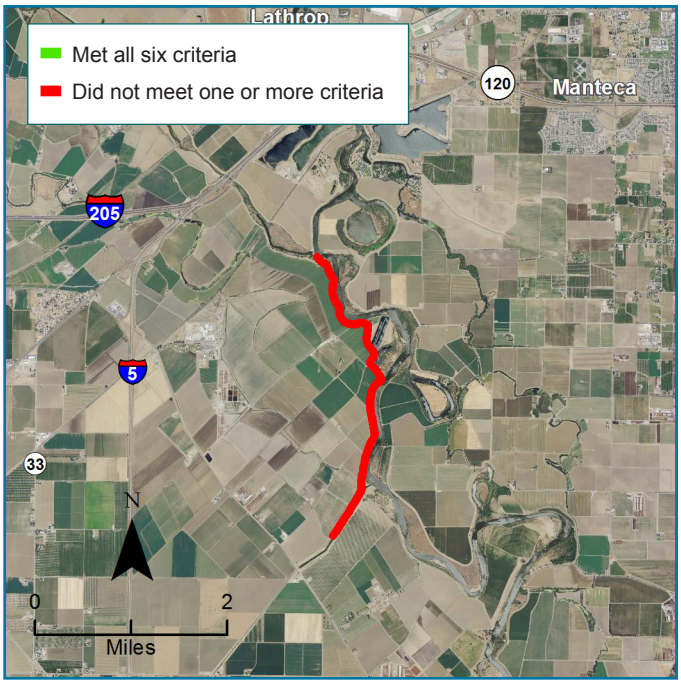
South Non-Urban Levee Evaluations Project

Reclamation District (RD) 2095 Study Area Summary

The California Department of Water Resources (DWR) Division of Flood Management conducted a levee evaluations program to assess the existing conditions of levees in California's Central Valley from 2008 to 2015. The Urban Levee Evaluations (ULE) Project addressed approximately 350 miles of Project[1] and non-Project[2] levees protecting populations of 10,000 people or more. The Non-Urban Levee Evaluations (NULE) Project provides a non-urban level of investigation to the remaining Project levees (over 1,200 miles) protecting populations of fewer than 10,000 people. Non-Project levees for the northern and southern areas of the Central Valley (about 275 miles) are considered appurtenant and are included under NULE when these levees protect part of a basin partially protected by Project levees, or when non-Project levees may impact the performance of Project levees.

The primary objective of the evaluation was to assess if the levees meet geotechnical criteria. For the Reclamation District (RD) 2095 Study Area the assessment water surface elevation (AWSE) used for analyses was the 1955/57 design WSE. The levees were divided into reaches/sub-reaches for evaluation within the southern central valley. For reaches/sub-reaches not meeting geotechnical criteria, conceptual remedial alternatives and screening-level cost estimates were prepared.



RD 2095 Study Area Levees

The Study Area

The RD 2095 Study Area levees are located along both the San Joaquin River and Banta Carbona Lift Canal in San Joaquin County, California approximately six miles east of Tracy. There are a total of 3.44 miles of levee within the study area. These levees were divided into four reaches/sub-reaches for screening-level static analyses.

The Scenarios

Levees in each reach/sub-reach were analyzed for five static NULE criteria at the AWSE: freeboard, through seepage, underseepage, landside slope stability, and waterside slope stability. No seismic analyses were performed.

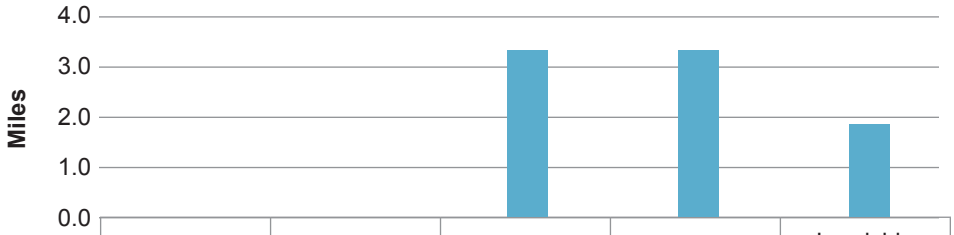
The Results

For the RD 2095 Study Area, approximately 0.03 miles of levee met all static NULE criteria at the AWSE. The reaches/sub-reaches that did not meet static NULE criteria were further evaluated to identify conceptual remedial alternatives. The dimensions of these alternatives were verified by analyses, and then a screening-level Class 4 cost estimate was prepared for planning purposes. The chart on the following page summarizes the findings of the existing condition static assessments.

Footnotes:
1 Project Levee – A levee or flood wall that is a facility of the State Plan of Flood Control as defined in *Public Resources Code Section 5096.805.*
2 Non-Project Levee – A levee or flood wall that is not a project levee as defined above.

Total Miles of Levee That Do Not Meet Static NULE Criteria

Total Miles of Levee in Study Area = 3.44



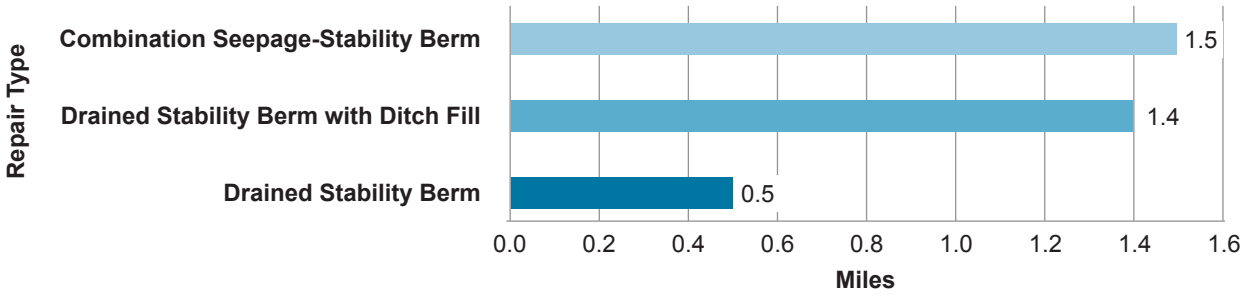
	Erosion Risk*	Freeboard*	Through Seepage	Under-Seepage	Landside Slope Stability
3 Feet BTOL	0	0	3.41	3.41	1.9

* Erosion and freeboard are not typically deficient across an entire reach

Conceptual Remediation

Property access on the landside of the levee is often limited, so typical conceptual static remedial alternatives in the RD 2095 Study Area consist of installing 3 types of berms as follows; combination seepage-stability, drained stability with ditch fill and drained stability along the landside of the levees to address seepage and stability deficiencies. The total length of each type of repair in the study area is depicted in the graph below.

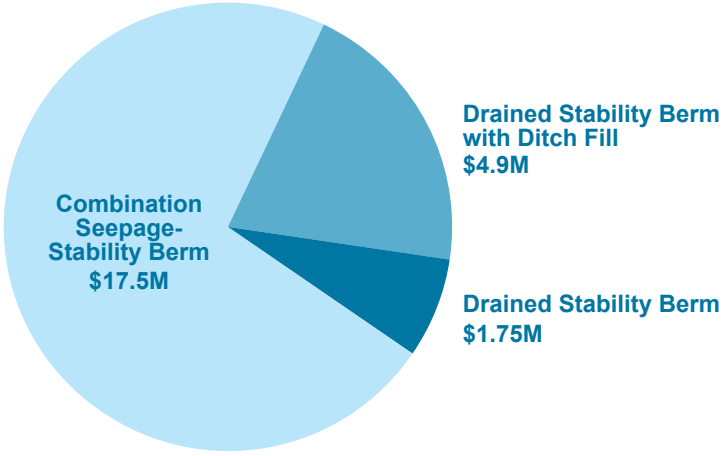
Conceptual Static Remedial Alternatives (miles)



Costs

Screening-level Class 4 cost estimates were prepared on a 2013 basis[3]. Class 4 estimates are not design-level cost estimates. However, they do include construction cost and owners' "soft" costs, such as permitting, legal, environmental mitigation, and contingency. The total estimated costs of conceptual static remedial alternatives for all reaches in the study area that do not meet NULE criteria are shown in the adjacent pie chart.

Total Remediation Costs ($149.46 Million)



References:
Geotechnical Overview Report Volume 1, Existing Conditions – Reclamation District 2095 Study Area, Non-Urban Levee Evaluations Project. Kleinfelder, February 2015.

Geotechnical Overview Report Volume 2, Remedial Alternatives – Reclamation District 2095 Study Area, Non-Urban Levee Evaluations Project. Kleinfelder, April 2015.

Footnotes:
3 2013 Basis – Industry construction cost derived from 2008 data with a 4 percent escalation included per year.

Reference sources for this document are available at http://www.dwr-lep.com/auth
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