US Army Corps of Engineers ®
Los Angeles District

RUBY WASH DIVERSION LEVEE SYSTEM

CITY OF WINSLOW, NAVAJO COUNTY, ARIZONA
NLD SYSTEM ID # 3805020015

PERIODIC INSPECTION REPORT NO 1
GENERALIZED EXECUTIVE SUMMARY

FINAL SYSTEM RATING: UNACCEPTABLE
FINAL RATING DATE: JUNE 4, 2015

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

SUBMITTED: MARCH 2015
INSPECTED: APRIL 07, 2014

EXECUTIVE SUMMARY

This Executive Summary provides the scope and purpose of the periodic inspection, an overview of the two flood control segments, Ruby Wash Diversion Levee 1 (RWD1 – Diversion Levee) and Ruby Wash Diversion Levee 2 (RWD2 – Training Levee) that constitute the Ruby Wash Diversion (RWD) system, a summary of major findings of the periodic inspection, and the overall levee system rating.

1.1 Scope and Purpose of Periodic Inspection

The purpose of the RWD Levee System periodic inspection is to identify deficiencies that pose hazards to human life or property, and to determine design adequacy relative to present day criteria. 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 RWD 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 periodic inspection.

1.2 System Summary

The RWD Levee System is located on the left/north and right/south banks of the Ruby Wash Diversion Channel in the State of Arizona, in Navajo County, south of the City of Winslow (Figure 1-1). The project functions to intercept, and direct eastward to the Little Colorado River, the south to north flow in the Ruby, Ice House, and four unnamed washes. The Levee Segments are called the Diversion Levee (north) and the Training Levee (south), and were constructed as part of the Winslow Flood Control Project. The levees were federally authorized and subsequently constructed by the US Army Corps of Engineers, Los Angeles District (USACE LAD). Construction was completed on September 3, 1971. The RWD Levee System is now operated and maintained by the City of Winslow, Arizona.

The National Levee Database (NLD) numbers for the RWD1 and RWD2 Levee Systems are 3804020015 and 3804020028, respectively. Work completed during the preparation of Periodic Inspection Report identified that the RWD1 and RWD2 leveed areas are hydraulically connected. Therefore, a single Levee System, and not two, exists at the project. It is recommended the NLD be updated to reflect a single system, the RWD Levee System, with the NLD number 3804020015. This periodic inspection encompasses the RWD1 and RWD2 Levee Segments that form the RWD Levee System.

The RWD1 and RWD2 Levee Segments are earthen embankments separated by approximately 1,400 feet at the western extent and narrows to 150 feet at the east. There is one grade control structure between the levees nearing the confluence with the Lower Colorado River. The RWD1 Levee Segment is approximately 5.3 miles long beginning in the west at high ground (Station 381+30) and ending at Burlington Northern Santa Fe (BNSF) railroad (Station 99+51) crossing of the Little Colorado River. RWD1 protects the area southwest of the BNSF railroad. The RWD2 Levee Segment is approximately 0.5 miles long beginning in the southwest at high ground (Station 127+60) and ending at revetment (Station 103+27) along the left bank of the Little Colorado River.

The RWD2 was constructed to prevent flow from entering existing irrigation ditches south of the RWD2 alignment. The leveed areas of each segment are hydraulically connected through two 24-inch concrete siphons installed to maintain flow in irrigation ditches that were traversed by the RWD project. That is, the siphons function to move irrigation water from the RWD2 leveed area to the RWD1 leveed area.

1.3 Summary of Key Deficiencies Found

The periodic inspection of the Ruby Wash Diversion System was conducted on April 7, 2014 by the United States Army Corps of Engineers, San Francisco District (USACE SPN) along with staff from the USACE LAD. The inspection team met with the Winslow City Manager, Mr. Stephen Pauken and former Winslow Public Works Director, Mr. Scott Lancaster. During the periodic inspection, deficiencies were noted for which remedial actions are required. The following main deficiencies of the project features were noted during the periodic inspection:

Levee Embankment:

- Non-compliant vegetation was observed in the vegetation free zones.
- Unauthorized vehicle access roads were observed on the crest and side slopes.
- Large erosion rills in the upstream reach of RWD1 have reduced the levee crest width to approximately 8 feet (worst case).
- A 30-inch reinforced concrete pipe (RCP) was not identified in the project as-built drawings and has no means of positive closure.

Interior Drainage System:

- Two RCP culverts, 36-inch and 30-inch, that penetrate the RWD1 levee were installed as open pipes with no flap gates or other means of preventing flow from the riverside to the landside of the levee.
- The interior of two 24-inch RCP siphons has not been video inspected.
- Sedimentation and vegetation has partially blocked the inlets and outlets of culverts penetrating the levee.

1.4 Overall Rating

On September 24, 2014, a Levee Safety Officer (LSO) out-brief meeting was held between USACE LAD, the City of Winslow, and USACE SPN. An overall system rating of "Unacceptable" was determined for the Ruby Wash Diversion Levee System by the USACE LAD Levee Safety Officer (LSO). An "Unacceptable" system rating is defined as the following: "One or more items are rated as Unacceptable and would prevent the segment / system from performing as intended, or a serious deficiency noted in past inspections (which had previously resulted in a minimally acceptable system rating) has not been corrected within the established timeframe, not to exceed two years." The severe erosion rills identified on the RWD1 Levee Segment are the item driving the "Unacceptable" rating.

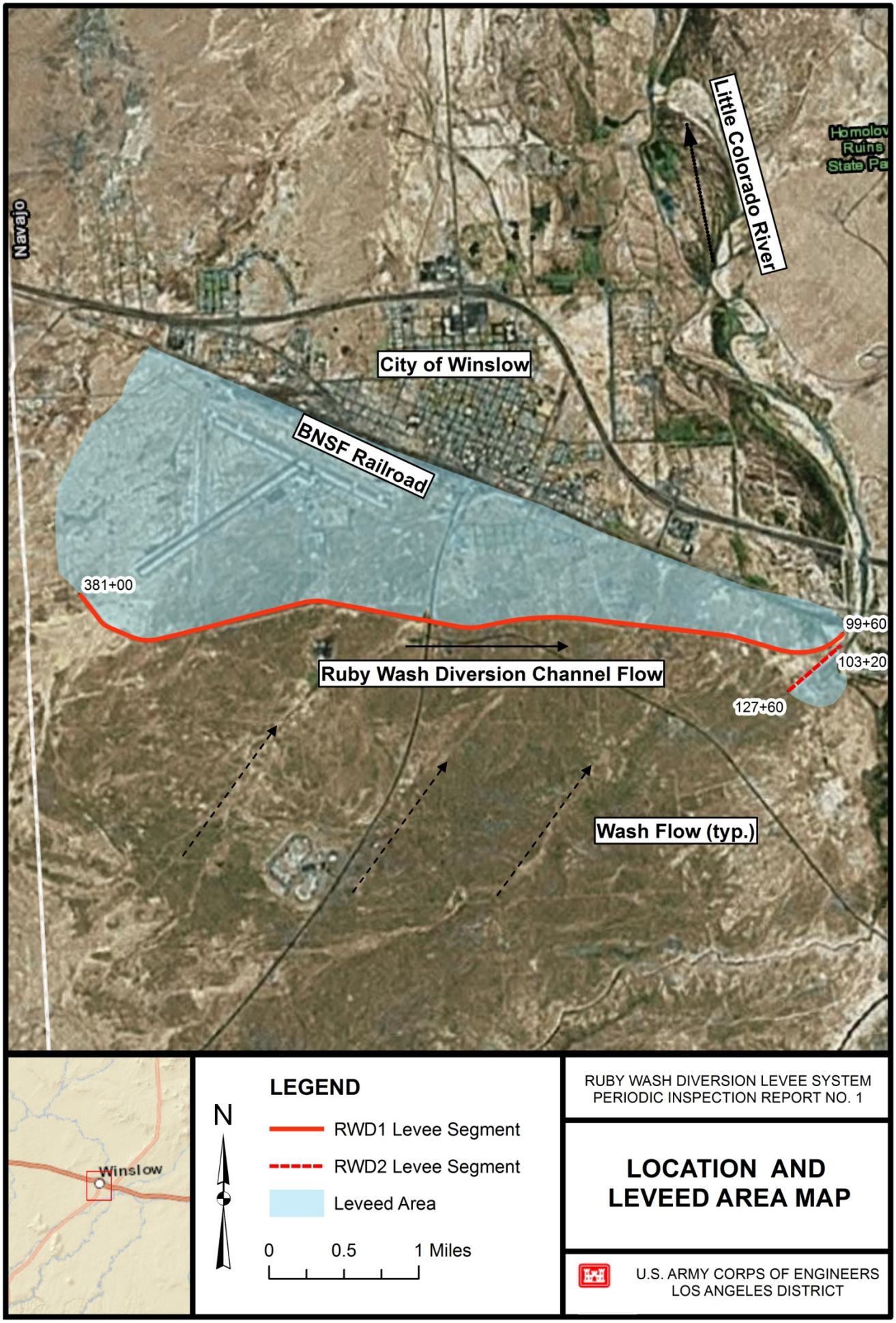
Little Colorado River
Homolov Ruins State Pa
Navajo
City of Winslow
BNSF Railroad
381+00
99+60
103+20
127+60
Ruby Wash Diversion Channel Flow
Wash Flow (typ.)
Winslow
N
LEGEND
RWD1 Levee Segment
RWD2 Levee Segment
Leveed Area
0
0.5
1 Miles
RUBY WASH DIVERSION LEVEE SYSTEM
PERIODIC INSPECTION REPORT NO. 1
LOCATION AND LEVEED AREA MAP
U.S. ARMY CORPS OF ENGINEERS
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Figure 1-1