Third Report

to the

Water and Natural Resources Committee

from the

Mid-Rio Grande Levee Task Force

October 11, 2011

This report was prepared by the Mid-Rio Grande Levee Task Force, under the direction of the Middle Rio Grande Conservancy District in cooperation with the Mid-Region Council of Governments of New Mexico and the Albuquerque District Office of the U.S. Army Corps of Engineers. This is the third report submitted in response to Senate Memorial 18, passed and signed at the 2009 Regular Session of the New Mexico Legislature.

THIRD REPORT TO THE WATER AND NATURAL RESOURCES COMMITTEE

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MID-RIO GRANDE LEVEE TASK FORCE

OCTOBER 2011

This report provides information to update the members of the Water and Natural Resources Committee concerning the activities of the Mid-Rio Grande Levee Task Force and the various projects to bring the levees into compliance with federal regulations and design standards. Preceding reports have evaluated the condition of the existing levee system, reviewed ongoing design and construction projects, and presented general findings and recommendations of the Levee Task Force.

This report provides the members of the Committee with information regarding the costs and cost sharing requirements for the construction of the San Acacia to Bosque del Apache Levee System, which is scheduled to begin construction in September 2012. Other significant projects consist of levee reconstruction in Bernalillo and Valencia Counties including the Albuquerque levees, the Corrales reach, the Montano Bridge gap, and the levees protecting the riverside communities of Valencia County.

Background

In response to N.M. Senate Memorial 18 (SM18), passed by a unanimous vote of the New Mexico State Senate on March 3rd during the 2009 Regular Session of the State Legislature, a Mid-Rio Grande Levee Task Force (LTF) was established with representation from all the governmental jurisdictions and agencies within the middle Rio Grande valley from Cochiti Dam to Bosque del Apache in Socorro County. The role of the LTF was to evaluate the current state of the Rio Grande levees and to determine significant issues of compliance under recently established levee regulations and to formulate recommendations for needed improvements or reconstruction of the Rio Grande levees. The LTF was also requested to look into the flood risks associated with the levees and the possible environmental and economic impacts of the overall levee system.

A Report to the Governor and Legislature of the State of New Mexico was presented by the LTF at the November 30, 2009 meeting of the Water and Natural Resources Committee. A Second Report was presented by the LTF to the Water and Natural Resources Committee at their November 29, 2010 meeting. Both reports were prepared by the LTF under the direction of the Middle Rio Grande Conservancy District (MRGCD) in cooperation with the Mid-Region Council of Governments (MRCOG) and the Albuquerque District of the U.S. Army Corps of Engineers (Corps). This is the Third Report submitted in response to SM18.

Overview of Mid-Rio Grande Levee System

Flooding in the Middle Rio Grande through Albuquerque is generally characterized by two types of runoff events: spring snowmelt with rainfall, and high intensity summer thunderstorms.

(1) Spring snowmelt with rainfall events usually occurs from March to July and the rate of flow for these events is controlled by upstream reservoirs. These events are long duration and high volume with gradual increases in the runoff rate rising from a typical Rio Grande flow of 800 cfs to a peak flow, and then gradually decreasing back to the typical flow of 800 cfs. A peak flow of

7,750 cfs (cubic feet per second) for this type of runoff represents the 1% chance event (referred to as the 100-year snowmelt event) with total duration of approximately three months.

(2) High intensity summer thunderstorm events generally occur from late June through September. This runoff event originates from unregulated watershed areas downstream of Cochiti Reservoir and is typically short duration. For thunderstorm events, a peak flow of 19,000 cfs represents the 1% chance event (referred to as the 100-year rainfall event) with a total duration of approximately twelve hours.

Flood risk management measures for the Middle Rio Grande were authorized by Congress in the Flood Control Act of 1948 (Public Law 80-858). The Rio Grande Floodway Project authorized by the 1948 Act included construction of upstream dams and reservoirs and levees by the Corps and channel rectification and maintenance work by the Bureau of Reclamation to provide relief from flooding for the Middle Rio Grande Valley.

Flood Risk Management Projects

Jemez Canyon Dam and Reservoir is located on Jemez Creek within the Santa Ana Pueblo, approximately 2.8 miles upstream of the confluence of the creek and the Rio Grande. The dam was completed in 1953. It is a flood control dam which stores no water.

Construction of the Albuquerque Levee Unit of the Rio Grande Floodway was completed in 1956. These levees were originally constructed to provide protection for a peak flow of 42,000 cfs. However, these levees are now more than 50 years old and no longer meet current design standards for levees. The levees are maintained by the Middle Rio Grande Conservancy District, which served as the local sponsor for the project.

Galisteo Dam and Reservoir, located in Santa Fe County on Galisteo Creek about 12 miles upstream of its confluence with the Rio Grande, was completed in 1970. The dam controls a drainage area of approximately 596 square miles. It stores no water.

Construction of Cochiti Dam, located approximately 50 miles upstream of Albuquerque within the Pueblo of Cochiti, was completed in 1973. The dam is a multipurpose facility, providing flood risk management and sediment retention, development of fish and wildlife resources and recreational benefits. Cochiti Dam provides the only flood risk management measure for snow melt runoff on the main stem of the Rio Grande above Albuquerque. Approximately 1,000 square miles of uncontrolled drainage exists between Cochiti Dam and Albuquerque.

Cochiti Dam regulates flood flows in the Middle Rio Grande Valley in coordination with Jemez and Galisteo dams by controlling releases, so far as possible, to obtain the maximum practical reduction in flood damages. Problems with the floodway in the Middle Rio Grande Valley begin when flows reach about 7,000 cfs (cubic feet per second). Sustained flows at 7,000 cfs for periods greater than about 7 days may create unstable levee conditions in the Los Lunas to Belen reach due to levee seepage. The existing spoil banks in these reaches are not suitable to withstand long duration flows of 7,000 cfs.

The Corrales Levee Unit of the Middle Rio Grande, Bernalillo to Belen project is located on the west bank of the Rio Grande, extending approximately 10.6 miles from the Village of Corrales to the La Orilla outfall in Albuquerque. Construction of this levee, which was designed for a peak flow of 42,000 cfs, was completed in 1997.

The Albuquerque West Levee extends for approximately 3.1 miles on the west bank of the Rio Grande from downstream of the South Diversion Channel to the northern boundary of the Isleta Pueblo. Construction of this levee was completed in December 2009.

Current Status of Middle Rio Grande Levee Projects

Reevaluation studies for two levee projects are currently underway by the Corps: (1) the Rio Grande Floodway, San Acacia to Bosque del Apache project, and (2) the Middle Rio Grande, Bernalillo to Belen project. A map showing the Middle Rio Grande Levees from Bernalillo to Bosque del Apache is included at the end of this report.

Rio Grande Floodway, San Acacia to Bosque del Apache

The Rio Grande Floodway, San Acacia to Bosque del Apache project consists of the replacement of approximately 43 miles of existing spoil banks along the west bank of the Rio Grande extending from the San Acacia diversion dam, north of the City of Socorro, to the Bosque del Apache National Refuge. The levees will be constructed to contain a 100-year flood event.

As noted in the second Report to the Committee, current law requires that the costs of Corps levee projects be shared with a local sponsor. The cost sharing local sponsors for the Rio Grande Floodway, San Acacia to Bosque del Apache project are the MRGCD and the New Mexico Interstate Stream Commission. The estimated total cost of this project is $166 million. Based on the current cost-sharing analysis, which does not take into account the value of the lands under the levees, the total federal cost portion is $138 million, and the total non-federal cost portion is $28 million. (As noted in the Second Report to the Committee, there continue to be issues regarding land ownership in the footprint of the existing spoil banks).

This project will be constructed in phases. The first construction contract is scheduled for award in September 2012. The non-federal cost share that will be required in August 2012 for this contract is $2.1 million.

Depending on funding availability, a second contract is scheduled for award in 2013. The estimated non-federal cost for the second contract is $2.1 million.

Middle Rio Grande, Bernalillo to Belen

The Middle Rio Grande, Bernalillo to Belen project consists of construction of approximately 55 miles of levees along the Rio Grande in Bernalillo and Valencia Counties. Construction of the first phase of the project, the Corrales Reach, on the west bank of the Rio Grande from the Corrales Siphon near Arroyo de la Barranca to the La Orilla outfall, was completed in 1997. Phase 2 of the project starts at the South Diversion Channel in Albuquerque and extends downstream on both sides of the river to the City of Belen. The second phase of the project will provide protection to the communities of Los Lentes, Village of Los Lunas, Los Chavez, City of Belen, Bacaville, Jarales, Pueblitos, Mountain View, Village of Bosque Farms, Town of Peralta, Valencia, Tome, Adelino, La Constancia, and Madrone.

A reevaluation report to reaffirm the design features, costs and economic justification for this project is scheduled for completion in 2013, pending availability of funds. Construction for this project is scheduled to begin in 2014.

The cost sharing local sponsor for this project is the MRGCD. Cost sharing for the project will be 75% Federal, 25% non-Federal. Project construction costs will be determined in the reevaluation report.

Albuquerque Levees

The Albuquerque Levees were constructed by the Corps in the 1950s. The levees on the east side of the river are located from the Sandia Pueblo to the South Diversion Channel and on the west bank from the Arenal Canal heading, approximately 3,300 feet upstream of Central Avenue, to approximately 6,400 feet downstream of the South Diversion Channel. No levees were constructed in the vicinity of the Montano Bridge crossing on the west bank of the river. This area, consisting of residential and commercial development and the Bosque School campus in the area approximately one mile upstream and one mile downstream of the bridge, is currently unprotected by levees.

With funding provided by AMAFCA, City of Albuquerque, and Bernalillo County, a special study was conducted in 2010 by the New Mexico Bureau of Business and Economic Research (BBER) to assess the economic impacts of the anticipated non-accreditation of the Albuquerque Levees. Using floodplain mapping provided by the Corps for a "no levee" scenario, BBER concluded that 13,267 parcels would be located in the designated FEMA floodplain, with 7,549 of those parcels being forced to buy flood insurance. The cost of this flood insurance is estimated to be about $6,000,000 per year. The BBER reports are available at the AMAFCA website: www.amafca.org.

Also In 2010, the Corps completed a study of the condition of the existing levees which determined that due to their age, the levees do not meet current levee design and construction criteria, cannot be rehabilitated to meet these criteria, and will require reconstruction. In 2007, based on preliminary findings from this study, the MRGCD and FEMA (Federal Emergency Management Agency) were notified by the Corps that the condition of the levees was considered "unacceptable" and were no longer eligible for emergency repair funding under Public Law 84-99. In 2010, the Corps notified the MRGCD and FEMA that the certification for the levees for the Flood Insurance Study that had previously been provided by the Corps will expire on August 31, 2013.

No funding has been provided to date to initiate this project.

Town of Bernalillo Levees

The 1979 Chief of Engineers' Report for the Middle Rio Grande, Bernalillo to Belen project did not find an economically justified levee project along the Rio Grande in the vicinity of the Town of Bernalillo; consequently levee construction for this reach was not included in the 1986 Construction Authorization for the project. In 2008, the release of new FEMA Flood Insurance Rate Maps resulted in some 500 homes in the Town of Bernalillo being placed in the floodplain: heightening the need for remedial action. Subsequently, the Town requested a reevaluation of flood risk management needs under Section 205 of the Flood Control Act of 1948, as amended, based on increased development in the Town since the 1970s.

To date, no funding has been provided to initiate this project.

FEMA Mapping Status

As part of a major effort to reform the National Flood Insurance Program, FEMA is reviewing and revising the process for analysis and modeling of flood hazards, or risk, in the vicinity of

levees. Determining flood risk in the community will affect the accreditation of the levees. Accredited levees are assumed to provide protection against a 1-percent-annual-chance (or 100-year) flood event.

The FEMA review process should be completed by 2013, resulting in new guidance to flood-prone communities. Until such new guidance is issued, the FEMA Regional Office should be contacted to determine the possible impact of new levee analysis and mapping methods on local communities. A fact sheet produced by FEMA entitled, "New Levee Analysis and Mapping Approaches Being Developed" is included with this report.

Vegetation Standards for Levees

As noted in the Second Report to the Committee, in 2009, the Corps issued guidelines for landscape planting and vegetation management on levees that require a vegetation-free zone on both sides of the levee, and that no vegetation be allowed on the slope or the crest of the levee. The purpose of this vegetation-free zone is to provide access along the levee for surveillance, inspection, maintenance, monitoring and flood-fighting.

A national study on levee vegetation was conducted by the Corps' Engineer Research and Development Center (ERDC) in 2009-2010 to evaluate the effects of vegetation on levees. Field investigations for this study included several sites along the Albuquerque Levees. The completed study was released in September 2011. The results of this study will be incorporated into studies of the levee systems along the Rio Grande to minimize impacts on the Bosque caused by construction of new levees. Changes to the Corps' process for requesting a variance from its levee vegetation guidelines will be made following completion of the ERDC study. The study provides a better understanding of the impacts of vegetation on levee performance and will be used by the Corps in its decision making process for vegetation on levees.

The Corrales Levee Unit of the Middle Rio Grande, Bernalillo to Belen project was constructed by the Corps in 1997 leaving vegetation in place along the toe of the levee that does not comply with the Corps current levee vegetation guidance. In January 2009, following an inspection of the Corrales Levee Unit, the Corps notified the MRGCD that the levees were being given an unacceptable rating and being placed in an "Inactive" status in the Corps' Rehabilitation Inspection Program. With this "inactive" status, the MRGCD is not eligible for federal assistance under Public Law 84-99 if the levee is damaged during a flooding event.

A subsequent levee inspection was conducted in September 2010 following performance of corrective actions by the MRGCD. The MRGCD was notified following this inspection that the only remaining deficiency for this levee was vegetation along the toe of the levee. However, the levees were still deemed by the Corps to be in an "Inactive" status.

In August 2011, the MRGCD requested temporary extension of Public Law 84-99 eligibility for the Corrales Levee Unit under the Corps' August 2011 guidance for System-Wide Levee Improvement. This request is currently under review by the Corps. If approved, the levees will receive a temporary extension under Public Law 84-99 while the issues regarding the vegetation along the toe of the levee are resolved by the MRGCD and Corps.

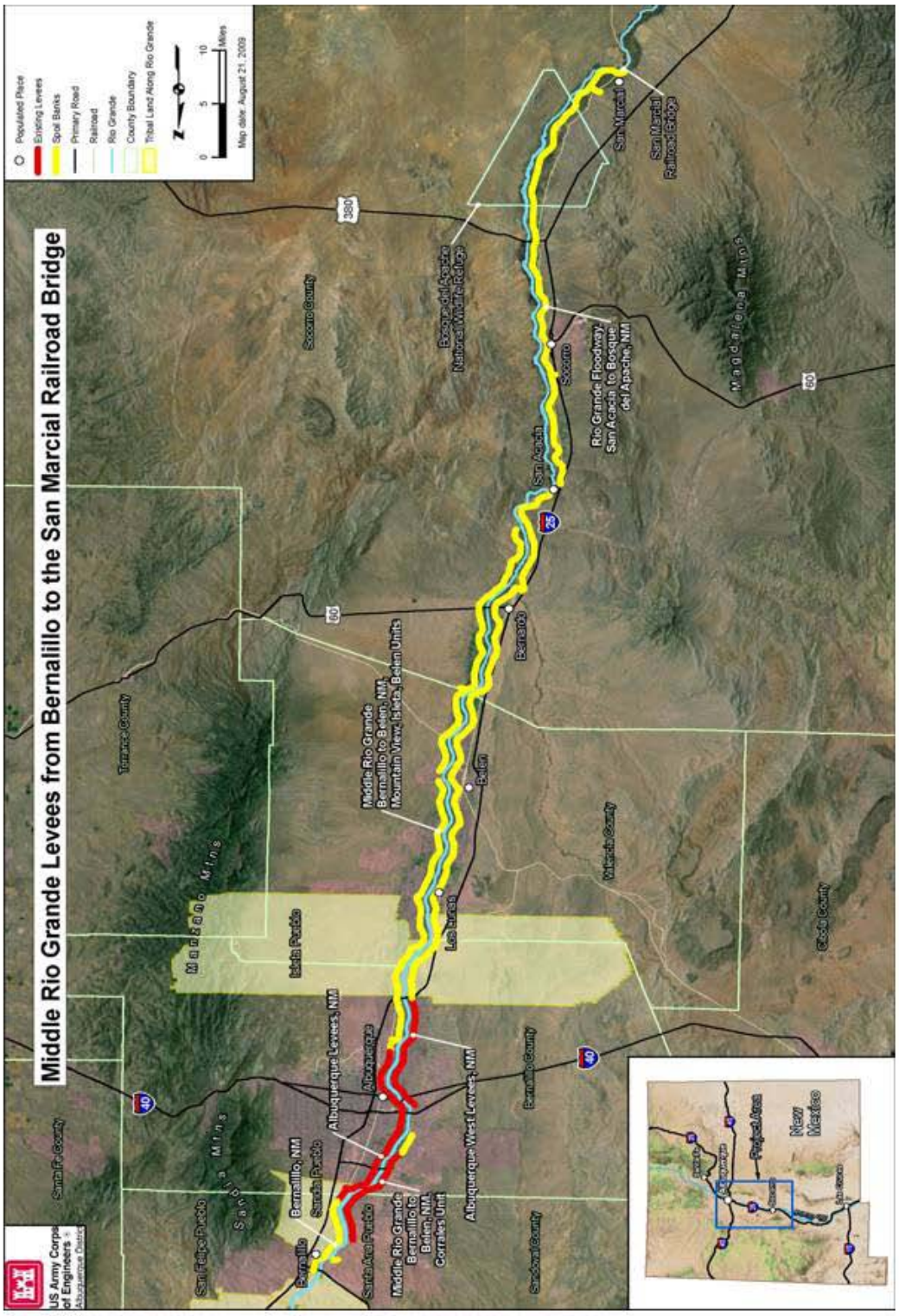
Middle Rio Grande Levees from Bernalillo to the San Marcial Railroad Bridge
Populated Place
Existing Levees
Spoil Banks
Primary Road
Railroad
Rio Grande
County Boundary
Tribal Land Along Rio Grande
Miles
Map date: August 21, 2009
US Army Corps of Engineers
Albuquerque District
Santa Fe County
Torrance County
Socorro County
Valencia County
Bernalillo County
Sandoval County
Cibola County
Manzano Mts
Sandia Mts
Magdalena Mts
San Felipe Pueblo
Santa Ana Pueblo
Isleta Pueblo
Bernalillo, NM
Albuquerque
Los Lunas
Belen
Bernardo
San Acacia
Socorro
San Marcial
San Marcial Railroad Bridge
Albuquerque Levees, NM
Middle Rio Grande Bernalillo to Belen, NM, Corrales Unit
Albuquerque West Levees, NM
Middle Rio Grande Bernalillo to Belen, NM, Mountain View, Isleta, Belen Units
Rio Grande Floodway, San Acacia to Bosque del Apache, NM
Bosque del Apache National Wildlife Refuge
New Mexico
Project Area
25
40
60
380

Figure C-1