



**US Army Corps
of Engineers** ®
Los Angeles District



**LOS ANGELES RIVER/
COMPTON CREEK 1 LEVEE SYSTEM
LOS ANGELES COUNTY, CALIFORNIA
NLD SYSTEM ID # 3805010026**

**PERIODIC INSPECTION REPORT NO. 2
GENERALIZED EXECUTIVE SUMMARY**

**FINAL SYSTEM RATING: MINIMALLY ACCEPTABLE
FINAL RATING DATE: MARCH 19, 2018**

PERIODIC INSPECTION REPORT PREPARED BY TETRA TECH FOR THE
U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT

SUBMITTED: NOVEMBER 2017
INSPECTED: MAY 22-23, 2017

EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the Periodic Inspection, an overview of the Los Angeles River/Compton Creek 1 (LAR/CC1) Levee System, a summary of the major findings of the Periodic Inspection of the LAR/CC1 Levee System, and the overall rating for the LAR/CC1 Levee System.

1.1 Scope and Purpose of Periodic Inspections

The purpose of the LAR/CC1 Levee System Periodic Inspection is to identify deficiencies that pose hazards to human life or property. The inspection is intended to identify the issues in order to facilitate future studies and associated repairs as appropriate.

This assessment of the general condition of the LAR/CC1 Levee System is based on available data and visual inspections. Detailed investigation and analysis involving hydrologic design, topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of this levee system inspection.

This report is for Periodic Inspection Number 2 (PI No. 2) of the LAR/CC1 Levee System, and supersedes PI No. 1 of the LAR/CC1 Levee System which was conducted by URS Group, Inc. (URS) on behalf of the U.S. Army Corps of Engineers, South Pacific Division, Los Angeles District (USACE SPL) in 2010.

1.2 System Summary

The LAR/CC1 Levee System is located in Los Angeles County, California, and is part of the Los Angeles County Drainage Area (LACDA). It is composed of two levee segments (Figure 1) along the right/west bank of Compton Creek and the Los Angeles River:

- Compton Creek LAR/CC1 Levee Segment
- Los Angeles River LAR/CC1 Levee Segment

The upstream limit of the LAR/CC1 Levee System is at the upstream end of the Compton Creek LAR/CC1 Levee Segment, near the 91 Freeway in the city of Compton. The downstream limit of the LAR/CC1 Levee System is at the downstream end of the Los Angeles River LAR/CC1 Levee Segment, near Queens Highway in the city of Long Beach. The total distance of the LAR/CC1 Levee System is approximately 40,461 feet (7.66 miles). There are different types of infrastructure that lie within the leveed area, which include residential, commercial, industrial, and civic improvements. This area is located to the west of the LAR/CC1 Levee System and is bordered on the west by Alameda Street, Dominguez Channel, and North Henry Ford Avenue.

The Compton Creek LAR/CC1 Levee Segment is located on the right/west bank of Compton Creek from approximately 400 feet south of the 91 Freeway in the city of Compton, to the confluence of Compton Creek and the Los Angeles River, located approximately 650 feet north of the BNSF Railway in the city of Long Beach. The Compton Creek LAR/CC1 Levee Segment is approximately 12,255 feet (2.32 miles) long and is in the cities of Compton, Carson, and Long Beach.

The Los Angeles River LAR/CC1 Levee Segment is located on the right/west bank of the Los Angeles River from the downstream end of the Compton Creek LAR/CC1 Levee Segment at the confluence of the Los Angeles River and Compton Creek, to approximately 1,200 feet downstream of Ocean Boulevard. The Los Angeles River LAR/CC1 Levee Segment is approximately 28,206

feet (5.34 miles) long and is in the city of Long Beach.

The LAR/CC1 Levee System consists of an earthen levee embankment and a trapezoidal channel with either reinforced-concrete or grouted stone on the riverward slopes. The landward slopes are covered by riprap, grouted stone, or are earthen and not covered by erosion protection. Other features along the LAR/CC1 Levee System include floodwalls, retaining walls, 62 conduits associated with the side-drainage structures, seven pump stations, numerous bridge crossings, numerous utility crossings, landscaping, and irrigation.

This levee system, along with other similar flood reduction works in the LACDA, was authorized initially by the Emergency Relief Act of 1935 to provide drainage and flood control. On June 30, 1937, it was transferred to the more comprehensive project adopted in the Flood Control Act of June 22, 1936. The project was modified by additional Acts and was eventually built under the Flood Control Acts of August 18, 1941 and May 15, 1950. The Los Angeles County Drainage Area, California Flood Control Improvements project was authorized under Title I, Section 101(b) of the Water Resources Development Act of 1990 (Public Law 101-640).

The USACE SPL and the Los Angeles County Flood Control District (LACFCD) entered into a Project Cooperation Agreement on August 7, 1995, as required by Public Law 99-622. The LACFCD is responsible for operating and maintaining all the non-federal features of the Los Angeles County Drainage Area. The Los Angeles County Department of Public Works (LACDPW) has assumed the functions of the LACFCD.

The National Levee Database Number (NLD No.) for the LAR/CC1 Levee System is 3805010026. The construction of the LAR/CC1 Levee System was completed on January 24, 1958 and subsequent improvements were completed circa 2000. The LACDPW operates and maintains both segments of the LAR/CC1 Levee System.

1.3 Summary of Major Deficiencies Found

The PI No. 2 of the LAR/CC1 Levee System was conducted from May 22 to May 23, 2017 in which both USACE SPL and LACDPW staff were present. During the inspection of the levee system, deficiencies were noted for which remedial actions are required. The following major deficiencies of the project features were noted during the PI No. 2.

1.3.1 Compton Creek LAR/CC1 Levee Segment

- Levee Embankment:
 - Non-Compliant Vegetation Growth: Significant vegetation growth, including shrubs and trees with trunks larger than 2 inches in diameter, were present on the landward slopes and within 15 feet of the landward toe.
 - Encroachments: There was a 15-inch-diameter petroleum pipeline penetrating the top of the riverward slope not shown on the as-built drawings or permitted by the USACE SPL.
 - Depressions/Rutting: There were intermittent depressions on the levee crown measuring up to 8 inches deep.
 - Animal Control: There were several animal burrows on the landward slope measuring up to 40 inches deep and intermittent burrows damaging the grouted stone on the riverward slope measuring up to 15 inches deep.

- Revetments other than Riprap: Cracking, undermining, voids, with some vegetation growth was observed on the grouted stone measuring up to 18 inches deep on the riverward slope.
- Floodwalls:
 - Non-Compliant Vegetation Growth: Vines less than 2 inches in diameter were growing from planter boxes at the landside toe of the floodwall, completely covering the majority of the floodwall preventing inspection.
- Interior Drainage Systems:
 - Vegetation and Obstructions: The outlets of three of the side-drainage structures were obstructed more than 10 percent by vegetation, sediment, and/or debris.
 - Culverts/Discharge Pipes: Three of the side-drainage structures were found to have deficiencies after being video inspected by LACDPW.
- Flood Damage Reduction Channels:
 - Erosion: There is erosion measuring up to 3 feet deep along the entire width of the channel invert, upstream of sheetpile cut-off wall, where the channel transitions from a soft bottom to reinforced concrete.
 - Revetments other than Riprap: Grouted stone was damaged intermittently on the riverward slope measuring up to 6 feet in depth.

1.3.2 Los Angeles River LAR/CC1 Levee Segment

- Levee Embankment:
 - Non-Compliant Vegetation Growth: Significant vegetation growth, including shrubs and trees with trunk diameters greater than 2 inches were present on the landward slope and within 15 feet of the toe of the landward slope.
 - Encroachments: There were several 16-inch-diameter pressurized gas pipelines penetrating the toe of the riverward slope as well as a 12-inch-diameter steel pipe (SP) on the levee crown not shown on the as-built drawings or permitted by the USACE SPL.
 - Erosion/Bank Caving: There were erosion gullies caused by local-surface runoff at several locations on the landward slope measuring up to 30 inches deep.
 - Depressions/Rutting: There was a depression on the levee crown measuring up to 9 inches deep.
 - Riprap Revetments & Bank Protection: The riprap bench was missing at the toe of the riverward slope above a grouted nylon pillow control sill.
- Floodwalls:
 - Tilting, Sliding or Settlement of Concrete Structures: A floodwall was observed to have a 3-inch vertical offset at the joint.
- Interior Drainage Systems:
 - Vegetation and Obstructions: The outlets or inlets of several of the side-drainage structures were obstructed more than 10 percent by vegetation, sediment, and/or debris.
 - Encroachments: There was an abandoned 18-inch-diameter coated steel pipe (CSP) side-drainage structure that has been capped/bolted shut.

- Concrete Surfaces: There was spalling on a concrete apron measuring up to 2 inches deep at the outlet of one of the side-drainage structures.
- Culverts/Discharge Pipes: None of the pipes could be visually inspected during PI No. 2, because either the flap gate at the outlet blocked access and/or the conduit was too small. LACDPW had video inspected some of the pipes; however, the records did not indicate which pipes had been video inspected.
- Flap Gates/Flap Valves/Pinch Valves: One 36-inch-diameter Reinforced Concrete Pipe (RCP) side-drainage structure did not have a flap gate, and no documentation was available to show if a flap gate was or was not required. Additionally, one 8-inch-diameter Corrugated Metal Pipe (CMP) was missing a flap gate.
- Pump Stations:
 - Pump Station Operations and Maintenance Equipment Manuals: There were missing Operation and Maintenance equipment manuals at four of the pump stations.
 - Pumps: Long Beach Pump Station (PS) #4 had a broken pump shaft that had been removed for repairs.
 - Motors, Engines, Fans, Gear Reducers, Black Stop Devices, etc.: Long Beach PS #4 had a broken pump shaft and motor both of which had been removed for repairs.
 - Megger Testing on Pump Motors and Critical Power Cables: All pump stations along this levee segment had no megger testing program implemented.
- Flood Damage Reduction Channels:
 - Concrete Surfaces: Spalling was observed on the reinforced-concrete slope lining on the riverward slope that measured up to 15 feet wide and up to 4 inches deep.

1.4 Overall Rating

The Levee Safety Officer Out-Brief Meeting was held on August 23, 2017. An engineering determination concluded that the observed deficiencies would not prevent the system from performing as intended during the next significant runoff event. Therefore, the Levee Safety Officer (LSO), USACE SPL, has determined the overall rating of the LAR/CC1 Levee System to be “Minimally Acceptable.”

A “Minimally Acceptable” system rating is defined as, “One or more items are rated Minimally Acceptable or one or more items are rated Unacceptable and an engineering determination concludes that the Unacceptable items would not prevent the segment/system from performing as intended during the next significant runoff event.”

The Local Sponsor will be notified of the overall rating of the levee system by letter with instructions to correct the Minimally Acceptable rated items within two years so that they do not deteriorate further and become Unacceptable.

1.5 Overall System Rating Comparison

Both PI No. 1 and PI No. 2 yielded an Overall System Rating of “Minimally Acceptable” for this levee system. The “Minimally Acceptable” rating associated with the PI No. 1 was driven by a number of Unacceptable and Minimally Acceptable rated items, many of which overlapped with PI No. 2.

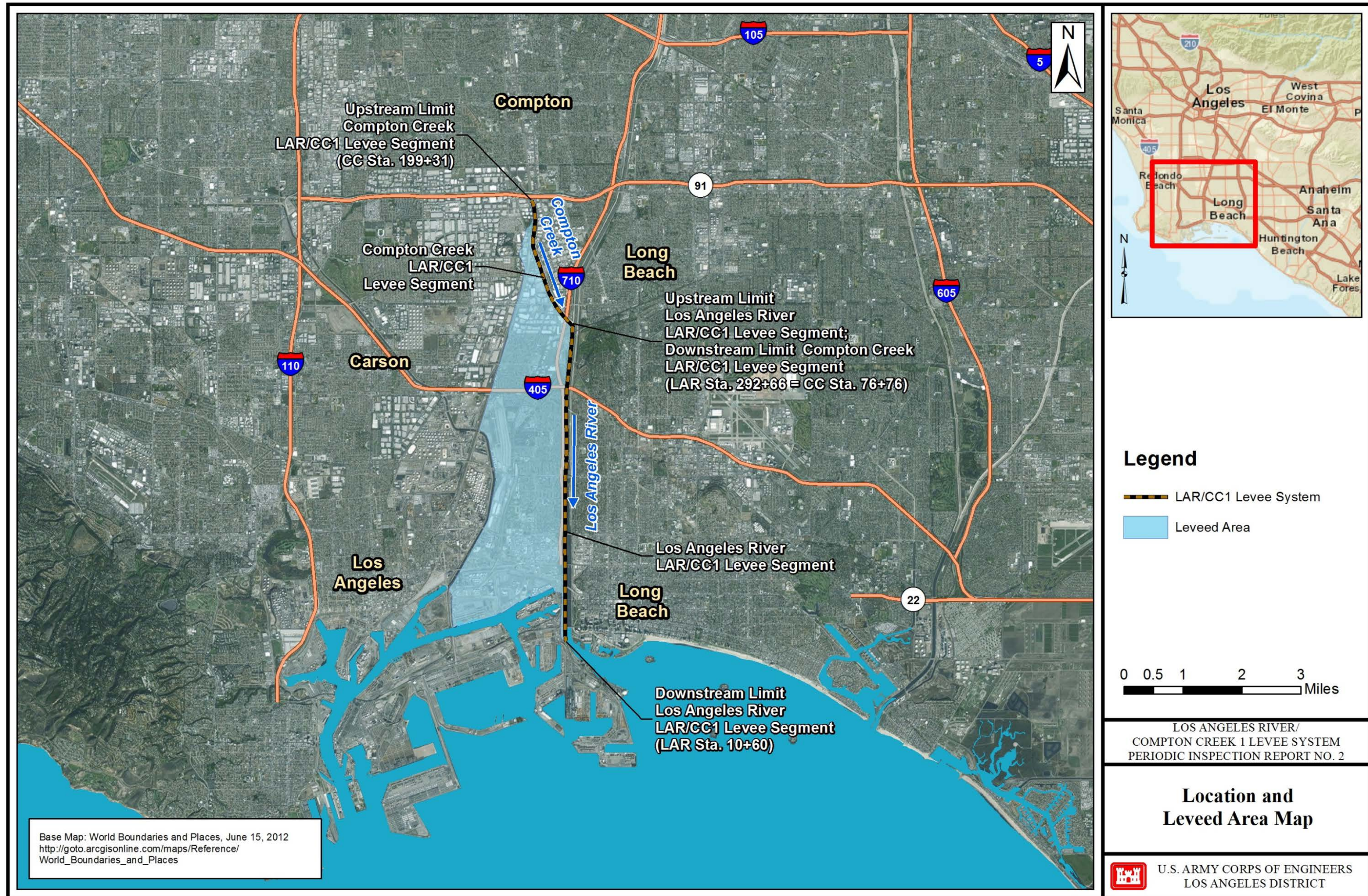


Figure 1