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Corby BESS Supplemental Data Requests

Geologic Hazards

Background: Shallow groundwater

The 2025 California Building Code, Section 1803.5.4, identifies shallow groundwater as a geologic hazard if (1) groundwater is above or within 5 ft below the elevation of the project's lowest floor, if the floor is below finished grade, or (2) the groundwater depth will affect the design and construction of the buildings and structures (CBC 2025).

The project's 2024 preliminary site-specific geotechnical investigation (geotechnical investigation) observed shallow groundwater at depths of 7.5 ft to 15 ft below ground surface (bgs) in September 2023. The geotechnical investigation also included one-time observations of groundwater depths from 24 publicly available well logs. These groundwater-depth data are not available as groundwater elevations, measured as ft above mean sea level (amsl) (TT 2024e). While one-time observations of past groundwater depths are helpful, time-series groundwater elevation data are more reliable for evaluating groundwater elevation trends at the project site.

A public comment on the Staff Assessment noted that CEC staff did not evaluate groundwater elevation trends at the project site for potential impacts related to shallow groundwater. Specifically, the comment questioned why CEC staff did not investigate if groundwater elevations higher than those observed during the geotechnical investigation may occur at the project site (Gellar 2026). CEC staff conservatively used the shallowest groundwater depth observed for the project site in the most recent geotechnical investigation because that was most consequential site-specific information available. A continuous, time-series, site-specific groundwater elevation record, would be more helpful to evaluate groundwater elevation trends at the project site.

Groundwater depth information alone is not an accurate indicator of groundwater elevations for the purpose of comparison at different locations. Other factors, including ground surface elevation, aquifer geology, natural and artificial recharge rates, and groundwater pumping rates, should also be considered when using groundwater-depth data to interpret groundwater elevations. The project site is an area of the Solano Subbasin where the ground surface elevation slopes downward from west to east.

The Solano Subbasin contains two primary aquifer zones: 1) the Alluvial Aquifer and Upper Tehama Zone and 2) the Basal Tehama Zone. The Alluvial Aquifer and Upper Tehama Zone are a hydraulically connected sequence of sedimentary deposits that include surficial Quaternary alluvium, the Montezuma Formation, and the Upper

Tehama Formation. Groundwater in the Alluvial Aquifer and Upper Tehama Zone is unconfined (Solano Collaborative 2026).

An aquitard, the Middle Zone of the Tehama Formation, limits vertical groundwater movement between the Upper Tehama Zone and the Basal Tehama Zone. The Basal Tehama Zone is a confined aquifer (Solano Collaborative 2026).

A complex and interconnected set of natural and artificial factors impact groundwater elevations across time and space. CEC staff reviewed seasonal groundwater contour maps and time-series groundwater elevation data presented in Annual Reports prepared for the Solano Subbasin Groundwater Sustainability Agency Collaborative and Solano County Water Agency.

The CEC staff reviewed groundwater elevation contour maps for the Alluvial Aquifer and Upper Tehama Zone. In the Solano Subbasin Annual Report for Water Year (WY) 2025, Appendix B presents groundwater elevation contour maps for the springs and falls of 2015 through 2022 (Solano Collaborative 2026). The Solano Subbasin Annual Report for WYs 2023 and 2024, Figures 3-2 and 3-4, present groundwater elevation contour maps for the springs and falls of 2023 and 2024, respectively (Solano Collaborative 2024, 2025). The Solano Subbasin Annual Report, Figures 3-2 and 3-3, present groundwater elevation contour maps for Spring 2025 and Fall 2025, respectively (Solano Collaborative 2026).

From 2015 to 2025, groundwater in the Alluvial Aquifer and Upper Tehama Zone consistently flowed downslope, from west to east, with one exception (Solano Collaborative 2024, 2025, 2026). In Fall 2023, groundwater may have flowed east to west towards a temporary cone of depression under Vacaville, CA (Solano Collaborative 2024).

The Solano Subbasin Annual Report for WY 2025, Figure 3-6b, presents groundwater hydrographs at monitoring wells in the project site's area. The hydrographs show multiple decades of time-series groundwater elevation and groundwater-depth data. Groundwater elevations decrease from west to east. Measured groundwater-depths also decrease. In the project's area, groundwater-depths become shallower even as groundwater elevations decrease (Solano Collaborative 2026).

The project site is an area where the ground surface slopes in the same direction as groundwater flow. CEC staff interpret that the primary reason that groundwater-depths decrease from west to east is that ground surface elevations decrease at a faster rate than groundwater elevations. CEC staff request continuous time-series groundwater

data for the project site to better understand groundwater-depth and groundwater elevation trends at the project site.

CEC staff interpret that the geotechnical investigation understood the need for time-series groundwater-depth and groundwater elevation data at the project site. The geotechnical investigation, Section 3.1.1 and Figure 12, stated that a piezometer was installed at the project site in boring B-9 (TT 2024e). CEC staff presume the piezometer's purpose was to measure groundwater depths and elevations at the project site to inform final engineering and grading decisions, including for subsurface components. A summary of one-month of time-series groundwater-depth data was provided in the geotechnical investigation, Appendix A, Table A3 (TT 2024e).

The geotechnical investigation concluded that shallow groundwater may impact the project's subsurface components. For example, the geotechnical investigation identified a design groundwater-depth of 7 ft bgs for shallow foundation systems that would support light loads (TT 2024e). Based on information presented in the geotechnical investigation and the following new evaluation of regional time-series groundwater elevation data, CEC staff conservatively interprets that a design groundwater-depth of 7 ft bgs might be too deep.

The Solano Subbasin Annual Report for WY 2025, Figure 3-6b presents time-series groundwater elevation data at three monitoring wells that are within two miles of the project (Solano Collaborative 2026). CEC staff evaluated this information:

- Monitoring well ID no. MW-15-188ft is less than two miles west of the project. At this well, groundwater is usually flowing east toward the project site.
    - During approximately 2000 to 2025, groundwater elevations ranged from about 64 ft to 82 ft amsl. These groundwater elevations correspond to groundwater-depths of about 31 ft to 13 ft bgs, respectively.
- Monitoring well ID no. 06N01W01B001M is less than two miles northwest of the project. At this well, groundwater is usually flowing east toward the project site.
    - From approximately 1960 to 2008, groundwater elevations ranged from 17 ft to 80 ft amsl. These elevations correspond to groundwater-depths of about 68 ft to 5 ft bgs.
    - During approximately 2010 to 2025, groundwater elevations ranged from 53 ft to 65 ft amsl. These elevations correspond to groundwater-depths 32 ft to 20 ft bgs.
- Monitoring well ID. no. 06N01E05A001M is less than two miles northeast of the project. At this well, groundwater is usually flowing east, away from the project site.

- During approximately 1975 to 2025, groundwater elevations ranged from 50 ft to 63 ft amsl. These elevations correspond to groundwater-depths of about 15 ft to 2 ft bgs.

Upon review of these Solano Subbasin groundwater elevation contour maps and time-series groundwater data, CEC staff interpret two important trends related to shallow groundwater at the project site. First, groundwater elevations in the vicinity of the project site are usually higher in the spring than in the fall. The geotechnical investigation measured groundwater depths in September 2023. Second, at the project location, groundwater elevations were at, or above, 70 ft amsl in at least Spring 2015, Spring and Fall 2016, Spring and Fall 2017, Spring and Fall 2018, Spring 2019, Spring 2020, Spring 2023, Spring 2024, and Spring 2025. In the springs of 2019, 2020, 2023 and 2024, groundwater elevations under the project site were about 75 ft amsl (Solano Collaborative 2024, 2025, 2026).

CEC staff note the following limitations and discrepancy from the Solano Subbasin Annual Reports. First, the duration of time depicted in the groundwater elevation contour maps is unclear. For example, it is not clear to CEC staff if the maps represent groundwater elevations on a particular date or month within a season, or if the groundwater elevation contours shown represent an average value for a season. Second, CEC staff are unable to interpret the number of days per year that groundwater depths at the project site were shallower than 7.5 ft bgs. Third, the time-series groundwater elevation data at selected monitoring wells do not always depict consistent groundwater elevations when compared to the seasonal groundwater elevation contour maps. Despite this discrepancy, the available data, and their limitations, support a conservative interpretation that groundwater depths shallower than 7.5 ft bgs may occur at the project site.

Project Description Update #2, Part 1, the project's most recent grading and site plan, shows that the ground surface elevation of the BESS and substation components would be 75 ft to 78 ft amsl. The bottom of the stormwater retention ponds would be 70 ft amsl. The top of the stormwater retention ponds would be 75 ft amsl (TT 2026a).

Based upon the information described in this supplemental data request, CEC staff conservatively conclude that high groundwater elevations, 70 ft to 75 ft amsl may occur at the project site during project construction and operation. These groundwater elevations would be within 2 to 3 ft of the ground surface elevations of the BESS and substation components. These groundwater elevations would be up to 5 ft above the bottom of the stormwater retention ponds.

The geotechnical investigation's proposed mitigation for addressing potential impacts from shallow groundwater impacts to subsurface project components provides some helpful information (TT 2024e). For example:

- The geotechnical investigation recommended that the surficial 2-ft of expansive soils be replaced with a layer of similar thickness of engineered fill. The engineered fill would underlie the foundations for the BESS and substation (TT 2024e).
- For the BESS, the geotechnical investigation recommended steel pile foundations, with helical pile and ground screw foundations as an alternative (TT 2024e).
- For shallow foundation systems that would support lightly loaded structures, such as inverter/transformer skids, the geotechnical investigation recommended a design groundwater-depth of 7 ft bgs (TT 2024e).

However, CEC staff needs additional information on the proposed design of subsurface project components to evaluate how potential impacts from shallow groundwater would be mitigated.

Data Requests:

SDR GEO-1: Please provide the full record of site-specific time-series groundwater-depth and groundwater elevation data collected at the project site. Please provide processed (QA'd and QC'd) data in a tabulated format in a Microsoft Excel compatible spreadsheet . Please provide hydrographs depicting the data. Please explain how the data supports the project's current site and grading plan.

SDR GEO-2: Based on evaluation of regional and site-specific time-series groundwater-depth and groundwater elevation data, and potential shallow groundwater hazards, is the applicant considering modifications to the project's site and grading plan? If yes, please provide the project's new site and grading plan.

SDR GEO-3: Please describe how potential impacts from shallow groundwater on construction of subsurface project components, including excavations, grading, and foundations would be mitigated. The evaluation should include the entire project, including the main project site and linear components, such as the gen-tie route and utility lines.

SDR GEO-4: Please describe how potential impacts from shallow groundwater on project operation would be mitigated. For example, explain how the design, grading, and construction of subsurface project components, including excavations, grading, and foundations, would mitigate potential impacts from shallow groundwater that may occur

during project operation. The evaluation should include the entire project, including the main project site and linear components, such as the gen-tie route and utility lines.

Background: Liquefaction

The geotechnical investigation observed that the soils and sediments that underlie the project site are mostly fine-grained clays and silts, with some sand layers. Clay soils and sediments were observed at depths of 0.5 ft bgs to 9 ft bgs. The geotechnical investigation, Section 4.5 and Table 4.5.1 concluded that liquefaction risk at the main project site is low (TT 2024e). The project application conservatively concluded that liquefaction risk at the main project site is low to moderate (TT 2024c). CEC staff agrees with the application's conservative conclusion.

The geotechnical investigation proposed mitigation for addressing potential impacts from liquefaction. However, it is not clear to CEC staff if the proposed mitigation considered the liquefaction potential of soils and sediments at the project site that are shallower than the shallowest groundwater-depths observed during the geotechnical investigation, 7.5 ft bgs.

Data Requests:

SDR GEO-5: Please explain if the geotechnical investigation evaluated the liquefaction potential of soils and sediments at the project site that are shallower than 7.5 ft bgs.

SDR GEO-6: Based on evaluation of regional and site-specific time-series groundwater elevation data, and potential liquefaction hazards, is the applicant considering modifications to the project's site and grading plan? If yes, please provide the project's new site and grading plan.

References

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