



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



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**SAN GABRIEL RIVER 1 LEVEE SYSTEM  
LOS ANGELES COUNTY, CALIFORNIA  
NLD SYSTEM ID # 3805010031**

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

**FINAL SYSTEM RATING: MINIMALLY ACCEPTABLE  
FINAL RATING DATE: APRIL 19, 2017**

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

SUBMITTED: JANUARY 2017  
INSPECTED: AUGUST 22-26, 2016

## EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the Periodic Inspection, an overview of the San Gabriel River 1 (SGR1) Levee System, a summary of the major findings of the Periodic Inspection of the SGR1 Levee System, and the overall rating for the SGR1 Levee System.

### 1.1 Scope and Purpose of Periodic Inspections

The purpose of the SGR1 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 SGR1 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.

### 1.2 System Summary

This report is for the Periodic Inspection Number 2 (PI No. 2) of the SGR1 Levee System. The PI No. 1 of the SGR1 Levee System was conducted by the URS Group, Inc. (URS) on behalf of the U.S. Army Corps of Engineers, South Pacific Division, Los Angeles District (USACE SPL) in 2010. The results of the PI No. 1 are documented in the report titled San Gabriel River 1 Levee System Periodic Inspection Report No. 1 Volume 1- Text and Appendices A and B (PI Report No. 1 [USACE SPL 2012c]).

The SGR1 Levee System (Figure 1) is located on the right/west bank of the San Gabriel River in the State of California in Los Angeles and Orange Counties, in the cities of Pico Rivera, Downey, Bellflower, Cerritos, Lakewood, Long Beach, and Seal Beach and is in the Los Angeles County Drainage Area. The SGR1 Levee System extends from approximately Station 1108+30, just downstream of the Whittier Narrows Dam, to upstream of the Pacific Ocean at approximately Station 23+88, a distance of 108,442 feet (20.54 miles). The upstream limit is near San Gabriel River Parkway in the city of Pico Rivera and the downstream limit is near Marina Drive in the city of Long Beach. The leveed area contains residential, commercial, industrial, and civic improvements. This area is located west of the SGR1 Levee System, south of Whittier Narrows Dam, east of California State Route 19 (Rosemead Boulevard/Lakewood Boulevard), and east of the Los Cerritos Channel.

The SGR1 Levee System consists of an earthen levee embankment and a trapezoidal channel with either riprap, grouted stone, or reinforced-concrete on the riverward slope and no revetment on the landward slope. Other features along the SGR1 Levee System include seven drop structures, 118 culverts/discharge pipes, one pump station, 38 bridge crossings, 28 access ramps, three spillways, and numerous utility crossings.

The San Gabriel River channel, which includes the SGR1 Levee System, was improved under the general comprehensive plan for flood control and other purposes in the basins of the Los Angeles and San Gabriel rivers and Ballona Creek (as set forth in House Document 838, 76th Congress, third session). The comprehensive plan was approved on August 18, 1941 by act of Congress, Public Law 228, 77th Congress, first session. The National Levee Database Number for the SGR1 Levee System is 3805010031. The construction of the SGR1 Levee System was completed on June 9, 1968 according to the Operation, Maintenance, Repair, Replacement, and Rehabilitation

Manual (USACE SPL 1999) and no subsequent improvements have been made. On August 7, 1995, the system was turned over to the local sponsor and is now entirely operated and maintained by the Los Angeles County Department of Public Works (LACDPW).

### 1.3 Summary of Major Deficiencies Found

The PI No. 2 of the SGR1 Levee System was conducted on August 22 through 26, 2016 and the 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:

- Levee Embankment:
  - Non-Compliant Vegetation Growth: Significant vegetation growth including trees with trunks larger than 2 inches in diameter and shrubs were present within the vegetation-free zone. The vegetation-free zone extends 15 feet outward from both the landward and riverward toes of the levee.
  - Encroachments: There were multiple encroachments that inhibited the ability to inspect the levee prism and are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the levee.
  - Depressions/Rutting: There were depressions on the landward slope measuring up to 10 inches deep. There were depressions and rutting on the crown measuring 6 inches deep. In addition, large voids on the crown in the asphalt concrete and levee embankment were observed at several locations.
  - Animal Control: There were intermittent animal burrows on the crown and landward slope measuring up to 3.5 feet deep and up to 18 inches in diameter.
  - Riprap Revetments and Bank Protection: There was significant riprap displacement at six locations.
  - Revetments other than Riprap: There was significant damage to the grouted stone for a section upstream of the drop structure. This section had been severely damaged and riprap was being used to protect this part of the bank until it could be re-grouted. At another location, missing riprap along the SR-22 bridge pier had exposed a 12-inch high vertical cross section of the upstream edge of the grouted stone. The undermining of the grouted stone measured approximately 12 inches deep.
  - Seepage: Softened and moist soil was observed intermittently at the toe of the landward slope towards the downstream end of the levee. Although no history of seepage has been documented along this levee system, the softened and moist soil provided evidence supporting the possibility of seepage.
- Interior Drainage Systems:
  - Vegetation and Obstructions: The outlet or inlet of six of the side-drainage structures was obstructed by more than 10 percent by vegetation, sediment, and/or debris.
  - Encroachments: The abandonment of a 60-inch-diameter reinforced-concrete pipe (RCP) side-drainage structure was not permitted by the USACE SPL.
  - Ponding Areas: At all three overflow spillway locations, there were unpermitted residential or commercial building structures and property walls located within the ponding area of the spillways. These structures prevent the overflow spillway from performing as designed.

- Tilting, Sliding, or Settlement of Concrete and Sheet Pile Structures: There were vertical offsets that measured up to 3.75 inches at the interface of the side-drainage structure headwall and the adjacent concrete slope.
- Culverts/Discharge Pipes: There were several pipes that have been video inspected and were noted to have damage/deterioration.
- Flap Gates: The flap gate at the outlet of a 24-inch-diameter RCP side-drainage structure has a hole due to corrosion and could not be fully exercised because of the rusted hinges.
- Flood Damage Reduction Channels:
  - Vegetation and Obstructions: Vegetation including brush and large trees located within the channel have impaired up to approximately 70 percent of the bottom width of the channel and the channel flow capacity. In addition, trees measuring up to 10 inches in diameter were observed within the right-of-way.
  - Foundation of Concrete Structures: Undermining was observed at the upstream ends of two reinforced-concrete drop structures, which measured up to 18 inches below the cutoff walls.
  - Flap Gates / Flap Valves / Pinch Valves: There was no flap gate at the outlet of a 66-inch-diameter RCP drainage structure and there is no design documentation available to determine if a flap gate is needed. This drainage structure appeared to be part of the outfall for the San Jose Creek – East Water Reclamation Plant LACSD.
  - Riprap Revetments and Banks: There was missing riprap on the riverward slope under Telegraph Road bridge. Underlying riprap was not detected using the soil probe.
  - Revetments other than Riprap: Revetment was missing for a height of three feet to four feet at the top of the riverward slope for a distance of approximately 30 feet, upstream of the Burlington Northern Santa Fe Railway. In addition, a void was observed in the asphalt concrete access road and levee embankment measuring up to 30 inches in depth and 4 inches in diameter.

#### 1.4 Overall Rating

The Levee Safety Officer Out-Brief Meeting was held on November 4, 2016 and a follow-up meeting was held on November 16, 2016. An engineering determination has 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), Los Angeles District, has determined the overall rating of the SGR1 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**

The Overall System Rating for this levee system associated with the PI No. 1 was “Unacceptable.” The Overall System Rating for this levee system associated with the PI No. 2 was “Minimally Acceptable.” The “Unacceptable” rating associated with the PI No. 1 was driven by the following:

- Animal burrows. The LACDPW made repairs to animal burrow locations following the PI No. 1. Animal burrows continue to be an active maintenance issue but not to the same level as seen previously.
- Flap gates were missing or inoperable during PI No. 1, but the LACDPW provided documentation for all but one of the “missing” flap gates to conclude that no flap gate was required during PI No. 2. However, one flap gate observed during PI No. 2 was rated Unacceptable due to its deterioration and the inability to operate the flap gate.
- Riprap displacement continues to be an issue. Some repairs occurred following PI No. 1 though some issues are still seen in the same locations. The extent of missing and displaced riprap was not considered to be critically Unacceptable in the PI No. 2.
- Non-compliant vegetation growth was still present during PI No. 2, but is not considered to be critically Unacceptable.

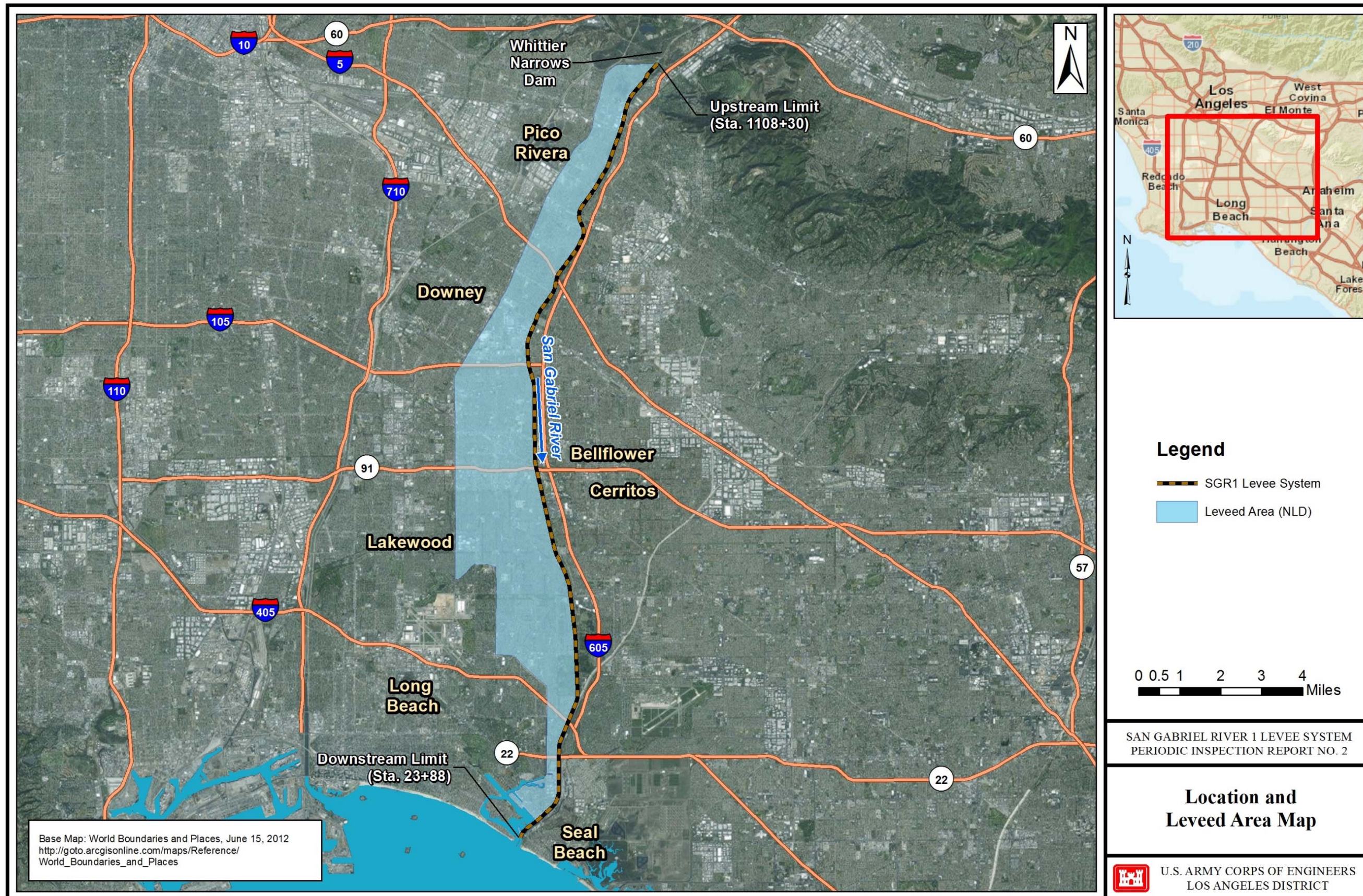


Figure 1