State of California **Business, Transportation and Housing Agency**

Memorandum

To: Michael Hollier,
Environmental Planning, SLO

Date: October 1, 2018

File No.: SB-217-PM 1.02
San Jose Creek Bridge Project
05-1C360_ (0512000134)

From: **DEPARTMENT OF TRANSPORTATION**/District 5
Environmental Engineering Branch Chief
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Subject: **GREEN HOUSE GAS MEMO**

BACKGROUND

Environmental Engineering has reviewed the above referenced project in Santa Barbara County on Route 217 at PM 1.02, which proposes to replace the San Jose Creek Bridge. Since the level of environmental document is a CEQA IS, construction related GHG estimates are required.

GREENHOUSE GAS DISCUSSION

Greenhouse gas emission discussion has been included as a supplement to the AQ technical report utilizing the Climate Change guidance on the DEA website, "Discussion Notes for Climate Change considerations/analysis for Caltrans Environmental Generalists." According to the guidance, there are several categories of projects that most likely will have minimal or no increase in operational GHG emissions, including bridge replacement projects such as this. These projects should include a qualitative discussion about the operation of the project and the low to no potential for an increase in GHG emissions. No modeling of operational related GHG emissions was conducted for this project consistent with the above referenced guidance.

It is anticipated that there will be long-term GHG benefits as a result of this project by improving the facility such that there are improved traffic flows, smoother pavement surfaces, and reduced lifecycle maintenance costs associated with the facility. These elements are all consistent with reducing operational GHG emissions.

Construction GHG emissions will be unavoidable and would result from raw material extraction, material processing and delivery to the job site, on-site construction equipment, and potential traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction would be offset by longer intervals between maintenance and rehabilitation activities.

Construction Climate Change emissions were estimated using the CAL-CET modeling tool utilizing default settings for a bridge replacement project (Refer to Table 1). Note that this estimate is based on assumptions made during the environmental planning phase of the project and is considered a "ballpark" of energy usage (diesel fuel) and climate change emissions (CO_2) using limited data inputs and default modeling.

To turn the emission estimates below into annual Carbon Dioxide equivalents (CO_2e): CO_2*(1) + NOx * (298) + CO * (3) = 446(1) + 1.78(298) + 1.03(3) = 979.5 tons/year.

The estimated average Carbon Dioxide equivalent emissions is 979.53 tons/year or a total of 2040.7 tons generated over a 25-month time frame.

Table 1: Project Related Construction Emission Estimates

	Summary of Project Emissions and Diesel Fuel Consumption							
	TOG	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	Diesel Fuel
Daily Average (lbs/day)	0.97	0.93	7.93	13.67	1.00	0.73	3423	983
Maximum Daily Average (lbs/day)	2.49	2.42	17.93	34.67	4.53	2.17	7823	2374
Annual Average (tons/year)	0.13	0.12	1.03	1.78	0.13	0.09	446	128