MEMO RESPONSE:
SEDIMENT DISCHARGE ANALYSIS

The preliminary engineering analysis for the Foothill Transportation Corridor (Corridor) includes a sediment study to assess the potential impact the Corridor will have on the long-term delivery of sediment to coast. The Corridor has the potential to impact both sediment discharge and stream discharge. A change in either of these parameters would alter the current channel dynamic equilibrium, resulting in changes to the channel planform, profile or cross section. Maintaining the existing sediment delivery in Cristianitos and San Mateo Creeks is also important in preserving the surfing resource at Trestles beach. The project sediment study was performed for a 10-year recurrence interval since this discharge likely represents the 'effective' or 'dominant' discharge for San Mateo Creek.

The dominant, or effective discharge is the discharge rate that transports the largest volume of annual sediment in the channel, and is therefore the most critical in determining potential impacts or changes to the channel. Leopold (1964) computed the dominant discharge for areas in the eastern US as having a return period of about 1.5 years. Goodwin (1998) indicates that the return period for the dominant discharge for arid and semi-arid areas such as southern California can vary from 2 – 10 years. A 10 discharge was selected for the sediment study since the project is located in an arid area and this return period corresponds to the dominant discharge calculated for other detailed studies in California.

The Corridor alignment falls on the upland areas away from Cristianitos and San Mateo Creeks on adjacent hillsides. The soils in this area are comprised primarily of siltstone (Geosoils Inc., 2006) and consequently are not a significant source of bed material (the portion of sediment load responsible for channel form) for the Creeks.

A significant change in the discharge to the creek could also potentially alter the dynamic equilibrium of the Creek by causing a change in the sediment transport. The Corridor design incorporates extended detention basins that also include a hydromodification element to ensure that flows in the range that are capable of transporting sediment remain relatively unchanged in the post-construction condition.

The analysis shows that additional sediment studies for storm recurrence intervals outside of the dominant channel discharge will not provide any additional useful information to assess potential impacts from the Corridor. The mitigation elements (hydromodification basins) and the selected Corridor location (out of the stream course and in areas comprised primarily of siltstone) will ensure that the annual sediment load delivered to the coast is not significantly impacted as a result of the project.