

1.7 GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

The following discussion evaluates the potential changes in impacts associated with geology, soils, and paleontological resources and the conclusions from the Proponent’s Environmental Assessment (PEA) with the incorporation of the Proposed Project’s design modifications as described in the redlined version of Chapter 3 – Project Description. The table below summarizes the impact determinations from the PEA and the impact determinations with incorporation of the design modifications.

Would the project:	PEA Impact Determination	Impact Determination with Design Modifications
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	Less-than-Significant Impact	Less-than-Significant Impact
ii) Strong seismic ground shaking?	Less-than-Significant Impact	Less-than-Significant Impact
iii) Seismic-related ground failure, including liquefaction?	Less-than-Significant Impact	Less-than-Significant Impact
iv) Landslides?	Less-than-Significant Impact	Less-than-Significant Impact
b) Result in substantial soil erosion or the loss of topsoil?	Less-than-Significant Impact	Less-than-Significant Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less-than-Significant Impact	Less-than-Significant Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	Less-than-Significant Impact	Less-than-Significant Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	No Impact	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less-than-Significant Impact	Less-than-Significant Impact

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides?

Construction, Operations and Maintenance

LSPGC and PG&E Components

Less-than-Significant Impact. The proposed Pacific Gas and Electric Company (PG&E) 500 Kilovolt (kV) Transposition Structures and associated work areas would be within 10 miles of faults (United States [U.S.] Geological Survey [USGS] 2022); information on these faults is provided in Table 1.7-1: Faults Located within 10 Miles of the Proposed PG&E 500 kV Transposition Structures. Therefore, these Proposed Project components would be susceptible to earthquake forces and seismic shaking. Design modifications to the remaining LS Power Grid California, LLC (LSPGC) and PG&E Proposed Project components would occur within the vicinity of the same faults previously evaluated in the PEA. Consistent with the analysis in the PEA, all design modifications would not introduce habitable structures; as such, the Proposed Project would not pose substantial risk of loss, injury, or death as a result of potential fault rupture. As a result, and consistent with the PEA, impacts associated with fault rupture would continue to be less than significant.

Proposed PG&E 500 kV Transposition Structure A would be located in an area identified by Solano County as having low susceptibility to liquefaction (Solano County 2024); however, the California Department of Conservation (DOC) does not identify the area as a liquefaction zone (DOC 2025). Therefore, this structure is in a location that is not likely susceptible to liquefaction. Proposed PG&E 500 kV Transposition Structures B and C would not be in an area identified as a liquefaction zone by Solano County or the DOC. Proposed PG&E 500 kV Transposition Structure D would be located in an area identified by Contra Costa County as having high susceptibility to liquefaction and within a DOC-identified liquefaction zone (Contra Costa County 2024, DOC 2025). However, consistent with the analysis in the PEA, geotechnical studies would be conducted as part of the engineering and design process. All design modifications would adhere to and implement all design recommendations and parameters established in the Proposed Project-specific geotechnical engineering report, which would be prepared prior to construction. Additionally, the design modifications would be consistent with the design and engineering standards contained in California Public Utilities Commission (CPUC) General Order (GO) 95 and the California Building Code (CBC). As mentioned previously, design modifications would not introduce habitable structures. Given that the design modifications would not introduce habitable structures and would adhere to design parameters established in the geotechnical engineering report, CPUC GO 95, and the CBC, the proposed PG&E 500 kV Transposition Structure D would not pose substantial risk of loss, injury, or death as a result of potential liquefaction. All other design modifications would occur within the same liquefaction areas previously evaluated in the PEA. As a result, and consistent with the PEA, impacts associated with liquefaction would continue to be less than significant.

Proposed PG&E 500 kV Transposition Structures A and D would not be within areas susceptible to landslides (Contra Costa County 2024, DOC 2025, Solano County 2024). Meanwhile, although proposed PG&E 500 kV Transposition Structures B and C would not be within areas identified by the DOC as susceptible to landslides, Solano County identifies the areas as susceptible to landslides. As previously discussed, geotechnical studies would be conducted as part of the engineering and design process. All design modifications would adhere to and implement all design recommendations and parameters established in the Proposed Project-specific geotechnical engineering report, which would be prepared prior to construction. Additionally, the design modifications would be consistent with the design and engineering standards contained in CPUC GO 95 and the CBC. In addition, design modifications would not introduce habitable structures. Given that the design modifications would not introduce habitable structures and would adhere to design parameters established in the geotechnical engineering report, CPUC GO 95, and the CBC, the proposed PG&E 500 kV Transposition Structures B and C would not pose substantial risk of loss, injury, or death as a result of potential landslides. All other design modifications would occur within the same landslide areas previously evaluated in the PEA. As a result, and consistent with the PEA, impacts associated with landslides would continue to be less than significant.

Operation and maintenance (O&M) activities associated with the proposed PG&E 500 kV Transposition Structures would be included in routine inspections of PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. The two proposed LSPGC 230 kV onshore riser structures would be included in the proposed O&M activities for the proposed LSPGC 230 kV Overhead Segment. The design modifications associated with all other LSPGC and PG&E Proposed Project components would not affect the O&M activities described in the PEA. As a result, and consistent with the PEA, impacts associated with O&M activities would continue to be less than significant.

Would the project result in substantial soil erosion or the loss of topsoil?

Construction

LSPGC Components

Less-than-Significant Impact. Design modifications associated with the proposed LSPGC Collinsville Substation and LSPGC 230 kV Overhead Segment would occur on the same slopes that were previously evaluated in the PEA and range between 2 and 30 percent and would occur on lands designated as Grazing Land by the California DOC's Farmland Mapping and Monitoring Program (DOC 2024). Design modifications to the proposed LSPGC Collinsville Substation's would increase permanent loss of Grazing Land by approximately 0.89 acre. The design modifications to the remaining LSPGC Proposed Project components would occur in close proximity to the original component locations and would not result in any change in erosion or topsoil loss beyond what was previously evaluated in the PEA.

Consistent with the analysis in the PEA, Storm Water Pollution Prevention Plan (SWPPP) measures would apply to work areas and, in accordance with applicant-proposed measure (APM) GEO-1, topsoil loss would be minimized to the extent feasible by keeping vehicles and construction equipment within the limits of the Proposed Project work areas, salvaging topsoil in appropriate temporary work areas where grading is required, avoiding saturated soils, restoring

Table 1.7-1: Faults Located within 10 Miles of the Proposed PG&E 500 kV Transposition Structures

Fault Name	Fault Type	Fault Section	Fault Length (kilometers)	Maximum Moment Magnitude	Age of Last Known Slip	Slip Rate (millimeters/year)	Proposed PG&E 500 kV Transposition Structure	Approximate Distance and Direction of Fault from Transposition Structure (miles, direction)
Great Valley Thrust Fault	Blind thrust fault	Trout Creek and Gordon Valley sections	61	6.6	Late Quaternary (less than 130,000 years)	1.0-5.0	A	3.26, west
							B	7.30, northwest
Lagoon Valley Fault	Unspecified	Information not available (INA)	14	INA	Late Quaternary (less than 130,000 years)	INA	A	6.45, west
							B	9.42, northwest
Midland Fault	Reverse, right lateral	INA	88	INA	Undifferentiated Quaternary (less than 1.6 million years)	INA	A	7.88, east
							B	9.49, east
							C	9.86, east
							D	1.02, west
Rio Vista Fault	Fault, concealed	INA	53	INA	Late Quaternary (less than 130,000 years)	INA	A	2.92, west
							B	3.14, west
							C	3.51, west
Unnamed Fault	Unspecified	INA	INA	INA	Late Quaternary (less than 130,000 years)	INA	A	9.55, northwest
Davis Fault	Fault, certain	INA	INA	INA	Undifferentiated Quaternary (less than 1.6 million years)	INA	C	9.30, south
							D	7.24, west
Midway Fault	Unspecified	INA	INA	INA	Late Quaternary (less than 130,000 years)	INA	D	8.85, south
Vernalis Fault	Unspecified	INA	43	INA	Undifferentiated Quaternary (less than 1.6 million years)	INA	D	8.00, southeast

Source: USGS 2022, DOC 2002

temporarily disturbed areas, and keeping vegetation and soil disturbance to a minimum. Although design modifications associated with the proposed LSPGC Collinsville Substation and LSPGC 230 kV Overhead Segment would increase topsoil loss, the implementation of the Proposed Project-specific SWPPP and APM GEO-1 would reduce the potential for substantial soil erosion or topsoil loss to occur. As a result, and consistent with the PEA, impacts from construction would continue to be less than significant.

PG&E Components

Less-than-Significant Impact. Design modifications associated with the proposed PG&E 500 kV Interconnection would occur on the same slopes that were previously evaluated in the PEA and range between 2 and 30 percent. Proposed PG&E 500 kV Transposition Structures A and D would be located on slopes ranging between 0 and 2 percent, proposed PG&E 500 kV Transposition Structure B would be located on slopes ranging between 2 and 9 percent, and proposed PG&E 500 kV Transposition Structure C would be located on slopes ranging between 9 and 30 percent. Design modifications to the PG&E Proposed Project components would occur on lands designated as Grazing Land or Farmland of Local Importance (DOC 2024).

Design modifications to the proposed PG&E 500 kV Interconnection would occur in close proximity to the original component locations and would not result in any change in erosion or topsoil loss beyond what was previously evaluated in the PEA. Proposed PG&E 500 kV Transposition Structures A and B would cause the permanent loss of approximately 0.08 acre of designated Grazing Land. Because proposed PG&E 500 kV Transposition Structure C would replace an existing structure, net permanent loss to designated Grazing Land is anticipated. Proposed PG&E 500 kV Transposition Structure D would cause the permanent loss of approximately 0.04 acre of land designated as Farmland of Local Importance. Therefore, design modifications to the PG&E Proposed Project components would increase permanent topsoil loss on lands designated as Grazing Lands or Farmland of Local Importance by approximately 0.12 acre.

Consistent with the analysis in the PEA, SWPPP measures would apply to exterior temporary work areas and, in accordance with PG&E Construction Measure (CM) GEO-1, topsoil loss would be minimized to the extent feasible by compacting, binding, or installing material such as aggregate rock or steel plates over loose soils. Although the design modifications associated with the PG&E 500 kV Transposition Structures would increase the amount of topsoil loss, implementation of the Proposed Project-specific SWPPP and CM GEO-1 would reduce the potential for substantial soil erosion or topsoil loss to occur. As a result, and consistent with the PEA, impacts from construction would continue to be less than significant.

Operations and Maintenance

LSPGC and PG&E Components

No Impact. O&M activities associated with the proposed PG&E 500 kV Transposition Structures would be included in routine inspections of PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. The proposed LSPGC 230 kV onshore riser structures would be included in the proposed O&M activities for the proposed LSPGC 230 kV Overhead Segment. The design modifications associated with the remaining LSPGC and PG&E Proposed Project

components would not affect the O&M activities described in the PEA. As a result, and consistent with the PEA, no impacts would occur.

Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Construction, Operation and Maintenance

LSPGC and PG&E Components

Less-than-Significant Impact. As previously discussed, proposed PG&E 500 kV Transposition Structure D would be located on geologic units identified to have high liquefaction potential (Contra Costa County 2024, DOC 2025). Proposed PG&E 500 kV Transposition Structures A, B, and C would not be located on geologic units with a high liquefaction potential. Proposed PG&E 500 kV Transposition Structures B and C would be located on geologic units with landslide potential, whereas proposed PG&E 500 kV Transposition Structures A and D would not. Consistent with the analysis in the PEA, Proposed Project design modifications would be consistent with the engineering standards contained in CPUC GO 95 and the CBC. In addition, all recommendations from the Proposed Project-specific geotechnical engineering report would be applied to the design modifications.

The proposed PG&E 500 kV Transposition Structures and design modifications to the proposed LSPGC 230 kV Overhead Segment would not occur in areas with a history of subsidence or high potential for subsidence (USGS 2025, Esri 2024). Design modifications are not anticipated to result in withdrawal of groundwater or extraction of oil and gas; therefore, they would not be expected to result in subsidence. Although unanticipated, if dewatering foundation holes or other excavations during construction is required, the dewatering would be considered a short-term and negligible impact to groundwater.

Design modifications to the remaining LSPGC and PG&E Proposed Project components would occur on the same geologic units previously evaluated in the PEA and would not change the impacts in the geologic units.

O&M activities associated with the proposed PG&E 500 kV Transposition Structures would be included in routine inspections of PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. The proposed LSPGC 230 kV onshore riser structures would be included in the proposed O&M activities for the proposed LSPGC 230 kV Overhead Segment. The design modifications associated with the remaining LSPGC and PG&E Proposed Project components would not affect the O&M activities described in the PEA. As a result, and consistent with the PEA, impacts would continue to be less than significant.

Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Construction, Operations and Maintenance

LSPGC and PG&E Components

Less-than-Significant Impact. Proposed PG&E 500 kV Transposition Structures A, B, and D and their associated work areas would be on soils classified as Hydrologic Group D, which could

potentially have expansive characteristics, as summarized in Table 1.7-2: Mapped Soil Units and Soil Properties Crossed by the Proposed PG&E 500 kV Transposition Structures. Proposed PG&E 500 kV Transposition Structure C would be located on soils classified as Hydrologic Group C; however, the associated work area north of the structure would be located on soils classified as Hydrologic Group D. Consistent with the analysis in the PEA, expansive soils along the proposed PG&E 500 kV Transposition Structures are unlikely to create geotechnical issues because new poles/structures would be installed at depths of 20 to 40 feet. Therefore, the structures would be buried below shallow expansive soils, as defined in the Uniform Building Code (1994).

Design modifications to the remaining LSPGC and PG&E Proposed Project components would occur on the same soil units previously evaluated in the PEA and would not change impacts.

O&M activities associated with the proposed PG&E 500 kV Transposition Structures would be included in routine inspections of PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. The proposed LSPGC 230 kV onshore riser structures would be included in the proposed O&M activities for the proposed LSPGC 230 kV Overhead Segment. The design modifications associated with the remaining LSPGC and PG&E Proposed Project components would not affect the O&M activities described in the PEA. As a result, and consistent with the PEA, impacts would continue to be less than significant.

Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Construction, Operations and Maintenance

LSPGC and PG&E Components

No Impact. The design modifications would not involve the use of a septic tank or alternative wastewater disposal system. Consistent with the analysis in the PEA, wastewater generated at portable toilets during construction would be disposed of offsite at appropriate facilities. As a result, and consistent with the PEA, no impact would occur.

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?

Construction

LSPGC Components

Less-than-Significant Impact. The design modifications to the LSPGC Proposed Project components would occur within the same geologic units previously evaluated in the PEA and would not change impacts. As a result, and consistent with the PEA, impacts would continue to be less than significant.

PG&E Components

Less-than-Significant Impact. Consistent with the analysis in the PEA, the Montezuma Formation (Qmz) and Pleistocene alluvial fan deposits (Qpf) underlying the Proposed Project have the potential to yield fossils, while Holocene deposits are typically too young to have

Table 1.7-2: Mapped Soil Units and Soil Properties Crossed by the Proposed PG&E 500 kV Transposition Structures

USDA Map Unit Symbol	National Map Unit Symbol	Map Unit Name	Hydrologic Group	Wind Erodibility Index (Tons/Acre/Year)	Soil Erodibility Factor (K)	Slope Percent	Stability Concerns
Proposed PG&E 500 kV Transposition Structure A							
Sh	h9mh	Solano loam	D	86	0.44	0 to 2	Moderate erosion potential; high runoff potential
Proposed PG&E 500 kV Transposition Structure B							
AmC	h9kg	Altamont-Diablo clays	D	86	0.23	2 to 9	High runoff potential
AsA	h9km	Antioch-San Ysidro complex	D	86	0.32	0 to 2	Moderate erosion potential; high runoff potential
Proposed PG&E 500 kV Transposition Structure C							
AmE2	h9kh	Altamont-Diablo clays	D	86	0.24	9 to 30	Moderate erosion potential; high runoff potential
DaE2	H9I5	Diablo-Ayar clays, eroded	C	86	0.24	9 to 30	Moderate erosion potential; moderate runoff potential
Proposed PG&E 500 kV Transposition Structure D							
Mb	2xld2	Marcuse clay, moderately saline	D	86	0.25	0 to 2	High liquefaction potential; moderate erosion potential; high runoff potential
Mc	2x4lq	Marcuse clay, strongly saline	D	86	0.25	0 to 2	High liquefaction potential; moderate erosion potential; high runoff potential

Sources: U.S. Department of Agriculture (USDA) 2002a, 2002b, 2019; Esri 2025

accumulated or preserved significant biological material and have a low paleontological sensitivity as a result. Proposed PG&E 500 kV Transposition Structure A and associated work areas would be located on Pleistocene alluvial fan deposits (Qpf). Proposed PG&E 500 kV Transposition Structures B and C and associated work areas would be located on the Montezuma Formation (Qmz) (Graymer et al. 2002). As a result, construction activities involving trenching or excavation at proposed PG&E 500 kV Transposition Structures A, B, and C would have the potential to uncover fossils.

Because PG&E Proposed Project components were not initially proposed on Pleistocene alluvial fan deposits (Qpf), CM PALEO-2 did not include paleontological monitoring requirements at locations underlain by Pleistocene alluvial fan deposits (Qpf). However, because proposed PG&E 500 kV Transposition Structure A would be underlain by Pleistocene alluvial fan deposits (Qpf), CM PALEO-2 would be modified to include paleontological monitoring requirements for initial ground-disturbing activities in previously undisturbed areas mapped as Pleistocene alluvial fan deposits (Qpf).¹

Proposed PG&E 500 kV Transposition Structure D and associated work areas would be located on Holocene fan levee deposits (Qhl) and Holocene alluvial fan deposits, fine-grained facies (Qhff) (Delattre et al. 2023). Therefore, proposed PG&E 500 kV Transposition Structure D would not be located on a geologic unit with high paleontological sensitivity.

With implementation of CM PALEO-1 and the modified CM PALEO-2, the proposed PG&E 500 kV Transposition Structures would not increase the Proposed Project's potential to impact a unique paleontological resource. Design modifications to the remaining PG&E Proposed Project components would occur within the same geologic units previously evaluated in the PEA and would not change impacts. As a result, and consistent with the PEA, impacts would continue to be less than significant.

Operations and Maintenance

LSPGC and PG&E Components

No Impact. O&M activities associated with the proposed PG&E 500 kV Transposition Structures would be included in routine inspections of PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. The proposed LSPGC 230 kV onshore riser structures would be included in the proposed O&M activities for the proposed LSPGC 230 kV Overhead Segment. The design modifications associated with the remaining LSPGC and PG&E Proposed Project components would not affect the O&M activities described in the PEA. As a result, and consistent with the PEA, no impacts would occur.

PG&E Construction Measure Modification

- **CM PALEO-2: Paleontological Monitoring.** A professional paleontologist would be retained to monitor initial ground-disturbing activities in previously undisturbed areas mapped as Montezuma Formation (Qmz) and Pleistocene alluvial fan deposits (Qpf).¹

¹ The changes to CM PALEO-2 to include monitoring within Pleistocene alluvial fan deposits are tentative and pending PG&E approval.

Monitoring would entail the visual inspection of excavated or graded areas and trench sidewalls.

If a paleontological resource is discovered, the paleontological monitor would have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the paleontological monitor would complete the following steps:

- If fossils are discovered, all work in the immediate vicinity would be halted to allow the paleontological monitor to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the paleontological monitor would recover them by following standard field procedures for collecting paleontological resources. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (e.g., skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontological monitor would have the authority to temporarily direct, divert, or halt construction activity to ensure that the fossils can be removed in a safe and timely manner.
- An accredited repository, which has agreed to accept fossils that may be discovered during Proposed Project-related excavations, would be identified prior to construction activities. Upon completion of fieldwork, all significant fossils collected would be prepared in a properly equipped laboratory to a point ready for curation. Preparation may include the removal of excess matrix from fossil materials and stabilizing or repairing specimens. During preparation and inventory, the fossil specimens would be identified to the lowest taxonomic level practical prior to curation at an accredited repository (usually a museum). The fossil specimens would be delivered to the accredited museum or repository no later than 30 days after all laboratory work is completed. The cost of curation would be assessed by the repository and would be the responsibility of the client.

References

- Contra Costa County. 2024. General Plan Health and Safety Element. Online.
<https://www.contracosta.ca.gov/4732/General-Plan>. Site visiting January 2025.
- Delattre, M.P., Graymer, R.W., Langenheim, V.E., Knudsen, K.L., Dawson, T.E., Brabb, E.E., Wentworth, C.M., and Raymond, L.A. 2023. Geologic and geophysical maps of the Stockton 30' x 60' quadrangle, California. Online.
https://ngmdb.usgs.gov/Prodesc/proddesc_115248.htm. Site visited January 2025.
- DOC. 2002. Appendix A – 2002 California Fault Parameters. Online.
https://www.conservation.ca.gov/cgs/Documents/PSHA/B_flt.pdf. Site visited January 2025.
- DOC. 2024. Farmland Mapping and Monitoring Program. Online.
<https://www.conservation.ca.gov/dlrp/fmmp/>. Site visited December 2024.

- DOC. 2025. Earthquake Zones of Required Investigation. Online. <https://maps.conservation.ca.gov/cgs/EQZApp/app/>. Site visited January 2025.
- Esri. 2023. USA SSURGO Erodibility Factor. Online. <https://www.arcgis.com/home/item.html?id=ac1bc7c30bd4455e85f01fc51055e586#>. Site visited January 2025.
- Esri. 2024. USA SSURGO – Soil Potential Subsidence. Online. <https://www.arcgis.com/home/item.html?id=3a1100ca5f6d4bd99a93601e156479bf>. Site visited January 2025.
- Graymer, R.W., Jones, D.L., and Brabb, E.E. 2002. Geologic map and map database of northeastern San Francisco Bay region, California: Most of Solano County and parts of Napa, Marin, Contra Costa, San Joaquin, Sacramento, Yolo, and Sonoma Counties: Reston, Virginia, U.S. Geological Survey, Miscellaneous Field Studies Map No. 2403. Online. <https://pubs.usgs.gov/mf/2002/2403/mf2403f.pdf>. Site visited January 2025.
- Solano County. 2024. General Plan Public Health and Safety Element. Online. https://www.solanocounty.com/depts/rm/planning/general_plan.asp. Site visited January 2025.
- USDA. 2002a. Hydrologic Soil Groups. Online. https://efotg.sc.egov.usda.gov/references/Public/PR_defunct/FOTGHydrologicGroups.pdf. Site visited January 2025.
- USDA. 2002b. Wind Erodibility Groups. Online. https://efotg.sc.egov.usda.gov/references/Agency/SD/Archived_winderos_100415.pdf. Site visited January 2025.
- USDA. 2025. Web Soil Survey. Online. <https://websoilsurvey.nrcs.usda.gov/app/>. Site visited January 2025.
- USGS. 2022. Interactive U.S. Fault Map. Online. <https://www.usgs.gov/tools/interactive-us-fault-map>. Site visited January 2025.
- USGS. 2025. Areas of Land Subsidence in California. Online. https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html. Site visited January 2025.