The Project Area soil conditions include slightly and moderately sloping topography and undeveloped site conditions. The use of erosion control best management practices (BMPs) to control water and wind erosion during construction activities, and placement of impervious surfaces and/or best management practices (BMPs) on disturbed areas within the Project Area will effectively control soil loss after construction. Quantitative calculations of potential soil loss using the Revised Universal Soil Loss Equation (Version 2, RUSLE 2) and Chepil Wind Erosion Equations utilizing the Wind Erosion Prediction System (WEPs) software have been performed, and the results are presented below. The Project's potential effects on soil resources can be categorized into those involving construction activities and those related to Project operation. Table 4.5-1 presents the anticipated disturbance areas north and south of the BNSF railway.

The average annual soil erosion rates by sheet and rill erosion caused by rainfall runoff for the soil associations with the Project are provided in the table below. Two soil textures were used for the calculations to correlate soil loss rates with soil texture. Based upon the calculations, the existing condition erosion rates increase during construction due primarily to fill placement without the use of erosion and sediment control BMPs. The Project will use construction and operation phase erosion and sediment control BMPs, and final stabilization to reduce soil erosion rates to at or below existing levels. The previously calculated soil erosion rates represented a conservative condition with an overland flow path length of 150 feet and an average slope steepness of 5%. Additional calculations were performed that include overland flow path lengths of 50 feet and 0.5-percent slope steepness and 100-feet overland flow length of 5-percent steepness for construction conditions. The BMPs reflected in the model include the use of linear sediment control barriers.

The WEPs model was used to estimate soil loss due to wind erosion. The existing wind erosion rates were estimated to be greater than 100 tons per acre per year for the soil associations. Wind erosion rates are an order of magnitude higher than soil erosion by rainfall runoff at this location due to the relatively low annual rainfall amount. Wind erosion control BMPs (e.g., tracking control, stabilized construction entrance exits, construction road stabilization, and dust control) will be used to maintain or reduce existing wind erosion rates during construction and operation. It is estimated that potential wind erosion rates will decrease based upon the proposed project modifications due to increased cover provided by the PV panels.

Table S-1
Original and Revised Estimated Soil Erosion Rates

Soil Type	Existing (ton/ac/yr)	Construction – Cut Area with No BMPs (ton/ac/yr)	Construction – Fill area with No BMPs (ton/ac/yr)	Construction – Average with No BMPs (ton/ac/yr)	Construction with BMPs (ton/ac/yr)	Operations with BMPs (ton/ac/yr)
Original Estimated:						
Carrizo Rositas Gunsight (60% Gravel, 30% Sand, 10% fines)	0.53	0.53	1.4	0.97	0.33	0.23
Nickel-Arizo-Bitter (30% Gravel, 30% Sand, 40% fines)	2.1	2.1	5.7	3.1	0.052	0.052
Revised Estimated:						
Carrizo Rositas Gunsight (60% Gravel, 30% Sand, 10% fines)	0.53	0.06-0.53	0.13-1.4	0.77	0.0018-0.33	0.0018-0.23
Nickel-Arizo-Bitter (30% Gravel, 30% Sand, 40% fines)	2.1	0.24-2.1	0.56-5.7	3.1	0.014-0.052	0.014-0.052

Notes:
< = less than
% = percent
BMP = Best Management Practice
ton/ac/yr = tons per acre per year
Soil erosion rates reflect sheet flow and rill erosion caused by storm water runoff and were calculated using the Revised Universal Soil Loss Equation (Version 2), RUSLE2 computer program.
BMP = Erosion and Sediment Control Best Management Practice (Erosion Blanket, Mulch, Silt Fence, Fiber Roll, or Final Stabilization, etc.).