US Army Corps of Engineers
Los Angeles District

INDIAN BEND WASH 2 LEVEE SYSTEM

MARICOPA COUNTY, ARIZONA
NLD SYSTEM ID # 3805020008

PERIODIC INSPECTION REPORT NO. 1
GENERALIZED EXECUTIVE SUMMARY

FINAL SYSTEM RATING: MINIMALLY ACCEPTABLE
FINAL RATING DATE: AUGUST 28, 2015

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

SUBMITTED: AUGUST 2015
INSPECTED: AUGUST 5, 2014

EXECUTIVE SUMMARY

This Executive Summary provides an introduction to the periodic inspection, an overview of the Indian Bend Wash 2 (IBW2) Levee System, a summary of the major findings of the periodic inspection, and the overall system rating.

1.1 Scope and Purpose of Periodic Inspections

The purpose of the IBW2 Levee System periodic inspection (PI) 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 IBW2 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

Figure 1 shows the IBW2 Levee System (NLD System ID #3805020008) and leveed area as depicted in the National Levee Database (NLD). Prior to this PI, USACE-SPL performed a field reconnaissance on December 3, 2013 to confirm or modify the information in the NLD. Items considered included the extent (limits) of the levee system and levee segments; the leveed area; and the number and locations of levee segments, gravity pipes, floodwalls, closure structures, and pump stations. The reconnaissance team eliminated channel reaches from the upstream and downstream ends of the levee system (a channel reach is a reach where the elevation of the ground on the landside is greater than or equal to the elevation of the levee system alignment (LSA) to a significant distance from the alignment). The reconnaissance team also recorded the number and locations of drop structures and groins, which are not included in the NLD. The reconnaissance team prepared a Memorandum for Record (USACE-SPL, 2015) with the findings of this reconnaissance and recommendations for updating the leveed area in the NLD; a copy is included in Appendix X. The Memorandum for Record is referred to herein as the *Leveed Area Revision MFR*.

URS was asked to confirm the upstream and downstream limits proposed in an earlier version of the *Leveed Area Revision MFR* or to recommend a modified limit and conduct the current PI on the basis of URS' recommendations. URS was not tasked with reviewing the full extent of the portions of levee proposed for deletion, only with observing whether the endpoints appeared reasonable based on the available information and observations in the field. Based on the PI observations and other information, URS agrees with the upstream and downstream limits of the levee system. The extent of the levee system and leveed area recommended by this PI is shown on Figure 1.

The LSA recommended by this PI extends along the right bank (looking downstream) of Indian Bend Wash (IBW) from just south of the projection of South Drive (Project Station 382+02.44) to East McDonald Drive (Project Station 368+51.15), for a total length of 1,343 feet (0.25 miles) measured along the LSA. The LSA is formed by two floodwalls and the crown of the levee embankment between the two floodwalls.

The IBW2 Levee System is a part of the Indian Bend Wash Project, which was authorized by the Flood Control Act of 1965, 79 Statute 1073, Public Law 89-298, 89th Congress, 1st Session, approved on October 27, 1965 and amended by the 1974 Water Resources Development Act (O&M Manual, USACE-SPL, 1982). Construction of the levee improvements was completed by

USACE-SPL on November 15, 1979 (Operation and Maintenance [O&M] Manual, USACE-SPL, 1982).

The IBW2 Levee System is located in the City of Scottsdale, in Maricopa County, Arizona. It is in Arizona's sixth congressional district and in Federal Emergency Management Agency (FEMA) Region 9.

The levee system is operated and maintained by the Flood Control District of Maricopa County (FCDMC) in accordance with the local cooperation agreement for the Indian Bend Wash Project signed on September 23, 1974 (O&M Manual, USACE-SPL, 1982).

1.3 Summary of Major Deficiencies Found

A team of five professionals from URS inspected the IBW2 Levee System on August 5, 2014. Representatives from the FCDMC and the City of Scottsdale accompanied the inspection team. An engineer from the USACE-SPL Dam and Levee Safety Section acted as the Site Safety and Health Officer.

Each item on the levee system inspection checklists observed during the site inspection was rated Unacceptable (U), Minimally Acceptable (M), Acceptable (A) or Not Applicable (NA) following criteria incorporated in the Levee Inspection System (LIS). During the PI of the system, any deficiencies (Unacceptable or Minimally Acceptable observations) were noted, for which remedial actions are required. The following major deficiencies were noted during the PI of the IBW2 Levee System features:

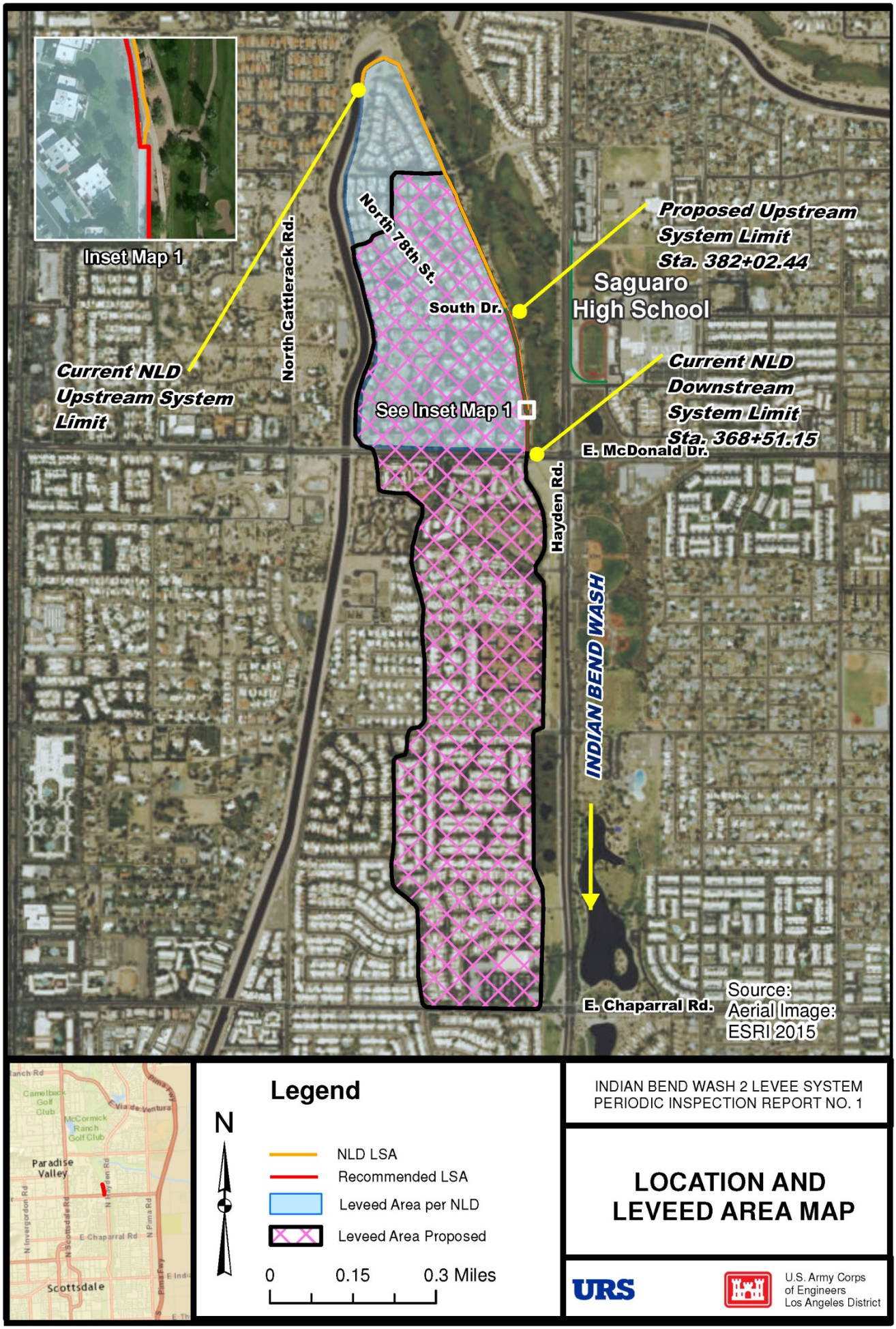
- Levee Embankments
  - Non-Compliant Vegetation Growth—Significant vegetation, including trees with trunks greater than 2 inches in diameter, was present in the vegetation-free zone (VFZ). The VFZ extends 15 feet outward from both the landward and riverward toes of the levee. The vegetation appears unlikely to impair adequate levee system inspection or to present a serious obstacle to flood-fighting activities. Decaying roots could result in preferential seepage pathways.
- Floodwalls
  - Non-Compliant Vegetation Growth—Significant vegetation, including trees with trunks greater than 2 inches in diameter, was present near the floodwall, within the VFZ, or have roots that are expected to intrude into the root-free zone. The vegetation appears unlikely to impair adequate levee system inspection or to present a serious obstacle to flood-fighting activities, although the trees do make it impossible to drive along the landside face of the floodwalls. The tree roots have the potential to cause some damage to the floodwall. Decaying roots could also result in preferential seepage pathways. While underseepage is generally of particular concern for a floodwall (relative to a levee embankment) due to the short distance needed to connect the riverside to the landside, these floodwalls generally have a levee embankment on the front face that has a crown elevation similar to the top-of-wall elevation, which would lengthen the riverside-landside seepage path.
  - Monolith Joints—Missing and deteriorating joint seals were observed.
- Interior Drainage System
  - Vegetation and Obstructions— Obstructions were observed at side drain inlets.
  - Culverts/Discharge Pipes— The interior condition of the pipes has not been verified using television camera videotaping or visual inspection methods within the past 5 years.

1.4 Overall Rating

The Levee Safety Out-Brief Meeting for the IBW2 Levee System was held on March 11, 2015 at the USACE-SPL headquarters, with representatives of the local sponsor and the City of Scottsdale participating by webinar. An engineering determination has concluded that the observed deficiencies would not prevent the systems from performing as intended during the next significant runoff event. Therefore, the Levee Safety Officer, Los Angeles District, has determined the overall rating of the IBW2 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 Unacceptable rated items as soon as possible, not to exceed two years, and to correct the Minimally Acceptable rated items so that they do not deteriorate further and become Unacceptable.


Inset Map 1
North Cattlerack Rd.
North 78th St.
South Dr.
Proposed Upstream System Limit Sta. 382+02.44
Saguaro High School
Current NLD Upstream System Limit
See Inset Map 1
Current NLD Downstream System Limit Sta. 368+51.15
E. McDonald Dr.
Hayden Rd.
INDIAN BEND WASH
E. Chaparral Rd.
Source: Aerial Image: ESRI 2015
Paradise Valley
Scottsdale
Legend
N
NLD LSA
Recommended LSA
Leveed Area per NLD
Leveed Area Proposed
0
0.15
0.3 Miles
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LOCATION AND LEVEED AREA MAP
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Figure 1