

# 1 Executive Summary

This report summarizes Jacobs Associates' evaluation of alternatives for managing stormwater and reducing flooding in the Vista Grande Drainage Basin in Daly City, California. It was prepared as part of the Vista Grande Drainage Basin Alternatives Analysis Project, commissioned by the City of Daly City (the City) to evaluate improvements to the Vista Grande Watershed stormwater outfall system.

Jacobs Associates investigated 7 initial alternative tunnel alignments from which the City selected 5 alternative tunnel alignments. In addition, the City identified 2 non-tunnel alternatives-- stormwater storage basins and groundwater recharge-- which could complement any of the tunnel alternatives or operate independently. Seventeen conceptual design alternatives were developed from the tunnel and non-tunnel alternatives. The alternatives under consideration address the need for additional flow capacity, the opportunity to reduce peak flows through stormwater detention, and the possibility for stormwater re-use.

Currently, rainfall in the Vista Grande Watershed is collected by several underground culverts which discharge into the Vista Grande Canal, located near the intersection of Lake Merced Boulevard and John Muir Drive. In the canal, stormwater flows west along John Muir Drive and then is diverted into the existing Vista Grande Outfall Tunnel. The tunnel discharges the stormwater through an existing outfall structure at Fort Funston, located in the Golden Gate National Recreation Area.

Frequently, rainstorms produce storm runoff that exceeds the hydraulic capacities of the tunnel (estimated to be 170 cubic feet per second or cfs), and the canal (estimated to be 500 cfs). When stormwater inflows exceed the tunnel's capacity, the water backs up into the canal, causes upstream flooding, and overtops John Muir Drive. Excess water may flow from the canal into Lake Merced or into other areas at lower elevation. The resulting flooding impacts the community and environment.

Stormwater modeling serves as the design basis for proposed flood control improvements. A storm hydrograph is a graph showing water flow with respect to time. A synthetic hydrograph was developed to estimate the design storm event (25-year, 4-hour event) peak flow and total run-off. For planning and conceptual design purposes, the synthetic hydrograph is considered suitable, but an actual hydrograph will have to be developed for the detailed design phase that reflects the anticipated future upper watershed hydrology and stormwater system configuration.

We understand that the City prefers solutions that take the entire watershed into consideration and that the City plans to evaluate the possible alternatives holistically, considering urban planning issues, potential stormwater system improvements, potential stormwater outfall improvements, and water re-use opportunities. Accordingly, this report summarizes the stormwater outfall improvement alternatives and provides an analysis of each alternative based on a set of criteria that include:

- Anticipated public benefits,
- Operability,
- Environmental compliance,
- Land acquisition costs,
- Constructability, and
- Life cycle costs.

Section 10 of this report provides an outline of the alternatives' evaluation criteria including a preliminary ranking of the alternatives. The results of the project team's evaluation are presented in Table 10.1.

The City's selection of the preferred alternative(s) must consider factors that are beyond the scope of an evaluation model. Accordingly, the ranking of alternatives shown above is preliminary and is based upon the criteria and the participants' knowledge and understanding of the project. We recommend that the City continue with its plan to thoroughly review the issues with City staff and include opportunities for public input. Additional discussions with permitting agencies would also clarify processes, durations, and required studies. Generally, the highest-ranked alternatives provide increased outfall tunnel capacity leading to a rehabilitated outfall structure, new stormwater storage capacity, and opportunities for stormwater re-use. The report also provides recommendations for the City's review and public input.

This work was carried out by Jacobs Associates in accordance with our contract with the City dated March 15, 2007. This report is the primary deliverable for Task 1 in the scope of work.