US Army Corps of Engineers ®
Los Angeles District


# SAN GABRIEL RIVER 1 LEVEE SYSTEM

## LOS ANGELES AND ORANGE COUNTIES, CALIFORNIA

## NLD SYSTEM ID # 3805010031

## PERIODIC INSPECTION REPORT NO 1
## GENERALIZED EXECUTIVE SUMMARY

## FINAL SYSTEM RATING: UNACCEPTABLE
## FINAL RATING DATE: MARCH 15, 2013

PERIODIC INSPECTION REPORT PREPARED BY THE URS GROUP, INC.
FOR THE U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT

SUBMITTED: AUGUST 2012
INSPECTED: NOVEMBER 9, 2010 THROUGH NOVEMBER 19, 2010

NOTICE FROM THE LEVEE SAFETY PROGRAM MANAGER
Los Angeles District Corps of Engineers (SPL)
11 December, 2015

As of 11 December 2015 Los Angeles County Department of Public Works (LADPW) has made repairs to a majority of the deficiencies noted in this executive summary. LADPW has submitted a request for SPL to correct the deficiency ratings and they are being processed at this time. When the corrections are approved and finalized with a notification to the LADPW, this executive summary will be revised to reflect the corrected condition.

The Los Angeles District Corps of Engineers would like to note and thank LADPW for doing an outstanding job of bringing their Corps built levees up to a higher standard in an efficient and effective way. Their efforts have notably improved the expected performance of this levee system.

<u>To the public</u>

Although this levee has undergone repairs of the major deficiencies, it is always important to know that any levee, when holding back water, poses some amount of risk. Be aware, be prepared, and consider flood insurance.

Levee Safety Program Manager
Los Angeles District Corp of Engineers

# EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the periodic inspection, an overview of the system, a summary of the major findings of the periodic inspection, and the overall rating for the system.

## 1.1 Scope and Purpose of this Periodic Inspection

The U.S. Army Corps of Engineers (USACE) Los Angeles District has authorized URS Group, Inc. (URS) to perform a Periodic Inspection (PI) of the San Gabriel River 1 (SGR1) Levee System in Los Angeles and Orange counties, California. This Periodic Inspection Report was prepared following the Scope of Work for Task Order CQ01 on USACE Contract W912P9-10-D-0501, *Indefinite Delivery A-E Contract for Dam and Levee Safety for Areas Selected by the St. Louis District, US Army Corps of Engineers*.

## 1.2 System Summary

The SGR1 Levee System is located in Los Angeles and Orange counties, California and is in the Los Angeles County Drainage Area (LACDA). The SGR1 Levee System is comprised of a single levee segment, the San Gabriel River 1 Levee Segment (SGR1 Levee Segment).

The San Gabriel River channel from Whittier Narrows Dam to the Pacific Ocean, 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, 76$^{th}$ Congress, third session). The comprehensive plan was approved on August 18, 1941 by act of Congress, Public Law 228, 77$^{th}$ Congress, first session.

The USACE Los Angeles District 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 LACDA. The Los Angeles County Department of Public Works (LACDPW) has assumed the functions of the LACFCD. The LACDPW is the Local Sponsor for the entire SGR1 Levee System.

## 1.3 Field Inspection and Summary of Major Deficiencies Found

The field inspection of the SGR1 Levee System was conducted from November 9, 2010 to November 17, 2010. An associated pump station was inspected on November 19, 2010. The Local Sponsor shows an active participation in operation and maintenance of the project; however, some deficiencies were noted and remedial actions are required. The main system deficiencies are:

### Levee Embankments

- **Noncompliant Vegetation Growth**: Non-compliant vegetation was observed growing in the vegetation-free zone, including on the levee embankments.

- **Encroachments**: Encroachments were observed, including side drains, buildings, facilities, nurseries, residential homes, streets, bridge abutments, utility improvements, utility poles, landscape irrigation improvements, pipelines, fencing and block walls on the levee embankments. The Levee Embankments checklist was used to record (1) any side drain that was shown on available as-built drawings but was not found during the field inspection

and for which no approved permit for removal was found and (2) any side drain that was found during the field inspection but is not shown on the as-built drawings (this may include side drains where changes have occurred, such as change in pipe material, change in diameter/size, or fewer or more pipes/conduits) and no approved permit for installation/modification was found. Side drain encroachments are important because they may have been removed or installed using unacceptable methods that could cause seepage and erosion along the pipe/conduit or leakage of water and backfill into the pipe/conduit. A total of 30 side drain encroachments were identified.

- **Erosion/Bank Caving**: Erosion on the landside slope, typically caused by collapsed animal burrows and stormwater runoff from the crown.

- **Depressions/Rutting**: Depressions and rutting were observed on the crown. Rutting at the top of the levee slopes exposed the edge of the crown pavement section.

- **Cracking:** Fatigue, transverse and longitudinal cracking were observed on the paved crown.

- **Animal Control:** Animal burrows were found in the levee embankments. Animal activities were observed within the riprap revetment on the riverside slope.

- **Culverts/Discharge Pipes**: Refer to Culverts/Discharge Pipes under the Interior Drainage System heading for details.

- **Riprap Revetments & Bank Protection:** Riprap displacement exposed bedding on the riverside slope.

- **Revetments other than Riprap:** Surface cracking and cavities were observed on grouted riprap.

**Interior Drainage System**

- **Vegetation and Obstructions**: Vegetation, sediment and debris obstructed drainage inlets and outlets.

- **Concrete Surfaces (Such as gate wells, outfalls, intakes, or culverts)**: Spalling and open cracking were observed on concrete structures. Concrete breakage was observed at the toes of the wingwalls.

- **Monolith Joints**: Joints at headwall or wingwall structures were deteriorated or joint filler material was missing. Vegetation was growing within the joints.

- **Culverts/Discharge Pipes**: Documentation of the interior condition of the pipes (via video or visual inspection methods) was not provided.

- **Sluice/Slide Gates**: The single sluice gate was not operated by LACDPW staff to demonstrate proper operation.

- **Flap Gates/Flap Valves/Pinch Valves**: Some flap gate hinges were bent or broken and some flap gates were missing. Due to inaccessibility of some flap gates, their operability could not be verified.

- **Trash Racks (non-mechanical)**: Some trash racks at drainage inlets were missing or damaged.

**Pump Stations**

- **Pump Stations Operating, Maintenance, Training, & Inspection Records**: Records of test runs for the four electric-driven pumps were not provided. Records of operator training were not provided.

- **Pumps**: Proper operation of the four electric-driven pumps was not demonstrated.

- **Megger Testing on Pump Motors and Critical Power Cables**: The megger testing program for the pump station was not available for review.

- **Cranes**: The 8-ton overhead crane was locked out. Load testing was not conducted.

**Flood Damage Reduction Channels**

- **Encroachments:** Pipes were observed penetrating through the concrete pavement on the riverside slope.

- **Flap Gates/Flap Valves/ Pinch Valves**: See Flap Gates/Flap Valves/Pinch Valves under the Interior Drainage System heading for further details.

- **Revetments other than Riprap**: See same rated item under Interior Drainage System for details.

URS presented an out-brief concerning Periodic Inspection No. 1 to the Los Angeles District Levee Safety Officer, reviewers of the draft report, and other interested USACE personnel. The USACE Los Angeles District has determined the overall system rating for the SGR1 Levee System as described in section 1.4 below.

## 1.4 Overall System Rating

The Levee Safety Officer, Los Angeles District, has determined the overall system rating of San Gabriel River 1 Levee System to be "Unacceptable." An "Unacceptable" system rating is defined as:

> *The Periodic Inspection has identified one (or more) System Components which are rated Unacceptable and require immediate correction. An engineering determination has concluded that the Unacceptable System Components identified seriously impair the functioning of the levee system, would prevent the system from performing as intended, and pose unacceptable risk to public safety.*

The Local Sponsor will be notified of the overall rating of the levee system by letter with instructions to correct "Critically Unacceptable" rated items immediately, "Unacceptable" rated items as soon as possible, and to correct the "Minimally Acceptable" rated items within two years so that they do not deteriorate further and become "Unacceptable." Because this levee system is rated as "Unacceptable" a public notice will be prepared and coordinated between the USACE and LACDPW. Additionally, due to the "Unacceptable" rating, the levee system will be removed from the USACE Rehabilitation and Inspection Program (RIP). Once the "Critically Unacceptable" deficiencies are corrected by the sponsor and verified by the USACE, the system rating will be revised to "Minimally Acceptable" and the system will be reevaluated for eligibility in the RIP.

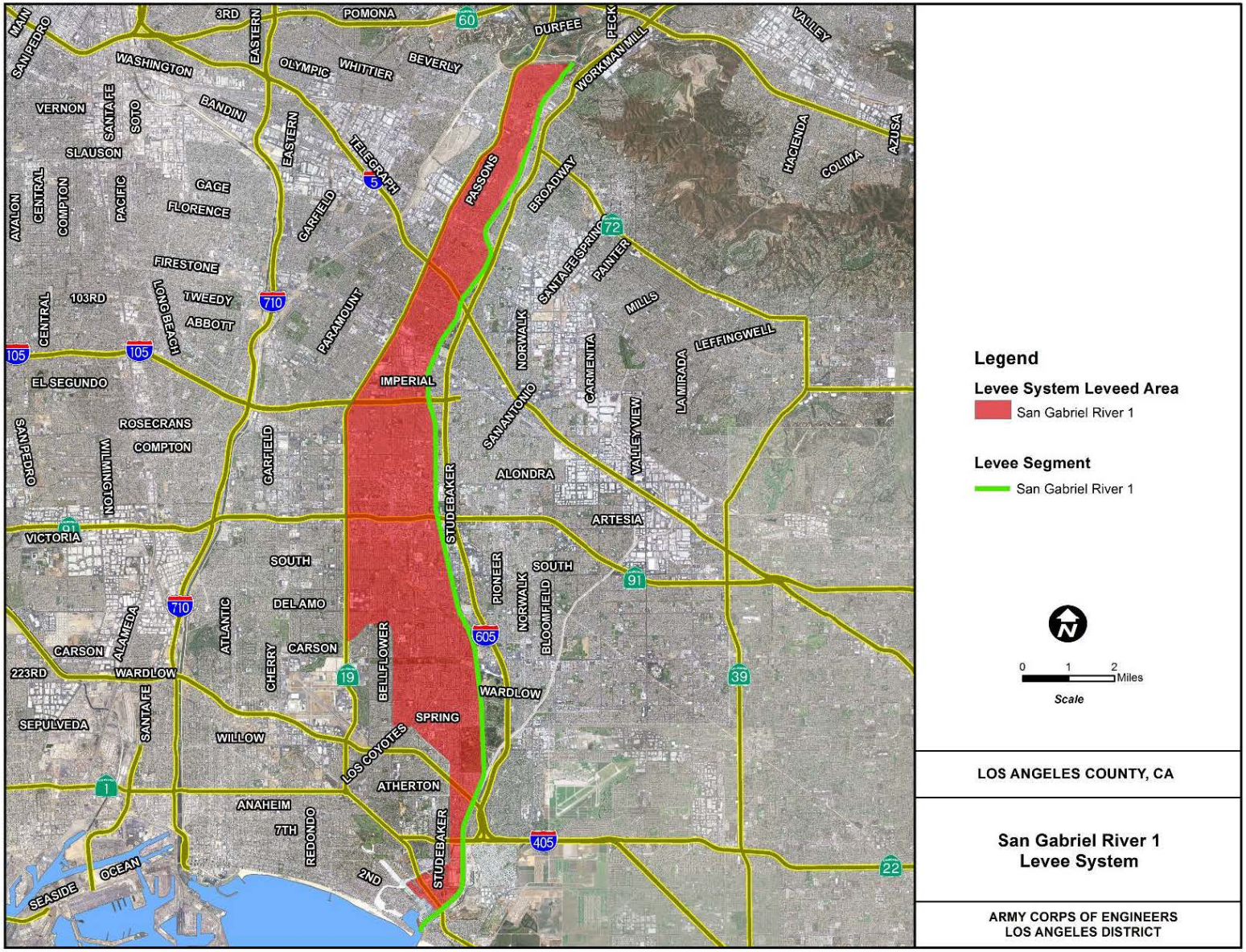


Figure 1. San Gabriel River 1 Levee System