowlark white-crowned sparrow yellow-rumped warbler

Biological Inspections Monthly Species List

Month	May 2023
Special Status Species Observed	golden eagle (flying over the site) northern harrier (foraging in a field in the southwest portion of the site) Swainson's hawk (flying over the site, in the agricultural fields, foraging in a field) white-tailed kite (foraging along canal) yellow warbler (individual in cottonwood)
Common Species Observed	American crow American kestrel barn swallow Brewer's blackbird common raven Eurasian collared dove horned lark house finch house sparrow killdeer mourning dove northern mockingbird northern rough-winged swallow red-tailed hawk red-winged blackbird turkey vulture western meadowlark western kingbird

Biological Inspections Monthly Species List

Month	June 2023
Special Status Species Observed	burrowing owl (flying away from a known burrow at southeastern extent of the project area) loggerhead shrike (seen hanging around a tree in a ditch on-site) northern harrier (foraging on the site) Swainson's hawk (flew into previously identified active nest, foraging across the project site, perching on a telephone pole)
Common Species Observed	American crow American kestrel Brewer's blackbird brown-eyed cowbird brown-headed cowbird Bullock's oriole California king snake California towhee Canada goose cliff swallow common raven Eurasian collared dove horned lark house finch house sparrow killdeer mallard mourning dove northern mockingbird northern rough-winged swallow red-tailed hawk red-winged blackbird rock pigeon song sparrow snowy egret tree swallow turkey vulture western fence lizard western kingbird western meadowlark western toad

Biological Inspections Monthly Species List

Month	July 2023
Special Status Species Observed	burrowing owl (observed by the road outside of the project site) loggerhead shrike (flying over the site) prairie falcon (flying over the site) Swainson's hawk (nesting in known nest, flying over the project site and the adjacent fields)
Common Species Observed	American crow American kestrel common raven Eurasian collared dove great horned owl house finch lesser scaup mourning dove northern mockingbird northern rough-winged swallow snowy egret turkey vulture western kingbird

Biological Inspections Monthly Species List

Month	August 2023
Special Status Species Observed	loggerhead shrike (perching on a powerline) Swainson's hawk (perching in and flying above the eucalyptus trees)
Common Species Observed	American crow American kestrel barn swallow common raven Eurasian collared dove horned lark house finch killdeer mourning dove northern mockingbird turkey vulture western kingbird

Biological Inspections Monthly Species List

Month	September 2023
Special Status Species Observed	None
Common Species Observed	American crow turkey vulture

Biological Reconnaissance Survey

Field Forms

Biological Reconnaissance Survey Form

Date	December 14, 2022
Survey Lead	Amy Leigh Trost
Additional Surveyors	Shannon Morris, Will Lawton, Morgan Craig
Arrival Time	0720
Departure Time	1515
Weather	33-54 F, 2-6 mph, 0% cc, Clear
Areas Surveyed	Utility switching station Gen-tie route (from roads) SW PV Parcels: DAR 1892 DAR 1889 DAR 1888 DAR 1901 DAR 2303 DAR 2307 DAR 2306 DAR 2309 DAR 2305
Species Status Species Observed	burrowing owl – two adults flushed (36.436102, -120.247661), burrow discovered nearby in junk pile northern harrier – adult male observed flying over disked field (36.452685, -120.225980) loggerhead shrike – one adult observed flying over disked field (36.452146, -120.247838)
Common Species Observed	California ground squirrel white-crowned sparrow house finch mourning dove northern flicker Nuttal's woodpecker red-tailed hawk great-horned owl American kestrel American pipit horned lark killdeer song sparrow savannah sparrow Eurasian collared dove western meadowlark black phoebe Say's phoebe ruby-crowned kinglet American crow common raven

Biological Reconnaissance Survey Form

	Brewer's blackbird northern mockingbird
Notes	Utility switching station – Active orchard, disturbed in SW corner where transmission line crosses parcel, California ground squirrel burrows along perimeters/roads, owl box at SW corner, cattle grazing on parcels to west, surrounding land use ag, cattle pond fed by pipe to west Gen-tie – Mostly active ag, crosses California Aqueduct DAR 1892 – disked DAR 1889 – disked DAR 1888 – disked DAR 1901 – disked; stick nest in tamarisk along canal in central SW corner, appears to be inactive; two burrowing owls flushed near central SW corner; burrowing owl burrow observed in pile of junk along central line, whitewash and pellets DAR 2303 – disked; irrigation ditch along eastern side DAR 2307 – disked; line of eucalyptus trees along east side, several great-horned owls flushed during survey, three large stick nests observed in eucalyptus, likely great-horned owl; small cup nest discovered in eucalyptus DAR 2306 – disked DAR 2309 – disked; small stick nest in tamarisk DAR 2305 – disked; open pipe in SW corner

Biological Reconnaissance Survey Form

Date	December 15, 2022
Survey Lead	Amy Leigh Trost
Additional Surveyors	Shannon Morris, Will Lawton, Morgan Craig
Arrival Time	0700
Departure Time	1515
Weather	34-52 F, 0-5 mph, Overcast
Areas Surveyed	DAR 2335 DAR 2274 DAR 2196 DAR 2275 DAR 1074 DAR 2265 DAR 1073 DAR 1072 DAR 1627 DAR 2262 DAR 1339 DAR 1340 DAR 2261 DAR 1341 DAR 1070 DAR 1069 DAR 1742 DAR 1071 DAR 2227 DAR 2230
Species Status Species Observed	burrowing owl – one adult observed in burrow documented on12/14/22 (36.436242, -120.246600), one adult observed sitting outside open pipe (36.502088, -120.184597), one adult flushed from burrow (36.502088, -120.184597), one adult flushed from pipe (36.455090, -120.157045), one adult flushed from pipe (36.455090, -120.157045), one adult sitting outside of pipe 36.455090, -120.157045), one adult flushed from irrigation channel (36.455090, -120.157045) prairie falcon – one adult observed perched on ground in field (36.436242, -120.246600) loggerhead shrike – one adult observed flying over field (36.473136, -120.193956), one adult observed flying over field (36.487405, -120.206367)
Common Species Observed	California ground squirrel white-crowned sparrow house finch mourning dove red-tailed hawk great-horned owl

Biological Reconnaissance Survey Form

	American kestrel merlin American pipit horned lark killdeer Eurasian collared dove Say's phoebe ruby-crowned kinglet American crow common raven Brewer's blackbird northern mockingbird
Notes	DAR 2335 – disked; large irrigation channel along east side; several BUOW flushed from ditch and adjacent field, burrows mapped; willows at two locations along channel, barn owl flushed from old nests in both; burrowing owl sign observed in two pipes along south side, one burrowing owl present DAR 2274 – disked; BUOW observed in burrows and pipes along eastern road, mapped DAR 2196 - disked DAR 2275 – disked; man-made wetland fed by pipes in NW corner, cattails and other emergent veg DAR 1074 - disked DAR 2265 - disked DAR 1073 - disked DAR 1072 - disked DAR 1627 - disked DAR 2262 – disked DAR 1339 – disked DAR 1340 - disked DAR 2261 - disked DAR 1341 – disked DAR 1070 – disked DAR 1069 – disked; burrowing owl using coyote den in NE corner DAR 1742 – disked DAR 1071 - disked DAR 2227 - disked DAR 2230 - disked

Biological Reconnaissance Survey Form

Date	December 16, 2022
Survey Lead	Amy Leigh Trost
Additional Surveyors	Shannon Morris, Morgan Craig
Arrival Time	0736
Departure Time	1340
Weather	35-51 F, 1-3 mph, Fog/Hazy
Areas Surveyed	DAR 1067 DAR 2230 DAR 1068 DAR 2233 DAR 2231 DAR 2232 DAR 2229 DAR 2221 DAR 1054 DAR 1088 DAR 2225 DAR 1055 DAR 1056 DAR 1066
Species Status Species Observed	mountain plover – flock observed foraging in disked field (36.487574, -120.186184), second flock observed foraging in disked field (36.502088, -120.184597) loggerhead shrike – one adult observed perched in tree on edge of drainage ditch (36.516739, -120.196266), one adult observed flying over field (36.502107, -120.204178), one adult observed flying over field (36.501990, -120.214736)
Common Species Observed	California ground squirrel white-crowned sparrow house finch mourning dove red-tailed hawk horned lark killdeer song sparrow savannah sparrow Eurasian collared dove western meadowlark American crow common raven northern mockingbird
Notes	DAR 1067 – disked; owl boxes along road on east side; mountain plover foraging in field DAR 2230 – disked DAR 1068 – disked

Biological Reconnaissance Survey Form

	DAR 2233 – disked DAR 2231 – disked DAR 2232 - disked DAR 2229 – disked DAR 2221 – disked; ag basin across road to west DAR 1054 – disked DAR 1088 – disked; fallow veg starting to come through DAR 2225 - disked DAR 1055, 1056, 1066 – disked; large ag ditch running across north side of all; 2 coyote burrows; 8 burrowing owl burrows; 3 badger burrows within ditch; lots of dead sheep

Biological Reconnaissance Survey Form

Date	March 31, 2023
Survey Lead	Amy Leigh Trost
Additional Surveyors	Shannon Morris
Arrival Time	0745
Departure Time	1450
Weather	43-62 F, 0-6 mph, Clear
Areas Surveyed	Gentie alignment from Utility Switching station to Parcel Dar_1892
Special Status Species Observed	Swainson's hawk – Two adults and one potential sub-adult observed perched along edge of orchard (36.443075, -120.311246), one adult observed on pole calling outside of project area (36.443075, -120.311246)
Common Species Observed	California ground squirrel house finch mourning dove red-tailed hawk great-horned owl killdeer Eurasian collared dove black phoebe Say's phoebe common raven northern mockingbird
Notes	Mostly existing agriculture including orchards; some orchards have been recently pulled up and dead trees left in place; 3 Swainson's hawks observed on edge of orchard near Cantua Creek and Aqueduct, one adult Swainson's hawk observed on pole calling outside of the project area

San Joaquin Kit Fox Survey

Field Forms

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Darden Solar Project
San Joaquin Kit Fox Habitat Assessment
Survey Data Sheet

Date: Dec 08 2022 **Time Arrived: 0845**

Surveyors: Colin Wilkinson **Time Departed: 1600**

Weather Conditions: Overcast, cold, wet from recent rain

Survey Parcel

Location	Survey Time	Land Description	Habitat Suitability
PVA 25-38	0930-1350	Disked land, bare ground, agriculture, orchard	None
PVA 1	0910	Disked land, bare ground, agriculture	None
PVA 39-42	1011	Disked land, bare ground, agriculture	None
MVE 6	1000	Disked land, bare ground, agriculture	None
GT 2-4, 7, 13, 16, 18, 19, 24-30	1030-1200	Disked land, bare ground, agriculture, orchard	None
PVA 3, 12, 21, 22	1300-1600	Disked land, bare ground, agriculture, orchard	None

Special-status Species Observations[1]

Location	Species[2]	No.	Coordinates	Observation Details	Disposition of Individual(s)

[1]Include signs of special-status species (i.e. dens)

Other Notes

Muddy roads impassable in places. Parcels accessed from various directions/roads.

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Darden Solar Project
San Joaquin Kit Fox Habitat Assessment
Survey Data Sheet

Date: Dec 09 2022 **Time Arrived: 0900**

Surveyors: Colin Wilkinson **Time Departed: 1530**

Weather Conditions: partly cloudy, cool

Survey Parcel

Location	Survey Time	Land Description	Habitat Suitability
PVA 2, 7-11, 15-20	0900-1030	Disked land, bare ground, agriculture fields, orchards	None
MVE 1-5	1100-1345	Disked land, bare ground, agricultural fields, canals and vegetated ponds	None
PVA 1, 4-6	1100-1330	Disked land, bare ground, agricultural fields	None
GT 3, 5, 6, 8-10	1345-1530	Disked land, bare ground, agricultural fields, and orchards	None

Special-status Species Observations[1]

Location	Species[2]	No.	Coordinates	Observation Details	Disposition of Individual(s)
PVA 12	Mountain plover	425	36.48758, -120.20466	Flocks of individuals foraging in disked fields	Flocking and flying from peregrine falcon
PVA 12	Peregrine falcon	1	36.48758, -120.20466	Perched and chasing/hunting mountain plovers	Perched and flying
MVE 2	Burrowing owl	1	36.48019, -120.17946	Perched near burrow	Perched near burrow

[1]Include signs of special-status species (i.e. dens)

Other Notes

Small mammal burrows were noted at 36.504552,-120.205 and 36.425141,-120.411226. No signs of special-status species were found within the area.

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Darden Solar Project
San Joaquin Kit Fox Habitat Assessment
Survey Data Sheet

Date: Dec 13 2022 **Time Arrived: 0945**

Surveyors: Colin Wilkinson, Cassandra Butler **Time Departed: 1400**

Weather Conditions: Partly cloudy, cool

Survey Parcel

Location	Survey Time	Land Description	Habitat Suitability
GT 11, 12, 14, 15, 20-24. 31-39	0945-1045	Disked fields, bare ground, agriculture fields, orchards	None
GT 40-55, 58-61, 63-72	1045-1400	Disked fields, bare ground, agricultural fields, orchards	None

Special-status Species Observations[1]

Location	Species[2]	No.	Coordinates	Observation Details	Disposition of Individual(s)

[1]Include signs of special-status species (i.e. dens)

Other Notes

Small mammal burrows were noted at 36.504552,-120.205. No signs of special-status species were found within the area.

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Darden Solar Project
San Joaquin Kit Fox Habitat Assessment
Survey Data Sheet

Date: Dec 14 2022 **Time Arrived: 1200**

Surveyors: Colin Wilkinson, **Time Departed: 1400**

Weather Conditions: Partly cloudy, cool

Survey Parcel

Location	Survey Time	Land Description	Habitat Suitability
Substation parcel GT 73-74	1200-1400	Disked ground, bare ground, orchards to the east, grassland to the west	Immediately adjacent to SJKF and BUOW habitat to the west. California ground squirrel burrows in western portion of project.

Special-status Species Observations[1]

Location	Species[2]	No.	Coordinates	Observation Details	Disposition of Individual(s)

[1]Include signs of special-status species (i.e. dens)

Other Notes

Small mammal burrows were noted at 36.423458,-120.411224. No signs of special-status species were found within the area.

Swainson's Hawk Surveys

Field Forms

SWHA Survey Form

Date	April 3, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Evening survey start time: 16:00
Departure Time	Evening survey end time: 20:00
Weather	Evening survey start/end temp: 55/58 F Evening survey wind: 15-20 mph mostly sunny, clear
Areas Surveyed	Gen-tie route plus 0.5-mile buffer (Cantua Creek area between S Monterey Ave and S Stanislaus Ave)
Special Status Species Observed	Swainson's hawk – 2 adults observed displaying courtship behaviors and perched in cottonwood tree (36.429429, -120.343024)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 1 Confirmed no suitable nest trees at historic nest site 36-TRQ. Swainson's hawks staging in nest territories; some courtship/nest building observed.

SWHA Survey Form

Date	April 4, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Morning survey start time: 06:30 Evening survey start time: 16:00
Departure Time	Morning survey end time: 10:00 Evening survey end time: 19:45
Weather	Morning survey start/end temp: 35/51 Evening survey start/end temp: 61/50 Morning survey wind: 3-10 mph Evening survey wind: 10-14 mostly cloudy
Areas Surveyed	Project site plus 0.5-mile buffer (north of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – adult observed perched in line of Eucalyptus, no nest identified (36.471496, -120.221042); group of foraging adults observed in field behind tractor as it was being disked (36.474319, -120.244914)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 1 Red-tailed hawk and great-horned owl nesting activity in both lines of Eucalyptus in the project site. Several inactive raptor nests observed.

SWHA Survey Form

Date	April 5, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Morning survey start time: 07:00
Departure Time	Morning survey end time: 12:00
Weather	Morning survey start/end temp: 35/55 Morning survey wind: 6-9 mph mostly cloudy
Areas Surveyed	Project site plus 0.5-mile buffer (south of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – group of ~20 adults observed foraging in recently disked field (36.458159, -120.198301)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 1 Three great-horned owl nests, one red-tailed hawk nest and an inactive raptor nest documented in southernmost line of Eucalyptus in the project site.

SWHA Survey Form

Date	April 11, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Evening survey start time: 16:00
Departure Time	Evening survey end time: 20:00
Weather	Evening survey start/end temp: 75/65 Evening survey wind: 8-12 mph mostly cloudy
Areas Surveyed	Gen-tie route plus 0.5-mile buffer (Cantua Creek area between S Monterey Ave and S Stanislaus Ave)
Special Status Species Observed	Swainson's hawk – adult pair observed flying overhead (36.430162, -120.348952)
Common Species Observed	red-tailed hawk great-horned owl common raven
Notes	Period II/III Survey 2 Active great-horned owl nest in small willow along the west bank of the canal that bisects gen-tie route. Common raven nest in utility tower just outside 0.5-mile buffer and two red-tailed hawk nests documented in gen-tie route.

SWHA Survey Form

Date	April 12, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Morning survey start time: 06:30 Evening survey start time: 16:00
Departure Time	Morning survey end time: 10:00 Evening survey end time: 20:00
Weather	Morning survey start/end temp: 48/57 Evening survey start/end temp: 70/60 Morning survey wind: 8-14 mph Evening survey wind: 10-15 mph mostly cloudy
Areas Surveyed	Project site plus 0.5-mile buffer (north of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – two adults flushed from nest in line of Eucalyptus within 0.5 mile buffer (Nest A, 36.475744, -120.248592)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 2 Swainson's hawks still primarily staging in territories with some courtship/nest building. Red-tailed hawk and great-horned owl nesting activity observed.

SWHA Survey Form

Date	April 13, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Morning survey start time: 06:30
Departure Time	Morning survey end time: 10:00
Weather	Morning survey start/end temp: 50/58 Morning survey wind: 12-16 mph partly sunny
Areas Surveyed	Project site plus 0.5-mile buffer (south of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – one adult observed foraging in field of mustard (*Brassica nigra*) near Eucalyptus tree line (36.455162, -120.216712); Adult Swainson's hawk observed on nest. Second adult observed foraging nearby (36.443796, -120.229731; Nest B)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 2 Swainson's hawks still primarily staging in territories with some courtship/nest building. Red-tailed hawk and great-horned owl nesting activity observed.

SWHA Survey Form

Date	April 17, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Morning survey start time: 06:30 Evening survey start time: 16:00
Departure Time	Morning survey end time: 10:00 Evening survey end time: 20:00
Weather	Morning survey start/end temp: 47/61 Evening survey start/end temp: 71/58 Morning survey wind: 0-7 mph Evening survey wind: 7-10 mph mostly cloudy
Areas Surveyed	Gen-tie route (Cantua Creek area between S Monterey Ave and S Stanislaus Ave) and project site plus 0.5-mile buffer (north of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – Unoccupied nest observed in tree in northern portion of northernmost Eucalyptus tree line in the project site. A pair of Swainson's hawks observed in the vicinity (36.471403, -120.221042; Nest C)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 3 Red-tailed hawk and great-horned owl nesting activity observed. Two active red-tailed hawk nests and two active great-horned owl nests observed in gen-tie route buffer.

SWHA Survey Form

Date	April 18, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Leigh Trost
Arrival Time	Morning survey start time: 06:30
Departure Time	Morning survey end time: 10:00
Weather	Morning survey start/end temp: 45/56 Morning survey wind: 0-12 mph mostly cloudy
Areas Surveyed	Project site plus 0.5-mile buffer (south of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – observed perched on telephone lines in project vicinity.
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period II/III Survey 3 Red-tailed hawk and great-horned owl nesting activity observed. Great-horned owl nesting in lone cottonwood in northern portion of project site.

SWHA Survey Form

Date	05/01/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Trost, Shannon Morris, Morgan Craig
Arrival Time	Morning survey start time: 0600 Evening survey start time: 1515
Departure Time	Morning survey end time: 1045 Evening survey end time: 2030
Weather	Morning survey start/end temp: 49/62 Evening survey start/end temp: 67/52 Morning survey wind: 0-3 Evening survey wind: 1-5 cloudy
Areas Surveyed	Project site plus 10-mile buffer – entire Cantua Creek area and project site
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Surveyed trees identified on aerials and during recon surveys <u>Nesting Survey (0.5-mile buffer): Period IV Survey 4</u> Checked on Nest C, adult observed at nest. Identified new nest in Eucalyptus within project site (36.455497, -120.212220; Nest D). Pair observed copulating in vicinity of nest, subadult observed nearby. <u>Foraging Survey (10-mile buffer)</u> Pair observed perched in tree (36.599843, -120.218678) One adult perched in tree near nest (36.589186, -120.214603) Two adults perched in tree surrounding nest (36.501233, -120.311273) Beginning of nest observed in tree. Pair observed nearby (36.428687, -120.336679) Adult observed sitting in nest (36.621998, -120.149415)

SWHA Survey Form

Date	05/02/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Trost, Shannon Morris, Morgan Craig
Arrival Time	Morning survey start time: 0530 Evening survey start time: 1515
Departure Time	Morning survey end time: 1030 Evening survey end time: 2015
Weather	Morning survey start/end temp: 51/60 Evening survey start/end temp: 65/54 Morning survey wind: 3-8 Evening survey wind: 1-7 sprinkled
Areas Surveyed	Project site plus 10-mile buffer –surveyed trees along I-5 and levees in east
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Surveyed trees identified on aerials and during recon surveys <u>Nesting Survey (0.5-mile buffer): Period IV Survey 4</u> No new nests observed within 0.5-mile buffer <u>Foraging Survey (10-mile buffer)</u> One adult sitting in nest. One adult perched nearby (36.583087, -120.154044) Adult perched nearby stick nest (36.574771, -120.137131) Nest in sparse eucalyptus. Adults observed sitting on pole next to nest tree (36.383526, -120.231658) Nest with two adults sitting in tree (36.482229, -120.095702) Copulation observed. Pair potentially taking over GHOW nest (36.383157, -120.269882) Large stick nest with adult perched in tree (36.532637, -120.100509) Adult sitting on nest (36.428997, -120.257517) Copulation and nest material carry observed (36.428871, -120.266910)

SWHA Survey Form

	Adult observed carrying materials to nest (36.418342, -120.193686) Pair observed hovering over nest in Eucalyptus (36.419493, -120.193691) Adult sitting in nest (36.468540, -119.998971)

SWHA Survey Form

Date	05/03/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Trost, Shannon Morris, Morgan Craig
Arrival Time	Morning survey start time: 0600 Evening survey start time: 1515
Departure Time	Morning survey end time: 1015 Evening survey end time: 1930
Weather	Morning survey start/end temp: 48/60 Evening survey start/end temp: 65/51 Morning survey wind: 1-5 mph Evening survey wind: 0-3 mph sprinkled
Areas Surveyed	Project site plus 10-mile buffer (north of Cantua Creek and west of Project site)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Surveyed trees identified on aerials and during recon surveys <u>Nesting Survey (0.5-mile buffer): Period IV Survey 4</u> No new nests observed within 0.5-mile buffer <u>Foraging Survey (10-mile buffer)</u> Adult observed in large stick nest in Eucalyptus (36.443182, -120.193838) One adult in nest, one adult perched in nest tree (36.482896, -120.001947) One adult sitting in nest, one adult perched in nest tree (36.517113, -120.053549) Adult observed in nest (36.402065, -120.103111) Adult observed on top of tree. Unable to verify nest due to private property (36.516934, -120.378457)

SWHA Survey Form

Date	05/04/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Amy Trost, Shannon Morris, Morgan Craig
Arrival Time	Morning survey start time: 0630 Evening survey start time: 1330
Departure Time	Morning survey end time: 1115 Evening survey end time: 1600
Weather	Morning survey start/end temp: 51/60 Evening survey start/end temp: 62/64 Morning survey wind: 0-4 mph Evening survey wind: 0-3 mph sprinkled
Areas Surveyed	Project site plus 10-mile buffer (10-mile buffer south of project site and east of Aqueduct)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Surveyed trees identified on aerials and during recon surveys <u>Nesting Survey (0.5-mile buffer): Period IV Survey 4</u> Checked on Nest A. One adult observed in nest and one perched nearby in nest tree. <u>Foraging Survey (10-mile buffer)</u> No new nests observed within 10-mile buffer

SWHA Survey Form

Date	05/05/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Morgan Craig
Arrival Time	Morning survey start time: 0615
Departure Time	Morning survey end time: 1015
Weather	Morning survey start/end temp: 52/54 Morning survey wind: 2-7 mph
Areas Surveyed	Project site plus 10-mile buffer (10-mile buffer directly north of Project site)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Surveyed trees identified on aerials and during recon surveys <u>Foraging Survey (10-mile buffer)</u> Pair sitting in tree near nest (36.610874, -120.241815)

SWHA Survey Form

Date	06/12/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Shannon Morris, Amy Trost, Cristy Rice
Arrival Time	Evening survey start time: 1530
Departure Time	Evening survey end time: 1930
Weather	Evening survey start/end temp: 82/81 Evening survey wind: 7 mph cloudy
Areas Surveyed	Project site plus 10-mile buffer (Cantua Creek west of S Stanislaus Ave and the eastern levees)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Re-checked nests, suitable trees, and territories identified during May surveys. <u>Nesting Survey (0.5-mile buffer): Period V Survey 5</u> Nest A – Adult sitting in nest Nest D – Adult sitting in nest, could be incubating or brooding Nest E – Adult female observed sitting low in the nest, believed to be incubating eggs. <u>Foraging Survey (10-mile buffer)</u> Two fledglings in nest identified in May (36.621677, -120.149099) Adult sitting in nest (36.583000, -120.153920) Adult observed sitting in nest (36.574653, -120.136236)

SWHA Survey Form

Date	06/13/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Shannon Morris, Amy Trost, Cristy Rice
Arrival Time	Morning survey start time: 0630 Evening survey start time: 1600
Departure Time	Morning survey end time: 1100 Evening survey end time: 2015
Weather	Morning survey start/end temp: 62/76 Evening survey start/end temp: 80/77 Morning survey wind: 3-8 mph Evening survey wind: 7-8 mph Cloudy/muggy
Areas Surveyed	Project site plus 10-mile buffer (south of project site and continued survey of eastern levees)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Re-checked nests, suitable trees, and territories identified during May surveys. <u>Nesting Survey (0.5-mile buffer): Period V Survey 5</u> Nest B - Adult on nest potentially brooding. Observed checking under itself periodically. Second adult believed to be the male observed nearby. Nest C - Adult female on nest believed to be incubating eggs or potentially with hatchlings. <u>Foraging Survey (10-mile buffer)</u> Adult on edge of nest. Likely with chicks (36.443073, -120.193980) Nest is falling apart. No Swainson's hawks observed (36.501347, -120.312017) Nest was empty and no Swainson's hawks observed in vicinity (36.501347, -120.312017) Adult on edge of nest. One nestling observed (36.430092, -120.256742) Unable to locate nest identified in May (36.428875, -120.266295) Adult observed returning to nest. Potential food carry (36.418414, -120.193686)

SWHA Survey Form

	Trees have leafed out, unable to see into nest and unable to enter private property. No Swainson's hawks observed at this nest (36.419519, -120.193691) New nest with adult observed in Eucalyptus tree (36.430847, -120.193778)

SWHA Survey Form

Date	06/14/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Shannon Morris, Amy Trost, Cristy Rice
Arrival Time	Morning survey start time: 0610 Evening survey start time: 1600
Departure Time	Morning survey end time: 1050 Evening survey end time: 2000
Weather	Morning survey start/end temp: 62/79 Evening survey start/end temp: 90/87 Morning survey wind: 3-5 mph Evening survey wind: 7 mph Partly cloudy
Areas Surveyed	Project site plus 10-mile buffer (Cantua Creek west of S Stanislaus Ave , eastern levees)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Re-checked nests, suitable trees, and territories identified during May foraging surveys. <u>Nesting Survey (0.5-mile buffer): Period V Survey 5</u> No new nests observed within 0.5-mile buffer <u>Foraging Survey (10-mile buffer)</u> Nest identified in May empty. No Swainson's hawks in area (36.423259, -120.370575) Adult observed in nest (36.423259, -120.370575) Female observed sitting in nest (36.589377, -120.214948) Nest in backyard Eucalyptus. Adult in nest, potentially incubating. Second adult flying overhead (36.643707, -120.231123)

SWHA Survey Form

Date	06/15/2023
Survey Lead	Stephen Stringer
Additional Surveyors	Shannon Morris, Amy Trost, Cristy Rice
Arrival Time	Morning survey start time: 0600 Evening survey start time: 1615
Departure Time	Morning survey end time: 1300 Evening survey end time: 1945
Weather	Morning survey start/end temp: 67/85 Evening survey start/end temp: 91/86 Morning survey wind: 0-3 mph Evening survey wind: 1-5 mph Partly cloudy
Areas Surveyed	Project site plus 10-mile buffer (south and east of project site)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Re-checked nests, suitable trees, and territories identified during May foraging surveys. <u>Foraging Survey (10-mile buffer)</u> Observed adult fly over twice. Potentially heard chick calls. Cannot see into nest (36.382998, -120.270297) No activity at nest observed in May (36.467530, -119.997699) Adult observed sitting in nest (36.482438, -120.001475) Fledgling observed sitting on nest (36.401514, -120.103256) Observed adult fly out of Eucalyptus. Unable to confirm if adult was incubating (36.484646, -120.032375) Female sitting in nest that had previous had a great-horned owl (36.459022, -120.046451) Adult perched in tree near nest (36.456831, -119.992549) One adult in nest in cottonwood and other sitting next to nest (36.429781, -120.075714)

SWHA Survey Form

Date	06/16/2023
Survey Lead	Amy Trost
Additional Surveyors	Shannon Morris
Arrival Time	Morning survey start time: 0645
Departure Time	Morning survey end time: 0930
Weather	Morning survey start temp: 67 Morning survey end temp: 72 Morning survey wind: 0-5 mph partly cloudy
Areas Surveyed	Project site plus 10-mile buffer (Cantua Creek east of S Stanislaus Ave)
Special Status Species Observed	Swainson's hawk (see notes below)
Common Species Observed	red-tailed hawk great-horned owl
Notes	Re-checked nests, suitable trees, and territories identified during May foraging surveys. <u>Foraging Survey (10-mile buffer)</u> Nest identified in May now empty (36.428687, -120.337093)

SWHA Survey Form

Date	July 11, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Morgan Craig
Arrival Time	Evening survey start time: 16:30
Departure Time	Evening survey end time: 19:30
Weather	Evening survey start/end temp: 92/99 Evening survey wind: 1-2 mph clear, sunny
Areas Surveyed	Project site plus 0.5-mile buffer (south of W Cerini Ave)
Special Status Species Observed	Swainson's hawk – observed flying overhead outside of project site within vicinity
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period V Survey 6 Red-tailed hawk and great-horned owl nesting activity throughout site appears complete.

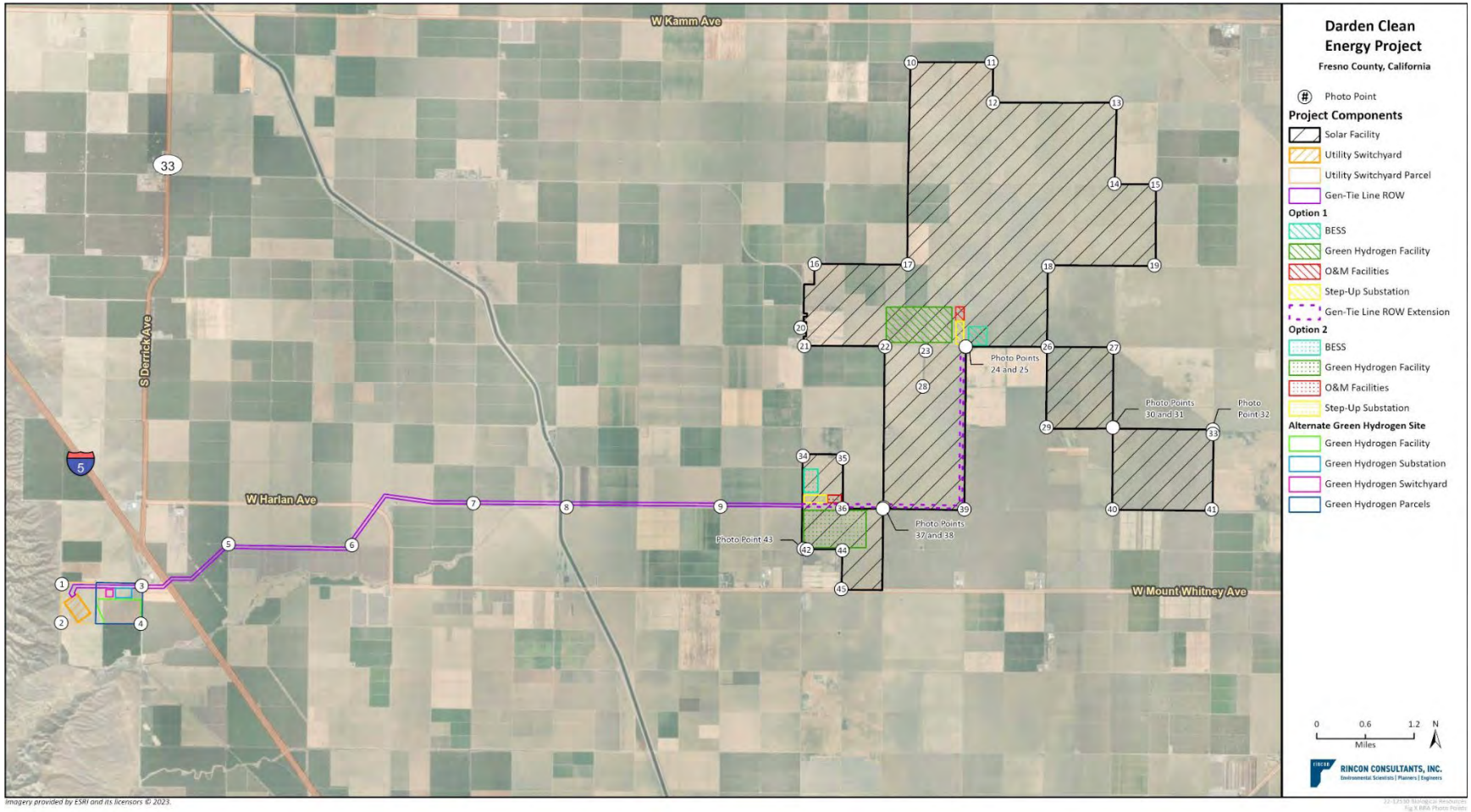
SWHA Survey Form

Date	July 12, 2023
Survey Lead	Stephen Stringer
Additional Surveyors	Morgan Craig
Arrival Time	Morning survey start time: 06:00 Evening survey start time:16:30
Departure Time	Morning survey end time: 10:00 Evening survey end time:19:45
Weather	Morning survey start/end temp: 63/86 Evening survey start/end temp: 102/92 Morning survey wind: 3-5 mph Evening survey wind: 0-8 mph clear, sunny
Areas Surveyed	Gen-tie route (Cantua Creek area between S Monterey Ave and S Stanislaus Ave) and project site plus 0.5-mile buffer (north of W Cerini Ave)
Special Status Species Observed	Swainson's hawk - Swainson's hawk pair observed guarding new nest. Nest status unknown. No fledglings observed. Nest was not observed during prior surveys (36.465570, -120.221436; Nest F). Nest A – fledgling Swainson's hawk observed in nest Nest B - adult sitting in nest in southwest portion of the site, unable to determine if chicks were present Nest C - fledgling observed in northern nest in the northernmost Eucalyptus tree line in the project site Nest D - fledgling in nest in southernmost Eucalyptus tree line in the project site with two adults guarding nest Nest E – no Swainson's hawk observed during final survey
Common Species Observed	red-tailed hawk great-horned owl
Notes	Period V Survey 6 Red-tailed hawk, and great-horned owl nesting activity observed.

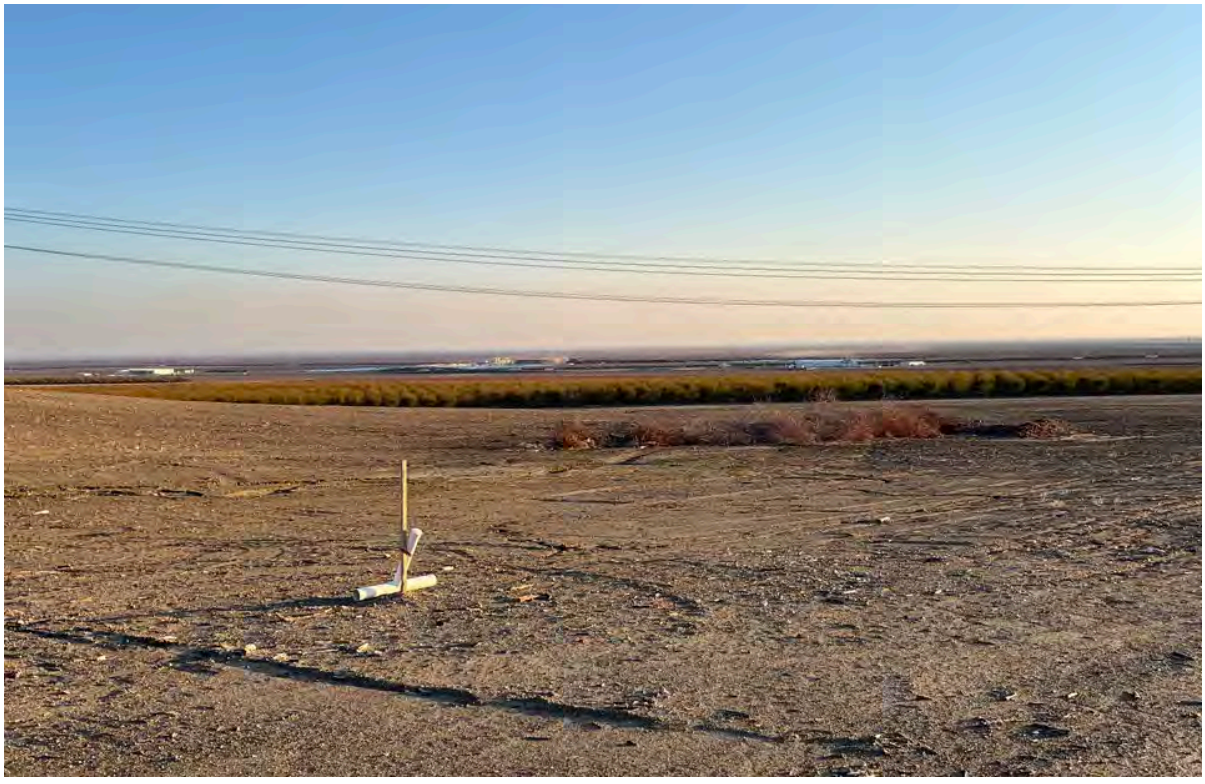
Appendix Q-4

Site Photographs

Figure D-1 Photo Points Map



Photograph 1. View of orchard taken on December 14, 2023, facing southeast.



Photograph 2. View of disturbed area with orchard in background taken on December 14, 2023, facing northeast.

Photograph 3. View of disked parcel taken on March 31, 2023, facing west.

Photograph 4. View of disked parcel and irrigation line taken on March 31, 2023, facing northwest.

Photograph 5. View of graded area with chipped piles taken on March 31, 2023, facing southwest.

Photograph 6. View of young orchard taken on March 31, 2023, facing northeast.

Photograph 7. View of orchard taken on March 31, 2023, facing east.

Photograph 8. View of aqueduct facility on March 31, 2023, facing west.

Photograph 9. View of active agricultural field on March 31, 2023, facing east.

Photograph 10. View of disked field on December 16, 2023, facing south.

Photograph 11. View of disked field on December 16, 2022, facing southwest.

Photograph 12. View of disked field on December 16, 2022, facing southeast.

Photograph 13. View of disked field on December 16, 2022, facing southwest.

Photograph 14. View of disked field on December 16, 2022, facing northwest.

Photograph 15. View of disked field on December 16, 2022, facing north.

Photograph 16. View of disked field on December 15, 2022, facing southeast.

Photograph 17. View of disked field and irrigation equipment on December 15, 2022, facing northeast.

Photograph 18. View of disked field with irrigation ditch on December 15, 2022, facing southwest.

Photograph 19. View of disked field on December 16, 2022, facing northwest.

Photograph 20. Adult Swainson's hawk perched at top of tree near nest.

Photograph 21. View of disked field on December 15, 2022, facing northeast.

Photograph 22. View of disked field on December 15, 2022, facing northwest.

Photograph 23. Swainson's hawk nest in upper right-hand side of tree.

Photograph 24. View of disked field on December 15, 2022, facing northwest.

Photograph 25. View of disked field with eucalyptus row on December 15, 2022, facing southwest.

Photograph 26. View of naturalized irrigation basin on December 15, 2022, facing southeast.

Photograph 27. View of disked field on December 15, 2022, facing southeast.

Photograph 28. Swainson's hawk nest in background near top of tree.

Photograph 29. View of disked field and retired/managed agriculture on December 15, 2022, facing northeast.

Photograph 30. View of disked field on December 15, 2022, facing northeast.

Photograph 31. View of disked field on December 15, 2022, facing northwest.

Photograph 32. View of disked field with irrigation channel on December 15, 2022, facing southwest.

Photograph 33. View of active burrowing owl burrow with whitewash on December 15, 2022.

Photograph 34. View of disked field on December 14, 2022, facing southeast.

Photograph 35. View of disked field on December 14, 2022, facing southwest.

Photograph 36. View of disked field on December 14, 2022, facing northwest.

Photograph 37. View of disked field on December 14, 2022, facing northeast.

Photograph 38. View of disked field on December 14, 2022, facing southwest.

Photograph 39. View of disked field on December 14, 2022, facing northwest.

Photograph 40. View of disked field with irrigation piping on December 15, 2022, facing northeast.

Photograph 41. View of disked field on December 15, 2022, facing northwest.

Photograph 42. View of disked field on December 14, 2022, facing northeast.

Photograph 43. View of burrowing owl using burrow in trash pile on December 14, 2022.

Photograph 44. View of disked field on December 14, 2022, facing northeast.

Photograph 45. View of disked field with stockpiles on December 14, 2022, facing north.

Appendix Q-5

Species Compendia

Plant Species Observed Within the Biological Study Area

	Common Name	Status	Native or Introduced
Trees			
Eucalyptus camaldulensis	red gum eucalyptus	None	Introduced
Populus fremontii	Fremont cottonwood	None	Native
Salix lasiolepis	arroyo willow	None	Native
Herbs			
Brassica nigra	black mustard	Cal-IPC Moderate	Introduced
Triticum aestivum	bread wheat	None	Introduced
Phacelia ciliate	great valley phacelia	None	Native
Convolvulus arvensis	field bindweed	None	Introduced

Wildlife Species Observed Within the Biological Study Area

Scientific Name	Common Name	Status	Native or Introduced
Birds			
Agelaius phoeniceus	red-winged blackbird	None	Native
Anas platyrhynchos	mallard	None	Native
Anthus rubescens	American pipit	None	Native
Aphelocoma californica	California scrub-jay		
Aquila chrysaetos	golden eagle	FP, WL	Native
Ardea alba	great egret	None	Native
Ardea herodias	great blue heron	None	Native
Athene cunicularia	burrowing owl	SSC	Native
Aythya affinis	lesser scaup	None	Native
Branta canadensis	Canada goose	None	Native
Bubo virginianus	great-horned owl	None	Native
Buteo jamaicensis	red-tailed hawk	None	Native
Buteo regalis	ferruginous hawk	WL	Native
Buteo swainson	Swainson's hawk	ST	Native
Calypte anna Swainson's	Anna's hummingbird	None	Native
Cathartes aura	turkey vulture	None	Native
Charadrius montanus	mountain plover	SSC	Native
Charadrius vociferus	killdeer	None	Native
Circus hudsonius	northern harrier	SSC	Native
Colaptes auratus	northern flicker	None	Native
Columba livia	rock pigeon	None	Introduced
Corthylio calendula	ruby-crowned kinglet	None	Native
Corvus brachyrhynchos	American crow	None	Native
Corvus corax	common raven	None	Native
Egretta thula	snowy egret	None	Native
Elanus leucurus	white-tailed kite	FP	Native

Scientific Name	Common Name	Status	Native or Introduced
Eremophila alpestris actia	California horned lark	WL	Native
Euphagus cyanocephalus	Brewer's blackbird	None	Native
Falco mexicanus	prairie falcon	WL	Native
Falco sparverius	American kestrel	None	Native
Fulica americana	American coot	None	Native
Haemorhous mexicanus	house finch	None	Native
Hirundo rustica	barn Swallow	None	None
Icterus bullockii	Bullock's Oriole	None	Native
Junco hyemalis	dark-eyed junco	None	Native
Lanius ludovicianus	loggerhead shrike	SSC	Native
Leiothlypis celata	orange-crowned warbler	None	Native
Melospiza melodia	song sparrow	None	Native
Melozone crissalis	California towhee	None	Native
Mimus polyglottos	northern mockingbird	None	Native
Molothrus ater	brown-headed cowbird	None	Native
Nycticorax nycticorax	black-crowned night-heron	None	Native
Oreoscoptes montanus	sage thrasher	None	Native
Passer domesticus	house sparrow	None	Introduced
Passerculus sandwichensis	savannah sparrow	None	Native
Petrochelidon pyrrhonota	cliff sparrow	None	Native
Picoides nuttallii	Nuttall's woodpecker	None	Native
Pooecetes gramineus affinis	vesper sparrow	SSC	Native
Quiscalus mexicanus	great-tailed grackle	None	Native
Sayornis nigricans	black phoebe	None	Native
Sayornis saya	Say's phoebe	None	Native
Setophaga coronate	yellow-rumped warbler	None	Native
Setophaga petechia	yellow warbler	SSC	Native
Sialia currucoides	mountain bluebird	None	Native
Stelgidopteryx serripennis	northern rough-winged Swallow	None	Native
Streptopelia decaocto	Eurasian collared-dove	None	Introduced
Sturnella neglecta	western meadowlark	None	Native
Sturnus vulgaris	European Starling	None	Introduced
Tachycineta bicolor	tree swallow	None	Native
Tyrannus verticalis	western kingbird	None	Native
Tyto alba	barn owl	None	Native
Zenaida macroura	mourning dove	None	Native
Zonotrichia leucophrys	white-crowned sparrow	None	Native
--	swallow sp.	--	--

Scientific Name	Common Name	Status	Native or Introduced
Mammals			
Canis latrans	coyote	None	Native
Lepus californicus	black-tailed jackrabbit	None	Native
Otospermophilus beecheyi	California ground squirrel	None	Native
Sylvilagus audubonii	desert cottontail	None	Native
Taxidea taxus	American badger	SSC	Native
Thomomys bottae	Botta's pocket gopher	None	Native
Reptiles			
Lampropeltis californiae	California king snake	None	Native
Sceloporus occidentalis	western fence lizard	None	Native
Amphibians			
Anaxyrus boreas	western toad	None	Native

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Appendix Q-6

San Joaquin Kit Fox Habitat Assessment

H. T. HARVEY & ASSOCIATES

Ecological Consultants

50 years of field notes, exploration, and excellence

Darden Solar Project
San Joaquin Kit Fox Assessment

Project #4695-01

Prepared for:

Rincon Consultants, Inc.
7080 N. Whitney Ave.
Fresno, CA 93720

Prepared by:

H. T. Harvey & Associates

March 2023

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Appendices

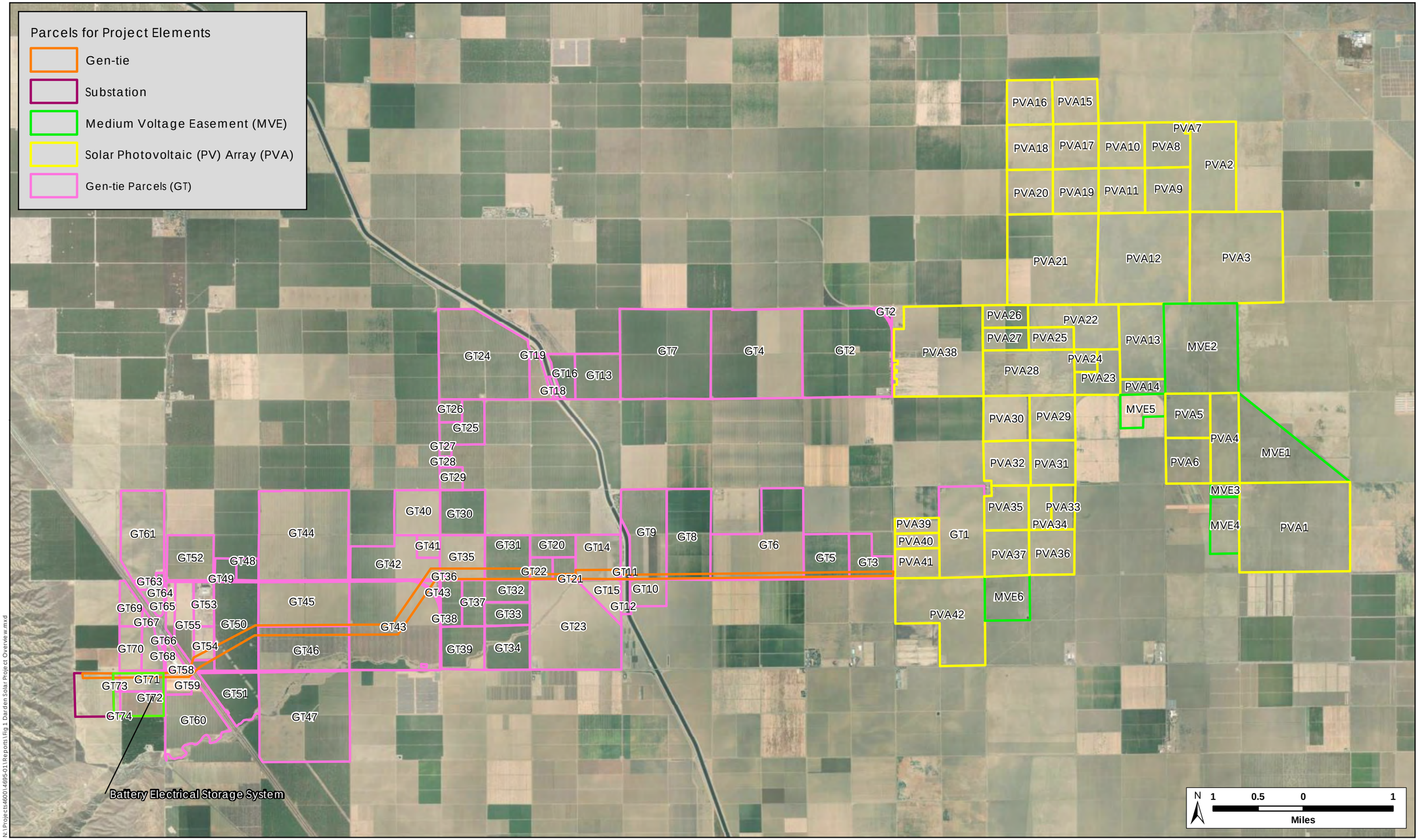
List of Preparers

Brian Boroski, Ph.D., Principal
Marianne Huizing, M.S., Senior Wildlife Ecologist
Allison Gibson, B.A., GIS Analyst

Section 1. Introduction

San Joaquin kit foxes (*Vulpes macrotis mutica*, hereafter, SJKF) inhabit the San Joaquin Valley and associated foothills, and flatlands such as the Carrizo Plain and Panoche Valley (U.S. Fish and Wildlife Service [USFWS] 2020). In 1967, the species was listed as endangered under the federal Endangered Species Act and in 1971, it was listed as endangered under the California Endangered Species Act. The Recovery Priority Number for SJKF is 3C (USFWS 1998), which reflects a high degree of threat, a high recovery potential, and a taxonomic rank of subspecies (USFWS 1983). The "C" indicates the conflict of the species with construction or other development projects or other forms of economic activity. As loss of habitat continues to threaten SJKF, the distribution of suitable habitat changes with time, and this loss and temporal change in the distribution of suitable habitat effects the occurrence of SJKF. H. T. Harvey & Associates has conducted an assessment of habitat suitability for SJKF within a 5-mile radius of the Darden Solar Project (Project) and the potential for the species to occur within the Project site. The Project consists of three components: (1) an approximate 1 gigawatt solar photovoltaic (PV) array, (2) medium voltage easement, and (3) a gen-tie of approximately 9 miles. For purposes of this report, reference to the Project will imply the above three components, unless explicated stated otherwise in the report. The southeast corner of the Project is approximately 3 miles northwest of the unincorporated community of Five Points in Fresno County, California. The PV array will be located within parcels of Westlands Water District land and encompasses approximately 9,000 acres. Medium voltage lines will be placed within easements on adjacent parcels of private land. The gen-tie spans private land heading west from the PV array to the base of the Tumey Hills range. The battery electric storage system (BESS) and the substation will be located on the two most western parcels associated with the gen-tie (Figure 1). The purpose of this report is to evaluate the potential for SJKF to occur on the Project site and within the vicinity of the Project.

In general, habitat quality for wildlife species can be defined as highly suitable, moderately suitable, and having low or no suitability, with the degree of suitability an area has for a specific species being dependent on what a species needs to survive and for a population to persist. High-quality habitat for SJKF typically supports robust and persistent kit fox populations and consists primarily of flat or gentle sloping terrain in sparsely vegetated natural areas, such as desert scrub or low grasslands dominated by red brome (*Bromus madritensis*) (McGrew 1979; Cypher et al. 2013); has a high density of small mammals for prey, in particular kangaroo rats (*Dipodomys spp*) (McGrew 1979); and loose textured soil for denning (Morrell 1972). Other contributing factors include size of the area of suitable habitat and connectivity of areas with suitable habitat to existing populations of SJKF. Other land such as grazed grasslands (Morrell 1972), retired farmland, and ruderal grassland may provide moderate-quality habitat for SJKF and support less dense or intermittently present SJKF populations (Cypher et al. 2013). Moderate-quality habitat, although at times to a certain extent natural, is of lower quality due to the presence and increased density of weedy herbaceous vegetation, a lower abundance of prey, and lack of suitable soil for denning. Other habitat types and altered anthropogenic lands (e.g., agricultural lands, urban areas) represent low or no suitability, where SJKF populations appear to be absent with no or only infrequent observations of individual foxes (Cypher et al. 2013).



N:\Projects\4600\4695-01\Reports\Fig 1 Darden Solar Project Overview.mxd

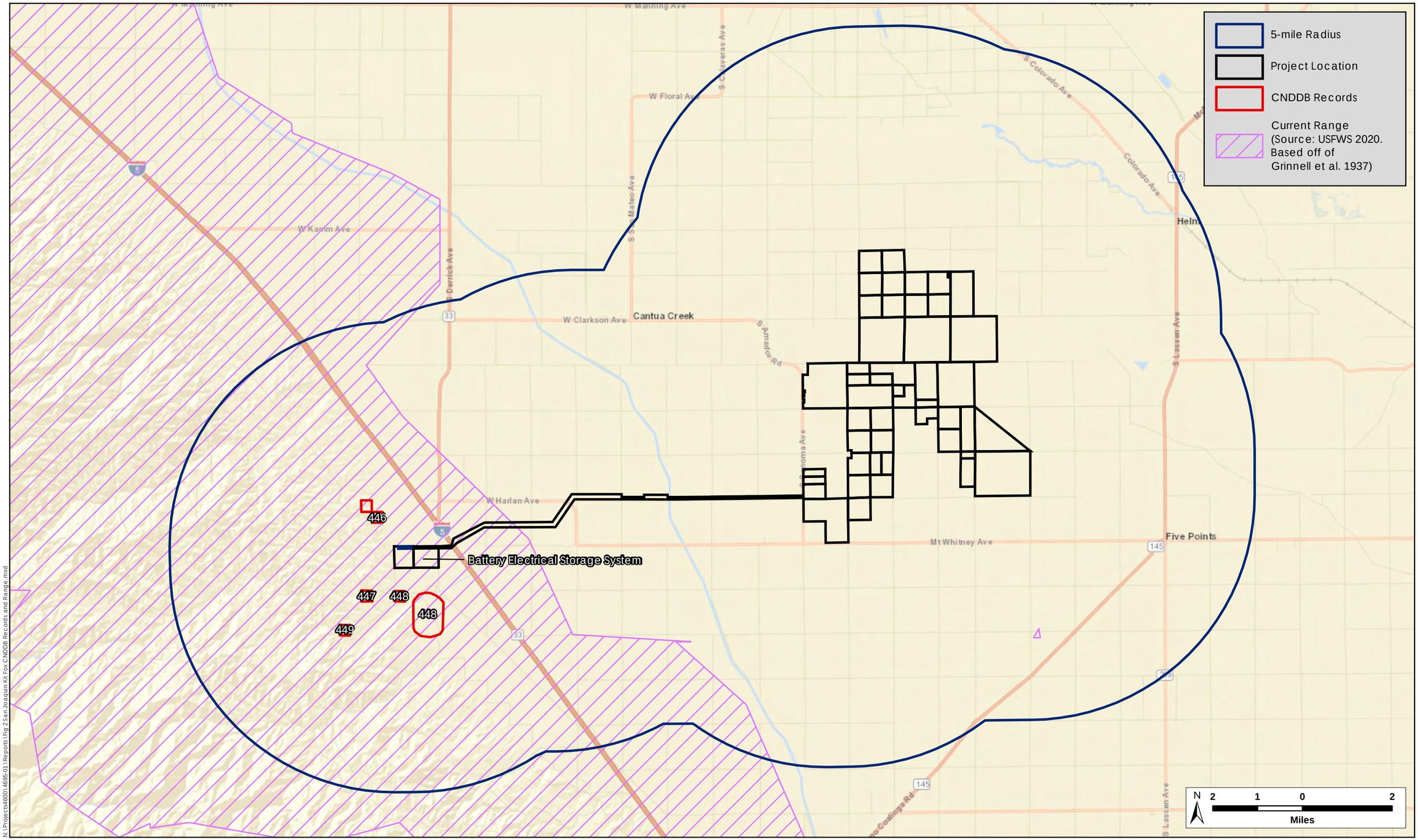
H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 1. Darden Solar Project Overview
Darden Solar Project
San Joaquin Kit Fox Assessment (4695-01)
August 2023

Section 2. Assessment Methodology

To evaluate the potential for SJKF to occur on the Project site or within the vicinity of the Project, a desktop analysis was completed. The analysis included (1) an examination of the historical range of SJKF in relation to the Project site, (2) a review the California Natural Diversity Database (CNDDB) records within the vicinity of the Project, (3) an assessment of habitat types and suitability on the Project and within a 5-mile radius of the Project by reviewing aerial imagery on Google Earth, and (4) a summary of SJKF ecology related to habitat type and size of area necessary for the species' survival and population persistence. Along with the desktop analysis, to verify Project site conditions and habitat quality for SJKF, H. T. Harvey & Associates qualified biologists completed a reconnaissance-level survey of the Project area. The reconnaissance survey included driving along the rural county roads to document land cover and habitat suitability to support prey and denning conditions for SJKF. Biologists had permission to access the PV array parcels and the substation parcel, and were able to survey and document habitat conditions in areas that were less disturbed (i.e., around storage buildings, drainage areas) within these parcels. These parcels were surveyed on December 8-9, 2022, and December 14, 2022, respectively. The parcels that contain the easements for the medium voltage lines, the BESS parcel, and the gen-tie line consisted of private lands and land cover was strictly surveyed and documented from the nearest county roads. The parcels that contain the easements for the medium voltage lines were surveyed on December 8-9, 2022 and the BESS parcel and gen-tie line were surveyed on December 13, 2022.

The assessment of the potential for SJKF to occur within the Project and vicinity began with a review of the species' historical range (USFWS 1998) and California Natural Diversity Database (CNDDB) records within a 5-mile radius of the Project (Figure 2). The 5-mile radius was included in the review, because even though SJKF can disperse long distances, they more commonly disperse shorter distances from their place of birth, with an average dispersal distance of 4.8 +/- 0.7 miles. Habitat suitability for SJKF was modeled within the species' historical range by Cypher et al. (2013) and was used to analyze habitat conditions for SJKF within the Project and the 5-mile radius. In brief, Cypher et al. (2013) modeled habitat suitability using remotely sensed measurements of three habitat attributes considered most important for SJKF. These attributes were (1) land use/land cover, (2) terrain ruggedness, and (3) vegetation density. A GIS model of land use/land cover was assigned values of 1-100 (with 100 being the most suitable) based on prior SJKF habitat use studies; topography ruggedness was based on a 100-foot elevation interval; and remotely sensed Moderate Resolution Imaging Spectroradiometer (MODIS) imagery was used for vegetation density. Even though the habitat suitability model was produced nearly a decade ago and does not reflect current conditions in some areas due to changes in land use, it remains the best range-wide model of the distribution of suitable habitats for the species. Although Cypher et al. (2013) modeled suitable habitat as low to none, moderate, and high, in this report only areas modeled as moderate or highly suitable habitat were used in the analysis, because SJKF populations are typically absent with no or only infrequent observations of individual foxes where habitats are low or no suitability (Cypher et al. 2013). This approach is still conservative for the species because SJKF



N:\Projects\4600\4695-01\Reports\Fig 2 San Joaquin Kit Fox CNDDB Records and Range.mxd

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Figure 2. San Joaquin Kit Fox CNDDB Records and Current Range
Darden Solar Project
San Joaquin Kit Fox Assessment (4695-01)
March 2023

populations are unlikely to persist in areas modeled as moderately suitable unless those areas occur in the vicinity of modeled habitat with high suitability and of substantial extent.

Areas within the Project identified by Cypher et al. (2013) as either high or moderate suitability for SJKF (Figure 3) were examined using the historical imagery feature on Google Earth (2022) and land cover was verified in the field by biologists as access permitted. Within the 5-mile radius only a desktop analysis as described above was performed to assess whether there was a change of land cover since 2013.

Land cover of the Project site was derived from a review of aerial imagery in Google Earth (2022) and where possible was verified during the reconnaissance survey (Figure 3). SJKF are known to use different types of habitats or land cover as documented in published reports (USFWS 1998, McGrew 1979, and Cypher et al. 2013), and include California annual grassland, non-irrigated grasslands/pastures, barren land, ruderal grasslands, fallow or inactive farmland, and irrigated hay crops. However, these land cover types vary in their capacity to provide foraging, cover, and natal denning conditions for SJKF (e.g., California annual grasslands have a greater capacity to support these essential elements contributing to SJKF occupancy than irrigated hay crops), and was taken into consideration when evaluating the Project and 5-mile radius. Land cover that is frequently disturbed (e.g., disced fields) or maintained (e.g., orchards) have low to no suitability for SJKF because such land cover has little capacity to support long-term SJKF survival (i.e., lack dens for escape and pupping, support less abundant prey, represent increased mortality risk). Suitable areas were further analyzed using size of area, surrounding land cover, connectivity to larger blocks of suitable habitat, distance from CNDDB records, and year of CNDDB records.

Suitable areas within the Project but isolated from larger blocks of suitable areas were analyzed for removal from further consideration as being potentially occupied. Although SJKF have been documented dispersing up to 20.1 miles and two known kit foxes dispersed up to approximately 100 miles (personal communication, Brian Cypher 2022), high traffic roads and coyote (*Canis latrans*) populations in agricultural landscape impede kit fox movement. Bjurlin et al. (2005) reported increased mortality rates of SJKF in environments highly altered by human activity. The two kit foxes that dispersed the approximate 100 miles were hit and killed by vehicles (personal communication Brian Cypher 2022). Based on this information, the analysis parameter of 5 miles for dispersing SJKF is reasonable within the highly fragmented habitat conditions of the Project and vicinity.

Although SJKF home range size has been reported to be as small as 0.2 square miles (mi^2; 128 acres) and as large as 9.3 mi^2 (5,952 acres) (Cypher et al. 2019), home range size is a reflection of prey density (White and Ralls 1993, Cypher et al. 2019). Cypher et al. (2014) and White and Ralls (1993) reported average home range size of 4.1 mi^2 (2,594.6 acres) and 4.5 mi^2 (2,880 acres), respectively, where prey density was lower. However, their study sites, represented conditions for SJKF that are far superior to those occurring within the Project. For instance, White and Ralls (1993) found that average home range size of SJKF in an oil field was 50% smaller than the average SJKF home range at study sites in core SJKF habitat within the Carrizo Plain, because prey density was greater at the oil field sites. Cypher et al. (2014), reported average home range size of 1.3 mi^2 (832 acres) in discontinuous habitat, wherein natural habitat was limited and was highly fragmented by agriculture, particularly by orchards. The smaller size of home range and significant overlap of home ranges was likely a

5-mile Radius

Parcels for Project Elements

Gen-tie

Substation

Medium Voltage Easement

Solar Photovoltaic (PV) Array

Photo Points

Representative Photo Points

Wildlife Sign and Observations

Small Mammal Burrow Location

Burrowing Owl

Mountain Plover

Great Horned Owl

Photo Points

PP 5

PP 6

PP 11

PP 12

PP 13

PP 14

PP 5

PP 6

PP 8

PP 3

PP 1

PP 7

PP 2

PP 4

PP 10

PP 11

PP 12

PP 13

PP 14

Battery Electrical Storage System

PP 9

N

2 1 0 2

Miles

N:\Projects\4600\4695-01\Reports\Fig 3 Photo Point Locations.mxd

H. T. HARVEY & ASSOCIATES

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Figure 3. Photo Point Locations

Darden Solar Project

San Joaquin Kit Fox Assessment (4695-01)

March 2023

function of limited available habitat and where prey base was higher than in surrounding areas (Cypher et al. 2014).

As the Project occurs in an area with intensive agriculture, including orchards and highly disturbed agricultural fields (e.g., disced), a conservative estimate of 832 acres of suitable habitat was used as the minimum area needed for SJKF to persist. Based on this home range estimate, areas modeled as moderate and high suitability by Cypher et al. (2013) and confirmed suitable habitat using imagery from Google Earth (2022) were termed unsuitable if the size of the area was less than 832 acres, unless habitat connectivity existed. All areas at least 832 acres or larger and with verified suitable land cover were considered as potentially suitable for SJKF.

Section 3. Site Assessment Results and Discussion

Current Range and CNDDB Records. SJKF's original range was described by Grinnell et al. (1937) as occurring on the western side of the San Joaquin Valley, extending from southern Kern County north to Tracy, San Joaquin County and near La Grange, Stanislaus County on the east side of the valley. The historical range for SJKF within a 5-mile radius of the Project runs in a northwest-southeast direction along the western edge of Fresno County, primarily in the foothills and the western edge of the San Joaquin Valley floor (USFWS 1998), which parallels the Interstate 5 (I-5) at the western end of the Project (Figure 2). The two parcels at the western end of the Project are part of the gen-tie line, and include construction of the BESS and substation. There are four CNDDB records for SJKF within a 5-mile radius of the Project; however, all four records occur outside of the Project and are west of the Interstate 5 (I-5) (Figure 2). CNDDB records #446, #447, #448, and #449 range in distance from 0.26 – 1.69 miles from the western edge of Project, with CNDDB record #448 being the closest. The four records are from 1984 and are more than 35 years old; CNDDB records #446 and #448 each have two sightings. Habitat for CNDDB records #446, #447, #448, and #449 was described as rolling hills and grassland (CNDDB 2022); a review of aerial imagery in Google Earth (2021) indicates that current habitat conditions appear to be similar to when the SJKF were sighted in 1984.

Reconnaissance Habitat Assessment Survey for San Joaquin Kit Fox. During the reconnaissance assessment surveys, biologist documented land cover conditions (Appendix A). Land cover within the 42 parcels, approximately 9,000 acres, that will contain the PV arrays consisted of bare ground that appeared disced or tilled within the past year (Appendix A, Photo Points 1–4 and Photo Point 6). Within these parcels, 2 parcels had sign of small mammals in an area of annual grassland (Figure 3; Appendix A, Photo Point 5). The small mammal sign consisted of burrows associated with California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and Heermann's kangaroo rat (*Dipodomys heermanni*).

Within the six parcels that will contain the medium voltage easement, one parcel consisted of a young orchard (Figure 3 and Appendix A, Photo Point 7) and the land cover of other five parcels consisted of bare ground (Figure 3 and Appendix A, Photo Point 8). Land cover that the gen-tie spans was a mix of orchard (Figure 3 and Appendix A, Photo Points 9–10) and bare ground (Figure 3). The parcel where the BESS will be built consisted of disced land. Land cover on the parcel where the substation will be built is a mix of bare ground, orchard, and an existing power line (Figure 3 and Appendix A, Photo Point 11). The orchard on the western side of the parcel is adjacent to land consisting of annual grassland (Figure 3 and Appendix A, Photo Point 12). No SJKF dens were observed on the annual grassland from the fence line boundary, but California ground squirrel burrows occur along the boundary (Figure 3 and Appendix A, Photo Point 13). The annual grassland (Figure 3 and Appendix A, Photo Point 15) adjacent to the substation parcel has the potential to support or be used by SJKF for denning or prey as it is part of the continuous annual grassland land with connectivity to other suitable habitat in the foothills.

During the reconnaissance habitat assessment for SJKF, biologists incidentally observed burrowing owl (*Athene cunicularia*), a California species of special concern, along a shallow irrigation ditch adjacent to a medium voltage

easement parcel. Wintering mountain plovers (*Charadrius montanus*), also a California species of special concern, were observed in a disced field of a future PV array parcel, and a great horned owl (*Bubo virginianus*) was also observed in a different future PV array parcel (Figure 3).

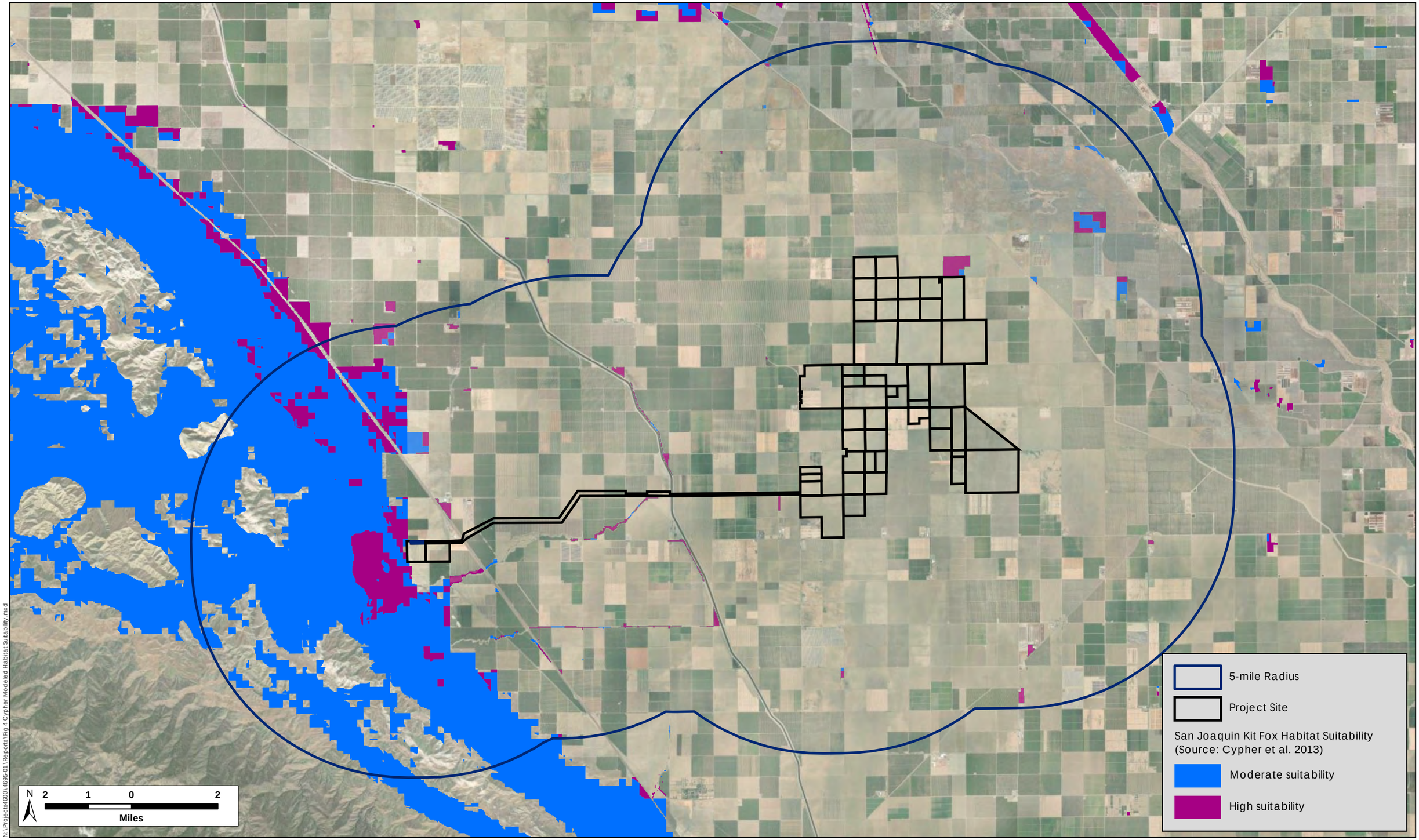
Modeled Suitable Habitat for San Joaquin Kit Fox. The Project and a 5-mile radius around the Project was considered in the assessment of the habitat suitability for SJKF and the potential for the species to occur on the Project. When Cypher et al. (2013) modeled suitable habitat within the historical range of SJKF, they considered land use/land cover, terrain ruggedness, and vegetation density to determine areas with potential suitable SJKF habitat. Even though Cypher et al. (2013) limited their model to the above three attributes, most of the land within the Project was modeled as unsuitable. Cypher et al. (2013) modeled a total of 24,720 acres of habitat within the assessment area (i.e., Project and a 5-mile radius) as suitable for SJKF, approximately 21,362 acres as moderate suitability and approximately 3,367 acres as high suitability (Figure 4). Most of this suitable habitat is west of the Project and extends westward and in a northwest to southeast direction along the Tumey Hills range. The Project is largely comprised of active agriculture, disced and tilled land, and orchards that represent low or no suitability for SJKF; Cypher et al. (2013) modeled approximately 7.87 acres of moderate suitable and approximately 6.63 acres high suitable habitat occur within the Project (Figure 4).

Areas within the assessment area (i.e., Project and a 5-mile radius) east of the I-5 that were modeled as moderate to high suitability were much less than the size necessary for SJKF to meet their basic life history requirements (e.g., securing sufficient amounts of prey, finding adequate cover to avoid predation and vehicle collisions, and finding a mate to sustain reproduction). The largest modeled area east of the I-5 (not including the modeled area adjacent to the eastside of the I-5 and northwest of the gen-tie that extends from the Tumey Hill range) which was a combination of moderate and high suitability, was approximately 238 acres and was approximately 17 miles east of the closest CNDDB records (CNDDB Occurrence #446 and 448). Furthermore, not only were modeled areas east of I-5 much smaller than the conservative estimate of 832 acres of suitable habitat needed for SJKF to persist, they were isolated and lacked connectivity to larger blocks of land. Therefore, even though some of the areas east of I-5 that Cypher et al. (2013) modeled as suitable occur within 5 miles of the CNDDB records (average SJKF disperse approximately 5 miles from their place of birth), the highly unsuitable habitat (i.e., orchards and disced land) surrounding the small areas modeled as suitable habitat are highly unlikely to be used by SJKF. During the reconnaissance habitat assessment, limited prey availability was observed on the Project, as small mammal burrows were only observed in 4 areas of very limited size (e.g., the largest area with prey was approximately 9 acres). Use of orchards by SJKF is limited, as prey availability is lower than in natural communities, and there is no or limited den availability (Warrick et al. 2007). Transient SJKF are unlikely to venture east of the I-5 because transportation corridors (Bjurlin et al. 2005), the California Aqueduct, and the vast amount of unsuitable habitat (e.g., agricultural land), serve as impediments to SJKF movement and dispersal, and increase the risk of mortality.

As a result of the desktop analysis, reconnaissance habitat assessment, and the sequential screening, modeled suitable areas for SJKF within the assessment area (i.e., Project and a 5-mile radius) was reduced from the 24,720 acres that Cypher et al. (2013) modeled (Figure 4) to 23,432 acres of suitable habitat, a reduction of 1,288 acres (Figure 5). Within a 5-mile radius of the project, only land cover with low or no suitability for SJKF

occurs east of the California Aqueduct (Figure 4), where the future PV arrays and medium voltage lines will be installed. Cypher et al. (2013) modeled areas as moderate and highly suitable habitat for SJKF along the northeastern section of Cantua Creek leading to the California Aqueduct and adjacent to the California Aqueduct (Figure 4). The modeled suitable habitat areas along the Cantua Creek consist of 99.86 acres. These areas occur south of the Project footprint, are less than one mile from where the gen-tie, will occur, but are surrounded by orchards and frequently disced agricultural fields. Modeled suitable habitat adjacent to the California Aqueduct consists of 62.81 acres, but are outside of the Project footprint (Figure 4), and also are surrounded by orchards and frequently disced agricultural fields. Under certain circumstances, SJKF may disperse across disturbed habitats and along aqueducts. For rights of way along aqueducts to serve as functional movement corridors, they must provide suitable habitat or at least be proximal to areas of suitable habitat in which SJKF may forage or find escape cover, and be in proximity to source and receiver SJKF populations. These conditions do not exist along the California Aqueduct in the vicinity of the Project (Figure 4), and therefore, under the existing conditions, SJKF are not predicted to use the rights of way of the aqueduct in the vicinity of the Project for movement or dispersal.

Cypher et al. (2013) modeled approximately 7.87 acres of moderate suitable habitat for SJKF and approximately 6.63 acres high suitable habitat for SJKF within the Project (Figure 4). Through this assessment, that modeled suitable habitat within the Project was reduced to 1.62 acres of moderate suitable habitat; there was no highly suitable habitat within the Project. The 1.62 acres of suitable habitat for SJKF are located at the southwestern end of the Project at the northwest corner of the substation parcel (Figure 5).



N:\Projects\4600\4695-01\Reports\Fig 4 Cypher Modeled Habitat Suitability.mxd

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Ecological Consultants

Figure 4. Cypher Modeled SJKF Habitat Suitability
Darden Solar Project
San Joaquin Kit Fox Assessment (4695-01)
March 2023

5-mile Radius

Project Site

San Joaquin Kit Fox Habitat Suitability
(Source: Cypher et al. (2013)
Updated 2023)

Moderate suitability

High suitability

Inset

See Inset

N

2 1 0 2

Miles

N:\Projects\4600\4695-01\Reports\Fig 5 Potentially Suitable Habitat for SJKF 5-Mile Radius.mxd

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Ecological Consultants

Figure 5. Potentially Suitable Habitat for SJKF within a 5-Mile Radius
Darden Solar Project
San Joaquin Kit Fox Assessment (4695-01)
March 2023

Section 4. Summary and Conclusion

With the exception of 1.62 acres of suitable habitat for SJKF located at the northwestern corner of the substation parcel, the Project consists of highly disturbed (e.g., agricultural industry) or maintained (e.g., orchards, disced/tilled) land cover that is unsuitable for SJKF. Within the 5-mile radius of the Project, SJKF are presumed to occupy the Tumey Hills range west of the I-5. The substation is the only portion of the Project that is adjacent to modeled suitable habitat (Figure 5).

Constructing the Darden Solar Project and avoiding suitable habitat for SJKF appears feasible, as the approximately 1.62 acres of suitable habitat along the northwestern corner of the substation parcel should be avoidable. Because of the proximity of extensive suitable and presumed occupied SJKF in the vicinity of the parcel where the substation will be built, implementation of *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance Activities* (USFWS 2011) are recommended within the substation parcel of the Project.

Section 5. References

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Appendix A. Representative Photographs from the Site Habitat Assessment Surveys (December 2022)

Photo Point 1. Bare ground and ruderal habitat in disced field of future solar facility parcel.

Photo Point 2. Bare ground and ruderal habitat in disced field of future solar facility parcel.

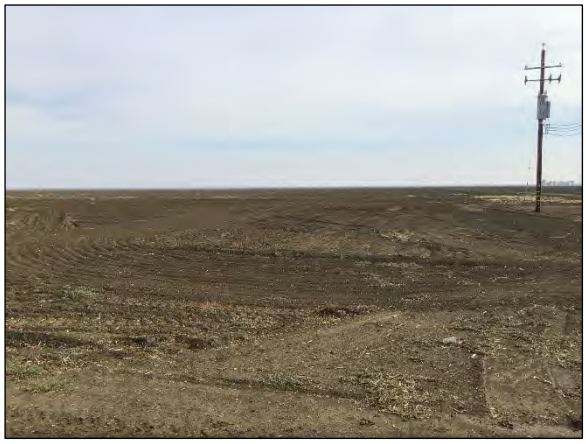

Photo Point 3. Bare ground in disced field of future solar facility parcel.

Photo Point 4. Bare ground in disced field of future solar facility parcel.

Photo Point 5. Annual grassland with small mammal burrows within future solar facility parcel.

Photo Point 6. Bare ground in disced field of future solar facility parcel (adjacent to location with small mammal burrows).

Photo Point 7. Young orchard within parcel to contain future medium voltage easement.

Photo Point 8. Bare ground of disced field within parcel to contain future medium voltage easement.

Photo Point 9. Recently planted orchard within parcel to contain future gen-tie.

Photo Point 10. Young orchard within parcel to contain future gen-tie.

Photo Point 11. Bare ground, orchard, and power line within parcel to contain future substation parcel.

Photo Point 12. Orchard at western boundary of parcel to contain future substation adjacent to annual grassland.

Photo Point 13. California ground squirrel burrows adjacent to future substation parcel.

Photo Point 14. Annual grassland adjacent to the future substation parcel.