

Appendix B

Sunnyvale East and West Channels Flood Protection Project Planning Study Report

SANTA CLARA VALLEY WATER DISTRICT
SUNNYVALE EAST CHANNEL AND SUNNYVALE WEST CHANNEL
FLOOD PROTECTION PROJECT

Project No. 26074002

PLANNING STUDY REPORT

Prepared by:

Bal Ganjoo, P.E.
Melissa Carter, P.E.
Emily Zedler, P.E.
Metra Angelica Valle
Tiffany Hernandez

Senior Project Manager
Associate Civil Engineer
Assistant Civil Engineer II
Assistant Engineer II
Environmental Planner II

Katherine Oven, P.E.
Deputy Operating Officer

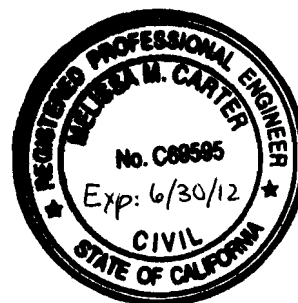
Chris Elias
Deputy Operating Office

Marc Klemencic
Chief Operating Officer

Beau Goldie
Chief Executive Officer

June 2010

This Planning Study Report has been prepared under the direction of the undersigned, who hereby certifies that she is a registered engineer in the state of California.



Melissa M. Carter

Melissa M. Carter, RCE No. C69595, Expiration Date 6/30/2012

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EXECUTIVE SUMMARY

Introduction

The Sunnyvale East Channel and Sunnyvale West Channel Flood Protection project (SEW Project) was initiated by the District as part of the Clean, Safe Creeks, and Natural Flood Protection Program (CSC Program), which was approved by the voters in November 2000. The project addresses flooding and erosion problems along the channels. Erosion along the channels is pervasive and flooding has occurred in the 1960's, 1980's and 1990's. The Channels were constructed by the District between 1959 and 1967 to convey urban runoff from the City of Sunnyvale's storm drain system to the bay.

The main purpose of this report is to present the details of the staff-recommended alternative for meeting the project objectives to provide flood and erosion protection to Sunnyvale East and West Channels. Summarized below, the project objectives are consistent with the Clean, Safe Creeks program.

Project Objectives

The main objectives of the SEW Project are listed here.

- Provide 100-year riverine flood protection to 1,618 parcels in the Sunnyvale East Channel Watershed and to 47 acres (11 parcels) of industrial and government lands in the Sunnyvale West Channel Watershed by December 2016.
- Provide erosion protection measures thereby improving water quality. The project shall restore, at a minimum, the 25 erosion sites identified in the 2004 West Valley Watershed Creek Inspection Report.

Project Alternatives Considered

The project team developed several feasible alternatives which meet the project objectives. They are:

- Alternative B - Floodwalls, Levees and Erosion Protection
- Alternative D – Detention, Floodwalls, Levees and Erosion Protection
- Alternative H - Pond A4, Floodwalls, Levees and Erosion Protection
- Alternative I - Pond A4, Levees and Erosion Protection
- Alternative J - Pond A4, Detention, Floodwalls, Levees and Erosion Protection
- Alternative K- Pond A4, Detention, Levees and Erosion Protection

There are four flood protection elements used in the feasible alternatives: Floodwalls, Levees, Pond A4, and Detention. These elements distinguish the alternatives from each other as the alternatives all have the same erosion protection element (which consists of rocking the channel toe and vegetating the earth bank). The Floodwalls and Levees elements involve raising the height of existing channel banks, thus providing flood protection by increasing channel capacity. The Pond A4 element involves realigning the channels to flow into Pond A4, which would serve as a detention basin for temporarily storing storm flows. This element would provide flood

protection by removing the channels from tidal influence and also from the potential for receiving backwater flows from Calabazas and San Tomas Aquino Creeks during high flow events. Lastly, the Detention element involves diverting peak storm flows into a storage facility and provides flood protection by reducing the peak flows to the channel. The project team identified one site suitable for serving as a detention facility along Sunnyvale East Channel at Braly Park and School in Sunnyvale.

Recommended Project

The project team recommends Alternative H (see Figure 1 for a map), based on its comparison of the alternatives via the District's Natural Flood Protection (NFP) evaluation process, a risk analysis performed by the project team, and the project team's own judgment, as discussed in Chapter 5. Alternative H involves constructing floodwalls and levees and using Pond A4 as a detention basin.

Alternatives D, I, and K were eliminated during the NFP evaluation process. Alternatives I and K were eliminated primarily due to their costs. Because they employed the exclusive use of levees to increase channel capacity, the required right of way acquisition would have been expensive. Alternative D was eliminated due to higher costs of construction and higher maintenance requirements. Although the remaining Alternatives, B, H and J rated similarly in the NFP evaluation, after completing a risk analysis Alternative H was chosen as the recommended project because it provides the most comprehensive and cost-effective flood and erosion protection.

Alternative H is the least expensive of the three alternatives and provides flood protection by the use of two mechanisms (both increasing channel capacity and reducing the starting water surface elevation in the channel) instead of one (increasing channel capacity). Specifically, it increases channel capacity by raising floodwalls and reduces flows to the channel by removing them from tidal influence (thus, preventing tidal flows from entering the channels downstream) and from receiving potential backwater flows from San Tomas Aquino and Calabazas Creeks which could enter the channel during high flow events from the West Valley Watershed. Additionally, the floodwall heights are much shorter than Alternative I or K. Although Alternative J employs these same flood protection mechanisms, it was judged that the benefits of constructing the proposed flood detention basin at Braly Park were not worth the additional cost.

Sensitive Habitats and Special Status Species

Pond A4 and Guadalupe Slough support a variety of sensitive habitats as well as special status species. Potential impacts from the project to these habitats and sensitive species associated with construction activities and modification of the existing hydraulic regime must be fully evaluated and discussed with applicable regulatory agencies. A variety of regulatory permits will be required for the project to move forward, including permits from U.S Fish and Wildlife Service, U.S. Army Corp of Engineers, California Department of Fish and Game and the Regional Water Quality Control Board.

In addition, preliminary investigations have indicated that there are water quality issues in Pond A4 associated with elevated metal concentrations that could impact wildlife. Further evaluation and discussions with the regulatory agencies will have to be completed to address the potential issues associated with water quality at the site.

Public Outreach

During the project's planning phase, the project team incorporated input from both internal and external stakeholders into the development and evaluation of its feasible alternatives. Notably, the project team has sought public input through a combination of flyers, surveys, and public meetings. In addition, the project team has initiated dialogue with regulatory agencies to investigate potential permitting issues.

Right of Way Acquisition Required for Project Construction

It is expected that strips of land from 3 parcels along Sunnyvale East Channel and from 3 parcels along Sunnyvale West Channel would need to be acquired by the District in fee or easement for the construction of Alternative H.

Along Sunnyvale East Channel, lands to be acquired to construct Alternative H would include commercial properties (parking), parks and recreation facilities (Fair Oaks Park), and the open space property owned by the City of Sunnyvale located on the East bank between Highway 101 and Tasman Drive.

Along Sunnyvale West Channel, lands to be acquired to construct Alternative H would include portions of commercial properties (parking), the landfill property for the City of Sunnyvale and the Sunnyvale Water Pollution Control Plant property. It is not anticipated that the operations of the City of Sunnyvale's public utilities would be impacted by the right of way acquisitions.

Estimated Cost, Financing, and Schedule

The estimated cost for project design and environmental documentation for the staff-recommended alternative is \$5 million. The estimated cost of construction and land acquisition is approximately \$37 million in 2010. Based on current construction cost escalation rates in the District's Capital Improvement Plan, the cost to construct this project beginning in 2013 is estimated at \$40 million plus an additional \$3 million for land acquisition. The total allocation from the CSC Program for these two projects is \$43 million. At the time of construction, staff may request the Board to allocate unspent funds from other CSC capital projects to complete this project work.

In addition, annual maintenance for the staff-recommended alternative is expected to cost \$50,000. The total cost over the 50-year life span of the project, assuming a 3.7% compounding escalation rate, would be \$7.3 million. Project design is expected to begin in FY 2010-11 and is anticipated to be completed in early 2013. Construction would be conducted in 2013 and 2014.

Project Implementation

If the Board elects to authorize staff to continue the project work the following milestones have been developed as next steps for project implementation:

- Commence design plans and specifications preparation: August 2010
- Complete CEQA analysis: June 2012
- Complete permit acquisition and design plans and specifications: February 2013
- Commence construction: June 2013



Figure 1. Map showing the elements of the Staff Recommended Alternative (Alternative H)

Complete document available for review at:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

or upon request to:

Tiffany Hernandez, Environmental Planner
Santa Clara Valley Water District
(408) 265-2607
thernandez@valleywater.org