

**FINAL
FEASIBILITY STUDY REPORT
FOR
ENGINEERED EARTHEN-BOTTOM FLOOD CONTROL CHANNELS
LOCATED WITHIN THE
SANTA CLARA RIVER AND ANTELOPE VALLEY WATERSHEDS**

**MAINTAINED AND OPERATED BY THE
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT**

**IN COMPLIANCE WITH THE
WASTE DISCHARGE REQUIREMENTS
FILE NUMBER R4-2015-0032-A1**

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**FEASIBILITY STUDY
TECHNICAL ASSESSMENT REPORT
FOR ENGINEERED EARTH-BOTTOM FLOOD CONTROL CHANNELS
LOCATED WITHIN THE
SANTA CLARA RIVER AND ANTELOPE VALLEY WATERSHEDS**

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**FINAL RECOMMENDATIONS SUMMARY TECHNICAL ASSESSMENT REPORT
AND RECOMMENDATIONS
FOR ENGINEERED EARTH-BOTTOM FLOOD CONTROL CHANNELS
LOCATED WITHIN
SANTA CLARA RIVER AND ANTELOPE VALLEY WATERSHEDS**

INTRODUCTION

On February 4, 2010, the Los Angeles Regional Water Quality Control Board (Regional Board) issued a Waste Discharge Requirements (WDR) Order No. R4-2010-0021 to the Los Angeles County Flood Control District (LACFCD), authorizing the maintenance of earth-bottom flood control channels located within the County of Los Angeles. Prior to this WDR, the Regional Board had issued a Section 401 Certification to the LACFCD to maintain 100 earth-bottom channel reaches located throughout the County. This WDR expired on February 3, 2015. On February 12, 2015, in lieu of a standard 5-year term WDR, the Regional Board issued a one-year WDR (Order No. R4-2015-0032), which expired on February 11, 2016. A new WDR (Order No. R4-2015-0032-A1) was issued on February 12, 2016, with a July 20, 2018 expiration date.

The earth-bottom channels are an important component of the LACFCD's statutory mission, which in addition to flood control, is to infiltrate water for future beneficial use. Such channels must be regularly maintained to ensure that their flood control capacity is not impaired.

The WDR requires that a Feasibility Study (FS) be conducted by watershed on each of the earth-bottom (sometimes referred to as "soft-bottom") channel reaches that are included in the WDR. The goal of the FS is to determine whether "a potential may exist for native vegetation to remain within the soft-bottom portion of the channel or if additional hydraulic capacity is needed" (WDR, Condition 45). This condition recognizes both the opportunity for additional native vegetation to remain, or to replace non-native vegetation and the need to ensure that flood control requirements are met.

To meet the WDR's requirement for a technical assessment report and recommendations, a Technical Assessment Report and Recommendations (Report) has been prepared for the Santa Clara River (51 soft-bottom channel reaches) and Antelope Valley Watersheds (one soft-bottom channel reach), which consists of this Final Recommendations Summary (Recommendations) as well as Appendix A, the Biological Technical Assessment report prepared by BonTerra Psomas, plus appendices and exhibits (Biological Report); Appendix B, the Hydraulic Analysis Technical Assessment report prepared by Pacific Advanced Civil Engineering, Inc. (PACE), a LACFCD consultant, plus appendices (Hydraulic Report); and Appendix C, the Water Quality Monitoring Report (Monitoring Report). Appendix D, Public Comments and Questions will be added later after the draft report has been circulated.

TECHNICAL ASSESSMENTS

The Report employed an analytical approach that involved first ranking the earth-bottom channel reaches from high to low according to their biological value. These rankings were determined by biological surveys conducted by BonTerra Psomas, a LACFCD consultant, and are discussed in the Biological Report. In the Hydraulic Report, PACE analyzed the hydraulic capacity within each reach under various vegetation scenarios.

A list of those reaches which had excess hydraulic capacity for additional vegetation was then reviewed by BonTerra Psomas for the development of specific vegetation management recommendations. Vegetation management recommendations included additional native vegetation and/or replacement of non-native with native vegetation.

BonTerra Psomas subsequently provided those detailed vegetation management recommendations for further hydraulic analysis by PACE. The biological recommendations were also evaluated by LACFCD maintenance personnel for potential impacts on maintenance activities.

RECOMMENDATIONS

All 52 soft-bottom reaches were analyzed in this Report. The hydraulic analysis determined that 7 out of the 52 reaches could accommodate additional vegetation growth: Reaches 82, 88, 101, 102, 103, 104 and 105. BonTerra Psomas developed a specific vegetation management recommendation for Reaches 88, 102, and 103. LACFCD maintenance plan already allows for additional vegetation at Reaches 82, 101, 104, and 105.

Reach 82, Santa Clara River Main Channel. Remove all vegetation within 20 ft of the toe of the levee. Allow native vegetation to establish in the remainder of the channel within LACFCD right-of-way.

Reach 88, Hasley Canyon Upper. Remove all vegetation within 15 ft of the toe of the levee. Allow native shrubs to establish and existing mature native trees to remain within the portion of the channel identified with excess capacity, from 15 ft to 39 ft from the toe of the levee. Remove all non-native vegetation and any newly established native or non-native trees within LACFCD right-of-way.

Reach 101, Violin Canyon. Remove all vegetation within 12 ft of the toe of the levee. Allow native vegetation to establish in the remainder of the channel within LACFCD right-of-way.

Reach 102, Violin Canyon. Remove all vegetation within 15 ft of the toe of the levee. At the drainage outlet, remove woody vegetation at a 45-degree angle towards center of the channel. Allow native shrubs to establish and existing mature native trees to remain within the portion of the channel identified with excess capacity, from 15 ft to 41 ft from the toe of the levee. Remove all non-native vegetation and any newly established native or non-native trees within LACFCD right-of-way.

Reach 103, Bouquet Canyon Channel. Remove all vegetation within 15-ft of the toe of both levee slopes and woody vegetation in a 20-ft wide low-flow channel through the center of the channel. Allow native vegetation to establish in the remainder of the channel within LACFCD right-of-way.

Reach 104, Castaic Creek (Hancock). Remove all vegetation within 15 ft of the toe of the levee and 10 feet from the outlets. Allow native vegetation to establish in the remainder of the channel within LACFCD right-of-way.

Reach 105, San Francisquito Canyon Channel. Remove all vegetation within 15 ft of the toe of the levee. Allow native vegetation to establish in the remainder of the channel within LACFCD right-of-way.

WATER QUALITY MONITORING

Condition 49 of the WDR required water quality monitoring during annual maintenance clearing of certain earth-bottom channel reaches in 2016-17. All of the reaches within Santa Clara River and Antelope Valley Watersheds were dry except Reaches 75 (Santa Clara River - South Fork) and 76 (Pico Canyon). It was observed that these two reaches had ponded water, however the water was stagnant and there was no inflow or outflow to sample.

Included as Appendix C is the Monitoring Report.

MITIGATION MEASURES

Condition 51 of the WDR requires that the recommendations concerning earth-bottom channel clearance “shall also include suggested schedules of vegetation removal frequency in order to ensure the maximum habitat preservation, consistent with necessary flood control, is achieved.” These schedules are already in place, and are dictated primarily by the need to protect nesting birds and other species. The LACFCD has employed BonTerra Psomas to monitor the channel clearance activities so as to avoid impacts to such species. BonTerra Psomas also has advised on ways to leave, maintain, and protect trees and other vegetation within a number of the channel reaches to the extent practicable when flood control and vector issues permit. In addition, invasive, exotic, and non-native vegetation is also removed during annual maintenance to ensure that native vegetation is preserved. These mitigation measures are ongoing, and are reflected in the biological and annual mitigation reports available on the LACFCD website. In addition, the LACFCD has mitigated impacts from its annual earth-bottom channel maintenance activities since the late 1990s, when it established 62.7 acres of habitat in the Big Tujunga Wash Mitigation Bank as mitigation for the clearance of vegetation in channels.

CONCLUSION

The LACFCD has completed the required FS analyses for the earth-bottom channel reaches that it maintains located within the Santa Clara River and Antelope Valley Watersheds. The FS showed that 7 out of the 52 reaches could accommodate additional vegetation growth: Reaches 82, 88, 101, 102, 103, 104 and 105.

FS showed that Reaches 71, 80, 109, 89, 90, 110, 47, 51, 55, 56, 60, 61, 66, 67, 69, 70, 75, 72, 91, 92, 93, 94, and 95 have no excess capacity for a portion or majority of the channel for existing conditions. These reaches may require additional vegetation removal within LACFCD right-of-way.

FS showed that Reaches 76, 86, 58, 79, 108, 46, 48, 49, 50, 53, 54, and 57 have no excess capacity and the current maintenance practice is to remove all vegetation within LACFCD right-of-way. Therefore, the maintenance practice for these reaches will remain the same.

FS showed that Reaches 97, 63, 87, 52, 64, 73, 74, 77, and 78 have no excess capacity for a portion or majority of the channel for existing conditions and the right-of-way for these reaches are unclear at this time. Reach 45 has excess capacity, right-of-way is unclear for this reach as well. Therefore, LACFCD will continue to research their right-of-way documentations and until it is determined, LACFCD will continue their current maintenance practices at these locations.