ATTACHMENT A

OPERATIONAL IMPROVEMENT STUDY

for

Ortega Highway
(State Route 74)
In Orange and Riverside Counties

Executive Summary

HDR 11252-66243

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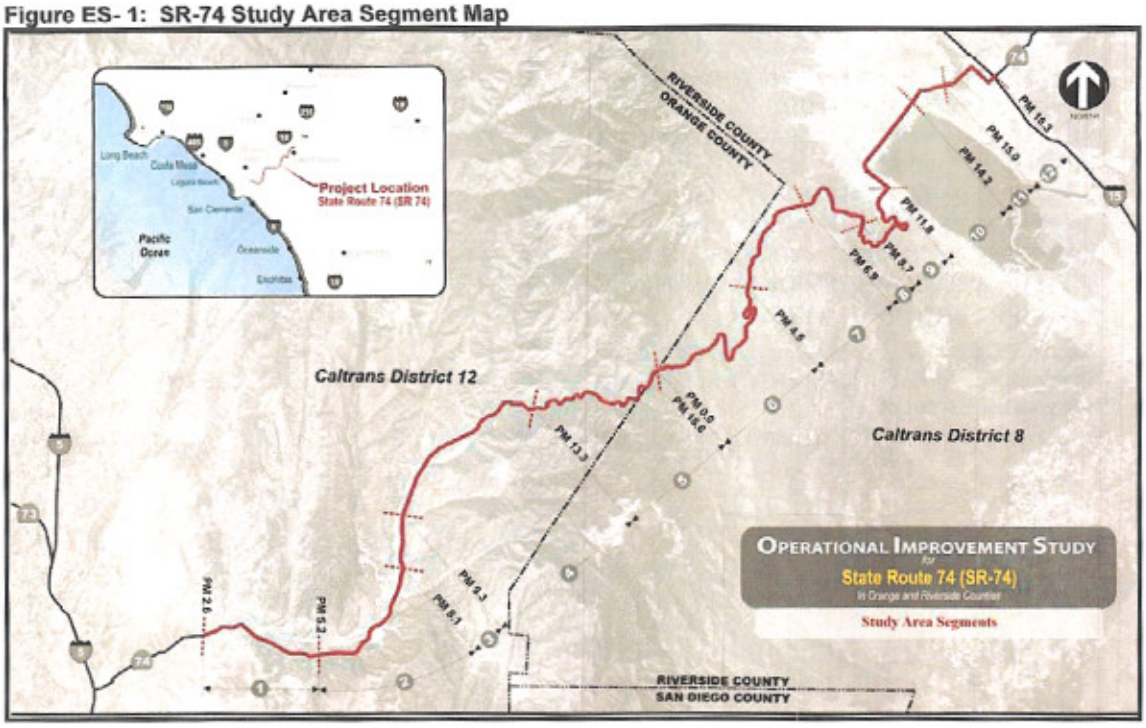
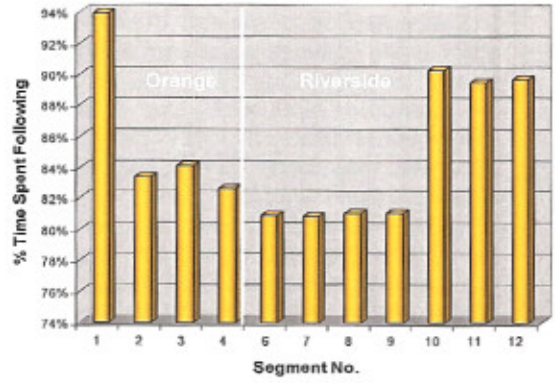
Figure ES- 1: SR-74 Study Area Segment Map



Current Operations. The SR-74 corridor is a winding mountainous alignment with limited places for passing, vehicle turnouts, or emergency clear zones. Because of the current corridor alignment and associated constraints, traffic queues form behind slow-moving vehicles and disabled vehicles; see Figure ES- 2. Traffic operations were analyzed for the current traffic conditions using the Highway Capacity Manual (HCM) methodology for two-lane undivided highways. This methodology incorporates geometric features and traffic demand factors such as lane and shoulder widths, type of terrain, number of access points, two-way traffic volumes, truck percentages, and directional splits. The analysis shows that the existing facility is operating at a Level of Service (LOS) E or less.

Figure ES- 2: Time Spent Following Slower Vehicles by Segment

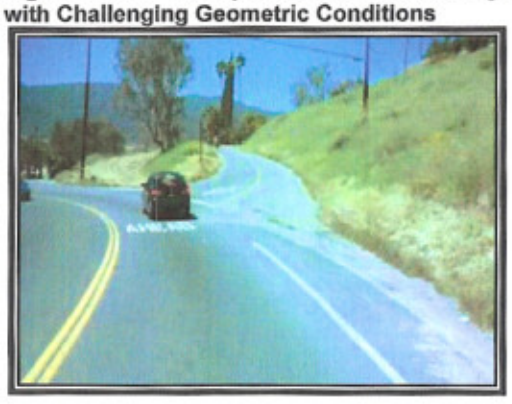


Horizontal Highway Curves. Within the study area, due to the mountainous terrain, horizontal curves are key physical characteristics of the roadway. At each horizontal curve location, the roadway geometry results in a corresponding recommended stopping sight distance and design speed[1]. Based on the as-built

[1] Geometric features affecting sight distances and design speeds typically include horizontal alignment, vertical alignment, super-elevation, and horizontal clearances.

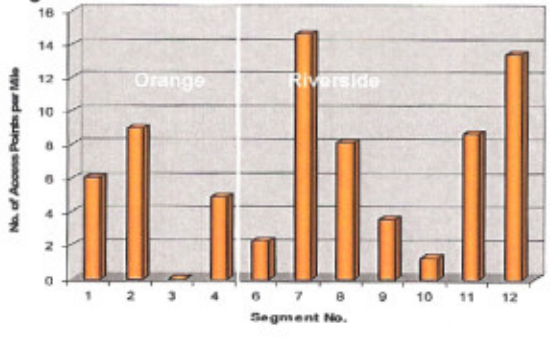
Access Points. Highway access points create potential traffic conflict points. Because of the topography, many access points have challenging geometric configurations. As an example, in the photograph in Figure ES-8, the connection of the subject access road is not perpendicular to the SR-74 and the access point is located at a curve, which can affect sight lines and driver comfort.

Figure ES-8: Example of Access to Ortega with Challenging Geometric Conditions



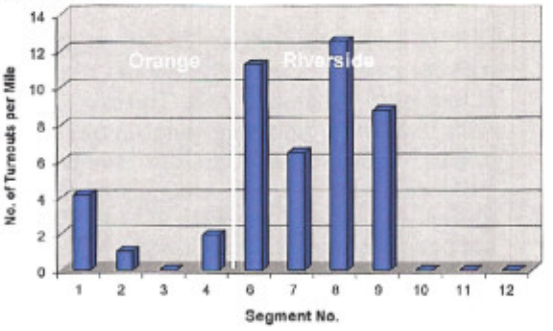
As shown in Figure ES-9, the density of access points is particularly prominent in Segment 7.

Figure ES-9: Access Points per Mile by Segment



Turnouts. Turnouts allow motorists to leave the traveled lane to allowing the motorists to slow or disabled vehicles to pull over and let faster traffic pass, so as to reduce traffic queues and driver frustration. Figure ES-10 shows turnouts are most numerous in Segments 6 and 8.

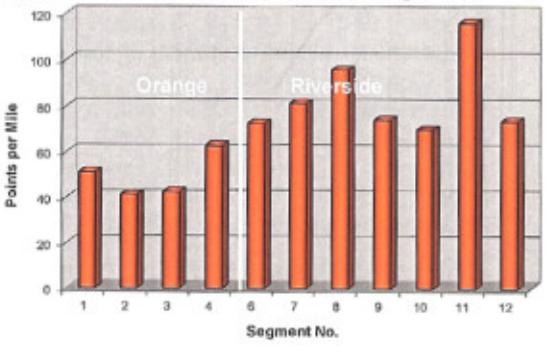
Figure ES-10: Number of Turnouts per Mile by Segment

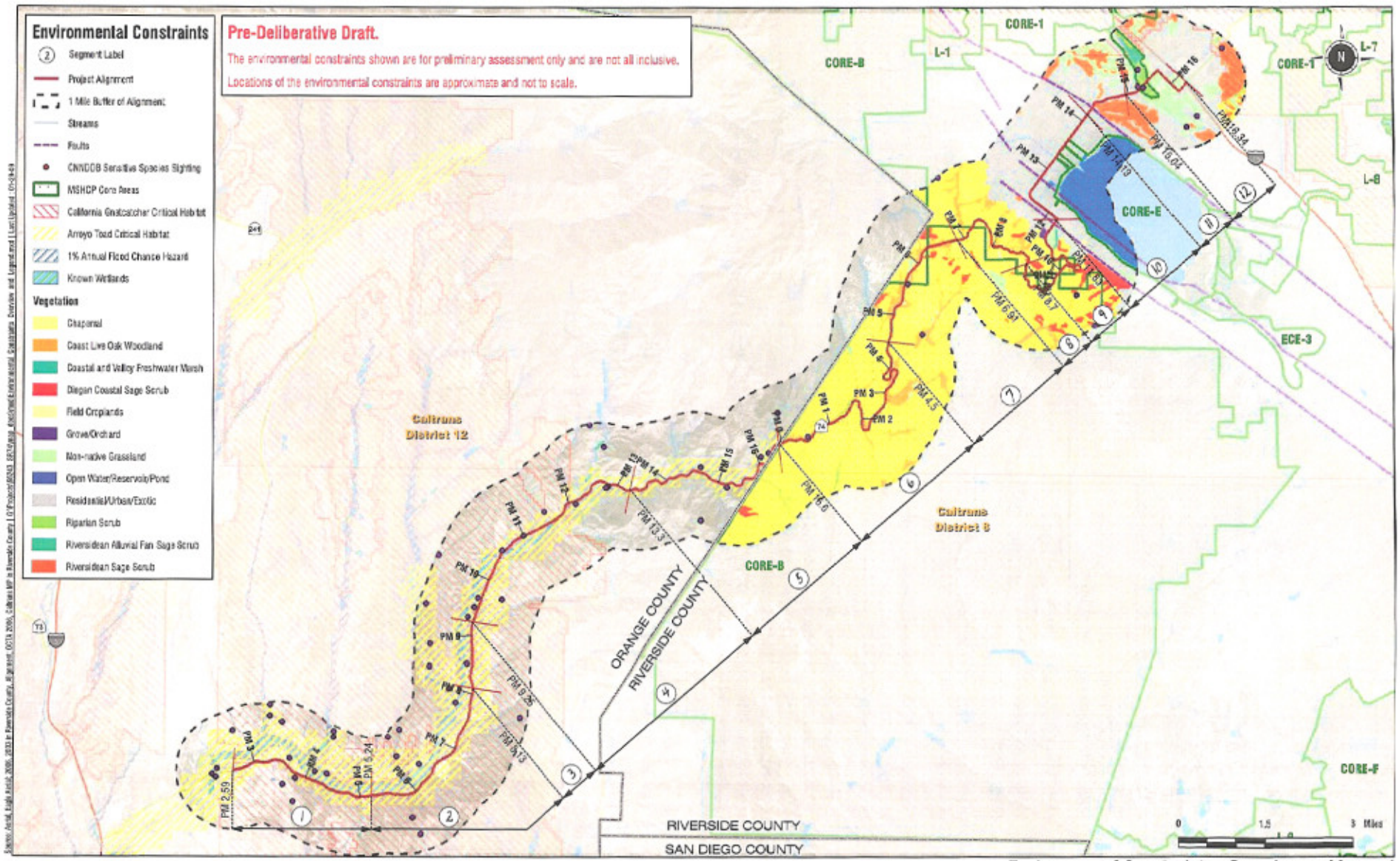


Scoring. Based on the traffic data, physical characteristics, and maintenance records, this study assesses the findings and recommends improvements for each SR-74 segment. A scoring system was developed to quantify comparisons. Scores are shown in "points per mile". Segments showing higher scores would presumably require more improvements than those segments with lower scores.

Figure ES-11 summarizes the operational scores by segment.

Figure ES-11: Score Summary by Segment





Environmental Constraints - Overview and Legend

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Recommendations

Based upon the conceptual analysis conducted for this study, it is suggested that the stakeholder planning agencies consider the improvement priorities summarized in the implementation phasing plan in Table ES-1, and perform the following additional studies:

- Feasibility Study for specific passing lane locations;
- Project Initiation Documents (PIDs), which will evaluate the specific feasibilities, cost, and scope of the proposed improvements in greater detail and precision;
- Analysis and research to determine the amount and availability of funding, and the requirements of proposed funding sources; and
- NEPA/CEQA compliance reports.

It should be noted that these proposed improvements are based on very high level evaluations. The feasibility of their final implementation will be subject to detailed analyses and studies.

Table ES- 1: Proposed Improvements and Priorities by Segment

Priority No.	Seg. No.	County	Begin Post Mile	End Post Mile	Length (mile)	"Order-of-Magnitude" Cost Ranges (Const. plus Support) ($ Millions)	Proposed Improvements										
							Upgrade Lanes	Upgrade Shoulders	Upgrade MBGR	Upgrade Drainage Systems	Add Passing Lanes	Improve Intersections	Remove Lateral Obstruction	Add Lighting	Add Recessed Pavement Markers	Add New MBGR Locations	Add Rock Catchment
1	11	Riverside	14.9	15.0	0.8	10 ~ 20			✓	✓			✓				
2	12	Riverside	15.0	16.3	1.3	10 ~ 20			✓	✓		✓					
3	8	Riverside	6.9	8.7	1.8	40 ~ 78	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
4	7	Riverside	4.5	6.9	2.4	40 ~ 78	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
5	1	Orange	2.6	5.2	2.6	23 ~ 46		✓	✓	✓	✓		✓	✓		✓	
6	4	Orange	9.3	13.3	4.0	30 ~ 98	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
7	2	Orange	5.2	8.1	2.9	23 ~ 46	✓	✓	✓	✓	✓		✓	✓			✓
8	10	Riverside	11.8	14.2	2.4	16 ~ 33			✓	✓			✓				
9	6	Riverside	0.0	4.5	4.5	90 ~ 176	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
10	3	Orange	8.1	9.3	1.1	13 ~ 26	✓	✓	✓	✓	✓		✓	✓			✓
11	9	Riverside	8.7	11.8	3.1	60 ~ 130	✓	✓	✓	✓	✓		✓	✓			✓
				Route Total:		355 ~ 751											