7. Alternative 3 (West Lancaster): Impacts and Mitigation Measures

The following section describes Hydrology and Water Quality impacts of Alternative 3 (West Lancaster Alternative), as determined by the significance criteria listed in Section 4.1. Mitigation measures are introduced where necessary in order to reduce significant impacts to less-than-significant levels. This alternative would deviate from the proposed route along Segment 4, at approximately S4 MP 14.9, where the new 500-kV transmission line would turn south down 115th Street West for approximately 3.0 miles and turn east for approximately 0.5 mile, rejoining the proposed route at S4 MP 17.9. This re-route would increase the overall distance of Segment 4 by approximately 0.4 mile, and would cross two additional unnamed streams.

7.1 Direct and Indirect Effects Analysis

The significance criteria used to identify impacts to Hydrology and Water Quality are introduced in Section 4.1 (Criteria for Determining Impact Significance). Impacts associated with this alternative are presented below under the applicable significance criterion.

Water Quality Violations, Waste Discharges, or Polluted Runoff (Criterion HYD1)

Impacts associated with Criterion HYD1 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Although this alternative introduces a re-route of part of the proposed transmission line in the Northern Region, the re-route would cross three of the same unnamed streams as the proposed Project, plus two additional unnamed streams. The two additional unnamed streams do not differ in channel type or flow characteristics from the other unnamed nearby streams that are crossed by the proposed Project. Therefore, the Hydrology and Water Quality impacts of Alternative 3 would be nearly identical to the proposed Project but of a slightly greater magnitude, and as such, Tables 2.3-1 through 2.3-3 present the streams and groundwater basins that could potentially be affected by impacts of Alternative 3 (with the exception of the two additional unnamed streams). These impacts and their associated mitigation measures that fall under Criterion HYD1 are summarized in the following paragraphs. Please see Section 6.1 (Direct and Indirect Effects Analysis) for a detailed description of these impacts, as they are nearly identical to the proposed Project.

Impact H-1 (Construction activities would degrade surface water quality through erosion and accelerated sedimentation) for this alternative is nearly identical to Impact H-1 for the proposed Project. Although this alternative requires a minor re-route in the Northern Region, and would cross two additional unnamed streams, the overall impact of Alternative 3 on erosion and sedimentation would remain unchanged compared to Impact H-1 for the proposed Project, and therefore would require implementation of the following mitigation measures: H-1a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits), H-1b (Dry weather construction), and B-2 (Implement RCA Treatment Plan). With implementation of the mitigation measures listed above and described in detail in Section 6.1, Impact H-1 for Alternative 3 would be less than significant (Class II).

Impact H-2 (Construction activities would degrade water quality through the accidental release of potentially harmful or hazardous materials) for this alternative is nearly identical to Impact H-2 for the proposed Project. Although this alternative requires a minor re-route in the Northern Region, and would cross two additional unnamed streams, the overall impact of Alternative 3 on water quality would remain

unchanged compared to Impact H-2 for the proposed Project, and therefore would require implementation of the following mitigation measure: H-1b (Dry weather construction). With implementation of the mitigation measure listed above and described in detail in Section 6.1, Impact H-2 for Alternative 3 would be less than significant (Class II).

Impact H-3 (Operation and maintenance activities would degrade water quality through the accidental release of potentially harmful or hazardous materials) for this alternative is nearly identical to Impact H-3 for the proposed Project. Although this alternative requires a minor re-route in the Northern Region, and would cross two additional unnamed streams, the overall impact of Alternative 3 on water quality would remain unchanged compared to Impact H-3 for the proposed Project. As described in detail in Section 6.1, Impact H-3 for Alternative 3 would be less than significant (Class III).

No further impacts would be introduced by Alternative 3 under Criterion HYD1. As mentioned, please see Section 6.1 for a detailed description of the impacts and mitigation measures listed above.

Depletion of Groundwater Supplies or Interference with Groundwater Recharge (Criterion HYD2)

Should groundwater be encountered during construction-related excavation, dewatering of the construction site would be required. For Alternative 3, depth to groundwater is approximately 75 feet or more bgs, and the maximum construction-related excavation depth is approximately 40 feet bgs. Although Alternative 3 would include a minor re-route of the proposed transmission line in the Northern Region, no excavation beyond 40 feet bgs would be required along the re-routed section of the transmission line, and depth to groundwater in that area is at least 100 feet bgs. Therefore no direct contact with the main groundwater table would be expected to occur during construction of Alternative 3. However, it may be possible for perched groundwater to be encountered during excavation activities, which would necessitate the implementation of APM HYD-6 (Drilling and Construction Site Dewatering Management). As described above in Section 6, the potential encountering and dewatering of perched groundwater during construction activities would not cause or contribute to depletion of groundwater supplies or interference with groundwater recharge.

Creation of new impervious surfaces through construction of Alternative 3 could interfere with groundwater recharge by reducing the amount of surface area through which precipitation and surface water percolates to underground aquifers. However, impervious surfaces that would result from construction of Alternative 3 would cover very small areas and would be distributed over a large geographic region, and therefore would not substantially interfere with groundwater recharge.

Operation of Alternative 3 would consist of transmission of electric current though the transmission line as well as periodic maintenance which would consist of driving construction vehicles along or within the transmission ROW and would have no effect on groundwater recharge. Therefore, all impacts related to Criterion HYD2 would be exactly the same as those for the proposed Project and, as described under Criterion HYD2 in Section 6.1, no impact would occur.

Siltation, Erosion, or Other Flood Related Damage from Impeding or Redirecting Flood Flows through Placement of a Structure in a Stream or Flood Hazard Area (Criterion HYD3)

Impacts associated with Criterion HYD3 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Encroachment of a Project structure into a stream channel or floodplain could result in flooding of or erosion damage to the encroaching structure, diversion of flows and increased flood risk for adjacent property, or increased erosion on adjacent property. Although this alternative introduces a re-route of part of the proposed transmission line in the Northern Region, the re-route would not cross through or be placed within any new Flood Hazard Areas. The impediment of flood flows is most likely to occur where transmission towers or other permanent Project features are constructed in or closely adjacent to a watercourse. Alternative 3 crosses two more streams than the proposed Project, both of which are unnamed streams. It is not expected that infrastructure associated with Alternative 3 would be situated within a watercourse; however, some towers would be placed in areas subject to periodic overland flow and flooding, such as the Santa Fe Flood Control Basin, the Whittier Narrows Flood Control Basin, and some broad, ephemeral washes in the Northern Region.. Therefore, the Hydrology and Water Quality impacts of Alternative 3 that fall under Criterion HYD3 would be the same as the proposed Project. This impact and its associated mitigation measures are summarized in the following paragraph. Please see Section 6.1 (Direct and Indirect Effects Analysis) for a detailed description of this impact, as it is the same as for the proposed Project.

Impact H-4 (Project structures would cause erosion, sedimentation, or other flood-related damage by impeding flood flows) for this alternative is nearly identical to Impact H-4 for the proposed Project. Although this alternative requires a minor re-route in the Northern Region, and would cross two additional unnamed streams, the overall impact of Alternative 3 on flooding would remain unchanged compared to Impact H-4 for the proposed Project, and therefore would require implementation of the following mitigation measure: H-1a (Implement an Erosion Control Plan and demonstrate compliance with water quality permits). With implementation of the mitigation measure listed above and described in detail in Section 6.1, Impact H-4 for Alternative 3 would be less than significant (Class II).

Flooding from Increased Rate or Amount of Surface Runoff (Criterion HYD4)

The amount of surface runoff is determined by the amount of precipitation and other imported water that enters a watershed, minus the amount of precipitation and imported water that infiltrates into the groundwater. Infiltration is determined by several factors, including soil type, antecedent soil moisture, rainfall intensity, the amount of impervious surfaces within a watershed, and topography. The rate of surface runoff is largely determined by topography and the storm hydrograph (the intensity of rainfall over a given period of time). Alternative 3 would not alter any precipitation amounts or intensities, nor would it require any additional water to be imported into the proposed Project area. Although Alternative 3 would include a minor re-route of the proposed transmission line in the Northern Region, this alternative would create the same amount and distribution of impervious surfaces as the proposed Project, and therefore would have the same effect on groundwater infiltration as described for the proposed Project under Section 6.1.

Alternative 3 would not substantially alter precipitation amounts or intensities, or the amount of precipitation or imported water that infiltrates into the groundwater. Therefore, all impacts related to Criterion HYD4 would be exactly the same as those for the proposed Project and, as described under Criterion HYD4 in Section 6.1, no impact would occur.

Damage from Inundation by Mudflow (Criterion HYD5)

Impacts associated with Criterion HYD5 for Alternative 3 would be the same as impacts associated with this criterion for the proposed Project. Mudflows are a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity. Mudflow events are caused by a combination of factors, including soil type, precipitation, and slope. Mudflow may be triggered by heavy rainfall that the soil is not able to sufficiently drain or absorb. As a result, soil and rock materials become unstable and eventually slide away from their existing location, in a mudflow event. Although this alternative introduces a re-route of part of the proposed transmission line in the Northern Region, it would still pass through the same mudslide prone areas, such as the Puente and Chino Hills. Therefore, the Hydrology and Water Quality impacts of Alternative 3 that fall under Criterion HYD5 would be the same as the proposed Project. This impact and its associated mitigation measures are summarized in the following paragraph. Please see Section 6.1 (Direct and Indirect Effects Analysis) for a detailed description of this impact, as it is the same as for the proposed Project.

Impact H-5 (Project structures would be inundated by mudflow) for this alternative is nearly identical to Impact H-5 for the proposed Project. Although this alternative requires a minor re-route in the Northern Region, and would cross two additional unnamed streams, the overall impact of Alternative 3 on inundation by mudflow would remain unchanged compared to Impact H-5 for the proposed Project, and therefore would require implementation of the following mitigation measure: G-3 (Conduct geological surveys for landslides and protect against slope instability). With implementation of the mitigation measure listed above and described in detail in Section 6.1, Impact H-5 for Alternative 3 would be less than significant **(**Class II**)**.

7.2 Cumulative Effects Analysis

This section addresses potential cumulative effects that would occur as a result of implementation of Alternative 3 (West Lancaster Alternative). This alternative consists of a brief re-route of the proposed transmission line just north of Antelope Substation, which would add approximately 0.4 mile to the length of the route. The remainder of this alternative route (south of Antelope Substation) would be identical to that of the proposed Project and would, therefore, result in identical impacts as the proposed Project. The rerouted portion of the Alternative 3 route generally parallels the proposed Project route to the west. As a result, this alternative traverses the same or similar land uses as the portion of the proposed Project route it is proposed to replace, would require the same types of construction activities to build, and would result in the same operational capacity as the proposed Project. Based on the substantial similarity of Alternative 3 to the proposed Project, this alternative's contribution to cumulative impacts would be identical to that of the proposed Project.

7.2.1 Geographic Extent

Alternative 3 only differs from the proposed Project for a very small portion of the proposed route in the City of Lancaster, near Antelope Substation. This area is still encompassed by the geographic extent of the cumulative analysis defined for Alternative 2 in Section 6.2.1. Therefore, the geographic extent of the cumulative analysis for Alternative 3 is exactly the same as that for Alternative 2.

7.2.2 Existing Cumulative Conditions

The existing cumulative conditions for Alternative 3 are exactly the same as for Alternative 2, as described in Section 6.2.2.

7.2.3 Reasonably Foreseeable Future Projects and Changes

Reasonably foreseeable future projects and changes to the cumulative scenario for Alternative 3 would be exactly the same as Alternative 2, described in Section 6.2.3.

7.2.4 Cumulative Impact Analysis

Impacts associated with Alternative 3 would be cumulatively considerable if they would have the potential to combine with impacts of other past, present, or reasonably foreseeable projects. The minor re-route of the proposed Project transmission line associated with Alternative 3 would not affect the proposed Project's contribution to cumulative impacts and therefore, cumulative impacts of Alternative 3 would be exactly the same as cumulative impacts for Alternative 2, as detailed in Section 6.2.4 and described below.

The following impacts would be cumulatively considerable but less than significant **(**Class III**)**: Impact H-3 (Operation and maintenance activities would degrade water quality through the accidental release of potentially harmful or hazardous materials) and Impact H-5 (Project structures would be inundated by mudflow).

The following impacts would be cumulatively considerable and would combine with similar impacts of other projects to result in impacts that would be significant and unavoidable **(**Class I**)**: Impact H-1 (Construction activities would degrade surface water quality through erosion and accelerated sedimentation) and Impact H-2 (Construction activities would degrade water quality through the accidental release of potentially harmful or hazardous materials).

7.2.5 Mitigation to Reduce the Project's Contribution to Significant Cumulative Effects

Mitigation measures introduced for Alternative 3 in Section 7.1 (Direct and Indirect Effects Analysis) would help to reduce this alternative's incremental contribution to cumulative impacts. However, no additional mitigation measures have been identified that would reduce cumulative impacts to a less-than-significant level for Hydrology and Water Quality.