



Section 5 Maintenance Cost Estimates

GOALS

To develop annual and deferred maintenance cost estimates for the recommended alignments.

PROJECT PROCESS

- Obtained benchmarks for annual trail maintenance costs from:
 - Orange County, and
 - City of Norco.
- Obtained bids from local contractors for deferred maintenance costs, including:
 - Asphalt removal and replacement,
 - Asphalt resurfacing,
 - Striping,
 - Signage design, manufacture and installation, and
 - Paving with decomposed granite.
- Calculated and tabulated annual and deferred maintenance costs for the recommended alignments.





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Introduction

The maintenance cost estimates for the proposed projects include the annual cost, as well as that required for periodic deferred maintenance. The estimates are based upon a review of local costs, those required for Orange County's trails, and general knowledge of trail maintenance costs in other parts of the state.

The estimates are conceptual and intended for use by the governing bodies and staffs to provide an approximate range of the funding required.

Estimates

The cost for trail maintenance is usually expressed in cents per square foot. It has been found that the cost for similar width paved and DG trails is approximately the same. Single tread dirt trails found in Southern California in natural landscapes normally cost about one-fourth the amount per lineal foot as what is needed for trails such as the SART.

The annual cost per square foot of the trails in Norco is presently 6 cents, and is performed by an independent contractor. Trail maintenance costs in 2007 in Orange County were in the same range, with 4 cents on their portion of the SART and 7.5 cents for Aliso Creek. These two trail corridors are the largest in Orange County's system and both are similar to the SART, consisting of both paved and DG trails. Some inmate labor is used for trail maintenance in Orange County. We recommend that a range of 5 to 8 cents be used for the project.

The following table provides trail distances for the total length of the two trails, as well as the estimated annual cost range for each.

Annual Maintenance Costs

Paved Trail	364,300 sq. ft.
DG Trail	484,590 sq. ft.
Total	848,890 sq. ft.

@5 cents/sq. ft. = \$42,444.50

@8 cents/sq. ft. = \$67,911.00

Say \$45 - 70,000 Annual Maintenance

Deferred Maintenance Costs

Normal deferred maintenance of trails will, over time, cost approximately 1% of the original construction cost per year. In the case of the SART, it will be more costly in two areas where the trail crosses below the spillway, and where the trail is inside the Prado Flood Basin. It is expected that when water flows over the spillway, the affected segment of the trail will be washed away. The frequency is less than once per hundred years. Inundation inside the basin is expected to occur more frequently, but involve silt and debris removal rather than full replacement. The frequency and level of damage is not precisely known.

A reasonable estimate is that the average increased cost over time will be approximately 1.5 times that required in non-flood areas. Approximately 4.6 miles of both the paved and DG trails are within the floodable zone.

The following table provides a breakdown of the separate deferred maintenance items, as well as the estimated annual cost range for each:

Annual Deferred Maintenance Costs

New Paved & Multi-use Trail - 6.2 Miles

Flood Areas	4.6	4.6 x \$1,200,000/mile x 1.5% = \$ 82,800
Non-Flood Areas	1.6	1.6 x \$1,200,000/mile x 1% = 19,200

New DG Trail - 6.5 Miles

Flood Areas	4.6	4.6 x \$300,000/mile x 1.5% = 20,700
Non-Flood Areas	1.9	1.9 x \$300,000/mile x 1% = 5,700

New Street DG Trail - 1.1 Miles 1.1 x \$400,000/mile x 1% = 4,400

Street Striping - 8.1 Miles 8.1 x \$200,000/mile x 1% = 16,200

Total \$149,000

Say \$145-160,000 Annual Deferred Maintenance Cost



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