BUREAU OF RECLAMATION

# DRAFT River Mile 60 Controlled Outfall Urgent Implementation Environmental Assessment and Finding of No Significant Impact

**Middle Rio Grande, New Mexico**
**Upper Colorado Basin Region**


**U.S. Department of the Interior** **December** 2022

# Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

# River Mile 60 Controlled Outfall Urgent Implementation Draft Environmental Assessment and Finding of No Significant Impact

**Middle Rio Grande, New Mexico**
**Upper Colorado Basin Region**

*prepared by*


## Albuquerque Area Office
**Environment and Lands Division**
**Facilities Management Division**
**Technical Services Division**
**Program Management Group**

## U.S. Department of the Interior

## Bureau of Reclamation

## Albuquerque Area Office
## Albuquerque, New Mexico

# FINDING OF NO SIGNIFICANT IMPACT

## River Mile 60 Controlled Outfall Urgent Implementation

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**Manager, Environment and Lands Division** **Date**

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**Area Manager, Albuquerque, New Mexico** **Date**

**FONSI Number: AAO-3**

## I. Executive Summary

In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the Bureau of Reclamation, Albuquerque Area Office (Reclamation) conducted an Environmental Assessment (EA) to determine the potential effects to the human and natural environment of the River Mile (RM) 60 Controlled Outfall Urgent Implementation Project (Project).

Reclamation proposes to implement the RM 60 Controlled Outfall Project to temporarily provide controlled conveyance of Low Flow Conveyance Channel (LFCC) irrigation return and seepage flows at RM 60 directly into the Rio Grande channel in support of efficient water delivery to Elephant Butte Reservoir under the Rio Grande Compact, and to continue to deliver flows along the LFCC West within existing compliance (e.g., 2016 Middle Rio Grande (MRG) Biological Opinion (BO)), with the goal of no negative impacts to the health of the federally listed bird habitat along the LFCC West beyond that covered by the 2016 MRG BO. There will be no negative impacts to the health of wetlands along the LFCC West or the wetlands associated with the ponded area near RM60.

The Project is being implemented under a phased approach, with the Project serving as an immediate short-term solution (described in the above paragraph), which will be include initial adaptive management, followed by longer-term operations and adaptive management. Then the Lower San Acacia Reach Improvements (LSARI) (formerly Evaluation of San Acacia Reach Option (ESARO)) planning process will determine a permanent solution. This EA addresses the short-term solution and initial adaptive management; any short-term temporary solution provided by the Project should not preclude any longer term or permanent solutions.

The Project will include the ability to provide water to the Southwestern Willow Flycatcher (*Empidonax traillii extimus,* flycatcher*)* and Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*; cuckoo) habitat (bird habitat) that currently exists along the LFCC between the RM 60 area and the current outfall of the LFCC (also known as LFCC West, at RM 54.5.

The water being delivered through the Project, which provides a connection between the LFCC and the river, will be sourced from the same drainage and irrigation return flows that currently provide water to the LFCC. Operation of the LFCC gates at San Acacia Diversion Dam is not included in this EA. Operation of the RM 60 outfall will be consistent with the 2016 MRG BO, and the Middle Rio Grande Conservancy District (MRGCD) has agreed that no additional river drying will occur as a result of operation of the Project. If Reclamation identifies through adaptive management any changes to operations, water sources, or new diversions in the future, such proposed actions will be covered by additional environmental compliance as needed. Successful delivery of water will require very close coordination with MRGCD on water operations and outfall operations will be coordinated during the weekly MRG water operations conference calls. The target flow rate under the Project's design is 750 cubic feet per second (cfs), but initial operations will likely not exceed 500 cfs. Operation of the Project will be year-round and adaptively managed to refine the

need and improve deliveries to Elephant Butte Reservoir and for environmental purposes. The Project will also inform the larger LSARI planning effort.

These irrigation return flows may include additional irrigation return flows that may result from efficiency, fallowing, or other water conservation actions. One Project operational scenario is to send additional flows added by MRGCD to the proposed Project outfall and bypass remaining flows to LFCC West. Another possible scenario is to modify existing available flows to LFCC West as needed to meet the goal of no negative impacts to the health of bird habitat, and send the remaining flows to the Project outfall. One other possible scenario could involve not sending LFCC flows to the bird habitat during the winter (non-growing season).

Reclamation proposes to

1) Temporarily provide controlled conveyance of LFCC irrigation return and seepage flows at RM 60 directly into the river channel in support of efficient water delivery to the Elephant Butte Reservoir under the Rio Grande Compact.
2) Provide adequate flows to the existing western areas around RM 60 (termed LFCC West) that support Federally listed species and habitat, as well as wetlands.
3) Minimize potential negative impacts to the environment.

MRGCD proposes to

1) Temporarily assist Reclamation by providing day to day operational control and flow monitoring at the proposed outfall and LFCC West in accordance with the guidelines in this EA and consistent with the decisions of the Interagency Adaptive Management Team.
2) Not increase river drying through flow management operations of the RM 60 outfall.
3) Minimize potential negative impacts to the environment.

## II. Summary of the Proposed Action

The Proposed Action is composed of the following elements:

1. Temporary Water Infrastructure Installation and Maintenance
2. Initial Experimental Water Operations and Adaptive Management for irrigation and drainage seepage return flows and support of LFCC West habitat areas

## III. Summary of Impacts

Five resources were identified by Reclamation's subject matter experts for detailed analysis in the EA: LFCC water flow at RM 60, wetlands and riparian vegetation, cultural resources, threatened and endangered species and critical habitat, and Indian Trust Assets. Four resources were identified, considered, and analyzed in brief in review of the Proposed Action: water rights, land use, air quality/sound, and environmental justice.

## IV. Finding of No Significant Impact

Based on the EA, which analyzes potential impacts of the Proposed Action, Reclamation finds that there would be no significant impacts associated with the Proposed Action. Reclamation makes this Finding of No Significant Impact (FONSI) pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.) and the Council on Environmental Quality implementing regulations (40 CFR 1500-1508). Reclamation has determined that the Proposed Action does not constitute a major Federal action that would significantly affect the human environment. Therefore, an environmental impact statement is not required.

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ac-ft | Acre Feet |
| AM | Adaptive Management |
| BDA | Bosque del Apache |
| BMP | Best Management Practice |
| CFR | Code of Federal Regulations |
| cfs | Cubic Feet Per Second |
| CMP | Corrugated Metal Pipe |
| CWA | Clean Water Act |
| EA | Environmental Assessment |
| ESA | Endangered Species Act |
| ESARO | Evaluation of San Acacia Reach Options |
| FONSI | Finding of No Significant Impact |
| ISC | Interstate Stream Commission |
| ITA | Indian Trust Asset |
| LFCC | Low Flow Conveyance Channel |
| LSARI | Lower San Acacia Reach Improvements |
| NAVD | North American Vertical Datum |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| P&P | Prior and Paramount |
| RGCC | Rio Grande Compact Commission |
| RM | River Mile |

| | |
|---|---|
| SADD | San Acacia Diversion Dam |
| SHPO | State Historic Preservation Officer |
| SWFL | Southwestern Willow Flycatcher |
| USFWS | U. S. Fish and Wildlife Service |
| YBCU | Yellow Billed Cuckoo |

# 1 Purpose and Need

This Environmental Assessment (EA) documents the Bureau of Reclamation's (Reclamation) review of implementation of the River Mile (RM) 60 Controlled Outfall Project (Project) to temporarily provide controlled conveyance of Low Flow Conveyance Channel (LFCC) irrigation return and seepage flows at RM 60 directly into the Rio Grande channel in support of water delivery to Elephant Butte Reservoir (Reservoir) under the Rio Grande Compact, and to continue to deliver flows to meet the goal of no negative impacts to the health of the federally listed bird habitat and wetlands along the LFCC West. A benefit of the Project may be to alleviate frequent excavation and channel clearing in the LFCC to maintain continuity of flows.

## 1.1 Introduction

The LFCC flows alongside the Rio Grande from the San Acacia Diversion Dam (SADD) to its outfall to the Rio Grande at RM 54.5 (2012). The LFCC was originally constructed in the 1950's and was operated as a surface water diversion from SADD downstream to the Reservoir from the 1950's to the 1980's due to low Reservoir water surface elevation levels and subsequent impacts to downstream water delivery due to the efficiency of the main river channel. The LFCC carried lower magnitude flows continuously to the Reservoir while the main river channel conveyed flows that exceeded the LFCC's capacity of about 2,000 cfs. However, the river breached the spoil levee and avulsed into the former LFCC in the 1980's, following a period of nearly full reservoir levels after the mid-1980's and buildup of sediment in the main river channel. Water from the LFCC then traveled in a straight line (LFCC West) from east to west along a path that had previously been cleared of the river vegetation (Figure 1). The lower part of the LFCC West is a historical side channel that was closed off during construction in the 1950s and reactivated by levee breaches in the 1980s during high flows and high reservoir pool levels. When the avulsion occurred, Reclamation installed a culvert to connect the LFCC with the main river channel; this culvert (Figure 2) has since been buried beneath the levee road by deposited lake sediments as the Reservoir filled during wet years as well as subsequent levee raising. The buried culvert is now estimated to be at an elevation near the bed of the existing river channel (Figure 2). With the culvert buried and non-operational, water in the LFCC flows to the west and then south to the outfall at RM 54.5.

Currently, the LFCC functions as the main valley irrigation return drain upstream of RM 64 and was originally designed to be lower than the main river channel for much of its distance. At the conclusion of active operations in the late 1980's, the LFCC continued to receive irrigation return flows and seepage from the active river channel and from adjacent groundwater inputs. Owing to falling reservoir levels starting in the late 1990's, a headcut in the river channel from the Reservoir north occurred through the Project area leaving the river channel bed incised, and currently at a lower elevation than the existing LFCC bed near RM 60. The LFCC is currently perched above the river channel between Ft. Craig (RM 64) and RM 60. At RM 60, the riverbed is approximately 22 ft. below the adjacent levee road (Figure 2, Figure 3; Reclamation 2022a,) (Southwest Water Design 2022). As a result, subsurface valley flows tend to concentrate along the LFCC and seep into the main river channel in this section of the river. Western valley ponding is due to a combination of low topography, western berms constructed sometime in the past, and seepage from the LFCC.

The LFCC departs its constructed channel at RM 60 where a berm and the levee road currently prevent LFCC flows from flowing directly into the river channel (Figure 2; Reclamation 2022a). A backwater is induced by this condition, and sediment has accumulated in the LFCC upstream of RM 60. This accumulation of sediment has reduced the LFCC channel slope from the originally constructed slope of 0.0005 ft/ft to a near zero slope in the few miles of the LFCC upstream of RM 60. Currently the area that will contain the proposed river outfall sits at an elevation of 4450 ft (NAVD 88), nearly 15 ft above the designed invert (bottom) of the LFCC in this location (4435.6 ft, NAVD 88) (Figure 3).

Alongside the western edge of the LFCC immediately upstream of RM60 is a large, ponded area that is inundated much of the time with open water consisting of seepage of water from the LFCC, down valley surface and groundwater flows, and drainage from western arroyos. There is direct seepage flow from the LFCC to the ponded areas once water levels reach a certain elevation. Historical aerial imagery shows the pond area has been shrinking in recent years, from roughly 300 acres in 2002 to roughly 150 acres in 2020 (Fluke 2022).

Downstream of the ponded area, the LFCC continues westward. Flows in this section come through the LFCC western embankment opening upstream of RM 60 (Figure 1) and initially flow due west then turn due south. This area downstream of the Lower Embankment Opening flowing west and then south is called LFCC West. The LFCC West eventually flows into the Rio Grande Delta Channel near RM 54.5 and is entirely within the Reservoir's full pool boundary. Numerous Southwestern Willow Flycatcher (*Empidonax traillii extimus,* flycatcher*)* and Western Yellow Billed Cuckoo (*Coccyzus americanus occidentalis*; cuckoo) nesting sites have been documented in the area fed by the LFCC West, and this area is known to provide suitable habitat for these threatened and endangered species. Critical habitat for both avian species occurs in the Project area. In addition, the river channel and Delta Channel provide habitat for the endangered Rio Grande Silvery Minnow (*Hybognathus amarus*).

As the Reservoir receded beginning in the mid-1990s, the water flowing in the LFCC West continued to redefine the channel that existed in 1935. Field observations and assessment of satellite imagery indicates the channel still delivers water back to the river channel. Its geomorphic, hydrologic, and vegetative condition has evolved over time in response to the hydrologic inputs of water and sediment and vegetation successional development, as well as changes to reservoir levels.

Vegetation development and flows have affected the quality of both cuckoo and flycatcher designated critical habitat along the LFCC, with many acres of suitable habitat from the confluence of the LFCC West at RM 54.5 upstream along the LFCC West. However, recent fires and vegetation succession have affected the quality of the habitat.


*Figure 1. River Mile 60 Surface Water Flows*


*Figure 2. Location of Existing River Mile 60 Buried Culvert and Channel Cross Section. The red A-A marking shows the location of the cross section.*

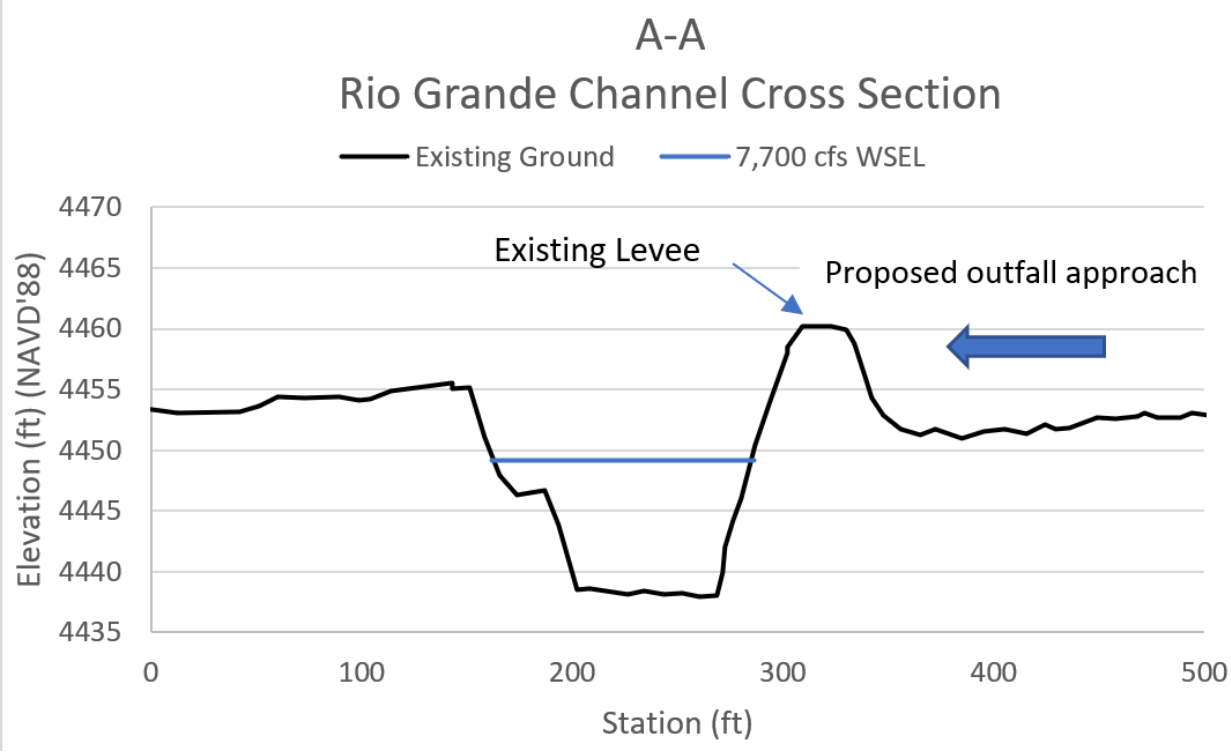


*Figure 3. Cross-sectional elevation profile of Section A-A in Figure 2, looking downstream. The main river channel is in the center.*

# 2 Alternatives

## 2.1 No Action Alternative

"…It is Reclamation's practice to include the No Action Alternative because it provides an appropriate basis by which all other alternatives are compared (Reclamation NEPA Handbook, February 2012)." According to the CEQ, if an agency is preparing or updating a plan, the no action alternative is

> … "no change" from current management direction or level of management intensity. To construct an alternative that is based on no management at all would be a useless academic exercise. Therefore, the "no action" alternative may be thought of in terms of continuing with the present course of action until that action is changed (CEQ 2020, sec. 1502.14[c]).

The no action alternative "sets a baseline of existing impacts continued into the future against which to compare impacts of action alternatives". Under the no-action alternative, no new management actions beyond those available as of the starting point of the EA analysis would be analyzed.

This alternative will be analyzed for the purposes of disclosing the effects of the proposed action to the affected environment from the implementation of the Project. This alternative would not meet the purpose of, or need for, the Proposed Action.

### 2.1.1 No Action Alternative

Under the No Action alternative, water operations would remain the same at the RM 60 location, with no direct flows from the LFCC to the river channel at the proposed Project location. Implementation of this Project would not be done despite very urgent and near drought conditions, and Reclamation would not be able to address emergency drought-related conditions in the Middle Rio Grande (MRG) valley and extremely low storage conditions at the Reservoir using this Project. Article 7 of the Rio Grande Compact is currently under effect and is triggered when the Rio Grande Project combined storage at Elephant Butte and Caballo Reservoirs are below 400,000 acre-feet. The MRG experienced below-average runoff volumes in 2020, 2021, and 2022. Combined with above-average runoff in 2019, this has led to accrued debt by the State of New Mexico in its deliveries downstream to the State of Texas. Additionally, the International Boundary and Water Commission (IBWC) has annual international treaty obligations for delivery of 60,000 acre-feet from the Rio Grande Project to the Republic of Mexico.

The No Action alternative would not provide additional support to New Mexico in meeting Rio Grande Compact requirements in the future, which depends on many different factors such as snowpack, agricultural uses, river channel efficiencies in other areas, and monsoons. New Mexico has incurred significant debit in the last few years, but it is not possible to say if that trend will continue without the Project. Regarding potential impacts to the ESA listed species, if no action occurs, the area may continue to adjust naturally to future water conditions, which may or may not provide water to the current existing listed species habitat because some parts of the LFCC West are becoming filled with vegetation and sediments and may become blocked without human intervention.

Under the No Action Alternative, the alternative would not involve expedited planning and implementation. Reclamation's LSARI planning effort would still occur, requiring additional separate long-term planning and design work to develop a more permanent engineered system that could still be pursued after the No Action alternative; however, Reclamation would not be able to collect data through experimental adaptive management (AM), which would provide key information for the longer-term needs of the river, LFCC, and habitat areas.

## 2.2 Proposed Alternative

### 2.2.1 LFCC Water Flows at RM 60

Given the existing uncertainty of the hydrologic conditions of the Middle Rio Grande, water operations of the RM 60 outfall will utilize AM principles to acquire key information on water flows at the Project site. The RM 60 outfall is identified as the Open Outfall on Figure 5, and the LFCC West is identified as the Lower Embankment Opening on Figure 1. The AM strategies below are considered part of the proposed action to conduct 1 to 2 years of water operation and assess whether the purpose and need were met.

#### *2.2.1.1 Initial 1 – 2 Years of Experimental Water Operations*

As part of the proposed Project, Reclamation would conduct initial experimental water operations during the first one to two years of operations, while biological and hydrologic monitoring is conducted. Experimental operations would also allow Reclamation to determine the gate operations needed to achieve a desired split (or desired flow levels) in LFCC West and the RM 60 outfall. Under the proposed Project, water being delivered through the RM 60 outfall will be sourced from the same drainage and irrigation return flows that already provide water to the LFCC. Specifically, under the proposed Project:

- Reclamation will form an Interagency Adaptive Management Team (AM Team) with MRGCD, ISC, and the Service to monitor and analyze results of the Project. As the AM Team better understands how operations result in surface water flows in the LFCC, LFCC West, and river reaches, the AM Team will continue to monitor surface water flows and groundwater levels and modify gate operations as needed (Section 4.1. Adaptive Management and Monitoring). The future operational plan for the outfall will undergo additional compliance as appropriate.
- Reclamation and MRGCD will sign an initial operations agreement. Also, during the irrigation season, outfall operations will be coordinated through the weekly MRG water operations conference calls. During the non-irrigation season, the AM Team (including MRGCD, ISC, and the U.S. Fish and Wildlife Service (Service)) will coordinate on outfall operations.
- MRGCD may add irrigation return flows to the LFCC as a result of efficiency, fallowing, or other water conservation actions, in accordance with the MRG 2016 BO per coordination with Reclamation and the Service.
- Outfall operations will send additional flows added by MRGCD to the outfall and bypass remaining flows to LFCC West.
- Outfall operations will modify existing available flows to LFCC West as needed to meet the goal of no negative impacts to the health of bird habitat and send the remaining flows to the outfall.
- Outfall operations may reduce or not send flows to the bird habitat during the winter (non-growing season).
- MRGCD may route some portion of monsoonal flows or November releases of Prior & Paramount water through the LFCC to the outfall.
- LFCC flows are limited initially to 500 cfs due to current capacity limits;
- Outfall gates will be automated.
- Gate operations would be experimental to determine opening rate (50% open, etc.) to achieve certain flows in the outfall and LFCC West.
- Gate operations would be modified and analyzed to determine how operation of the outfall impacts flows in LFCC West and how long it takes to modify those flows.
- Gated culverts will be added to the LFCC West to better control flows. LFCC West gates may be automated.

Actively diverting flows into the LFCC via operation of the LFCC gates at San Acacia is not proposed and may require additional compliance. If AM identifies any changes in the future to

operations or water sources including new diversions, those will be covered by additional environmental compliance as needed.

The experimental operations and AM 2-year plan will focus on understanding how to operate the gates to control flows to the river while providing necessary flows to the LFCC to meet the goal of no negative impacts to the health of the flycatcher and cuckoo habitat (Section 4.1 Adaptive Management and Monitoring). The experimental operations focus will be to understand how gate heights impact water moving into the LFCC West and the river channel, as well as developing rating curves to measure flows passing through the culverts. The adaptative management plan will focus on understanding how to operate the RM 60 gate to maximize deliveries to the Reservoir and to meet the goal of no negative impacts to the health of bird habitat in the LFCC West. Adaptive Management will be used to define the flow amount needed in the LFCC West for this purpose as well as understanding how groundwater is impacted by surface flows and what role groundwater plays in maintaining habitat (Section 4.1Adaptive Management and Monitoring).

Initial operations are expected to begin once construction of the proposed outfall is complete in spring 2023. Gate operations will be automated and controlled by the MRGCD and monitored by Reclamation. Operation of the RM60 outfall will be consistent with the 2016 MRG BO and MRGCD has agreed that no additional river drying will occur because of experimental operations of the RM60 outfall.

Flows will be monitored at several locations such as the RM 60 outfall, LFCC, LFCC West, and river channel as described in Section 4.1 Adaptive Management and Monitoring. The gages will be read before operations to create a baseline and during and/or post gate operations to analyze how RM 60 gate operations affect water deliveries to the Reservoir. Two gage locations already exist: LFCC West downstream of the pond outlet and LFCC West immediately upstream of the confluence with the river (Figure 4). The location downstream of the pond outlet is the most informative due to the uncertainty about how the upstream pond area contributes to flows to LFCC West.

Bird habitat current conditions were evaluated in July/August 2022 with a field survey (Section 9.4 Appendix D). Bird habitat surveys will be conducted annually during summer months if the outfall is being operated at that time. Five ground water wells have been installed in the LFCC West bird habitat to monitor ground water levels as a proxy (leading indicator) for vegetation and bird habitat condition during operations. These data are collected daily and will be used to create an average from the baseline data collected before Project operations begin. Telemetry will be installed at the well sites to assess ground waters levels before the operations, during operations and post operations. If ground water levels dip below an acceptable level as determined by Reclamation and Service biologists, the outfall gates will be closed. This is the fail-safe option to allow full flow to the LFCC West to restore current flow conditions so that threatened and endangered bird species habitat would not be impacted.

At the end of the two-year period, Reclamation will develop a longer-term operations plan that incorporates information from the experimental operations and AM plan. AM will continue as part of the operations plan to include safeguards to meet the goal of no negative impacts to the health of the LFCC West bird habitat, wetlands, and pond water levels. Additional compliance will be completed on the longer-term operations plan as needed.

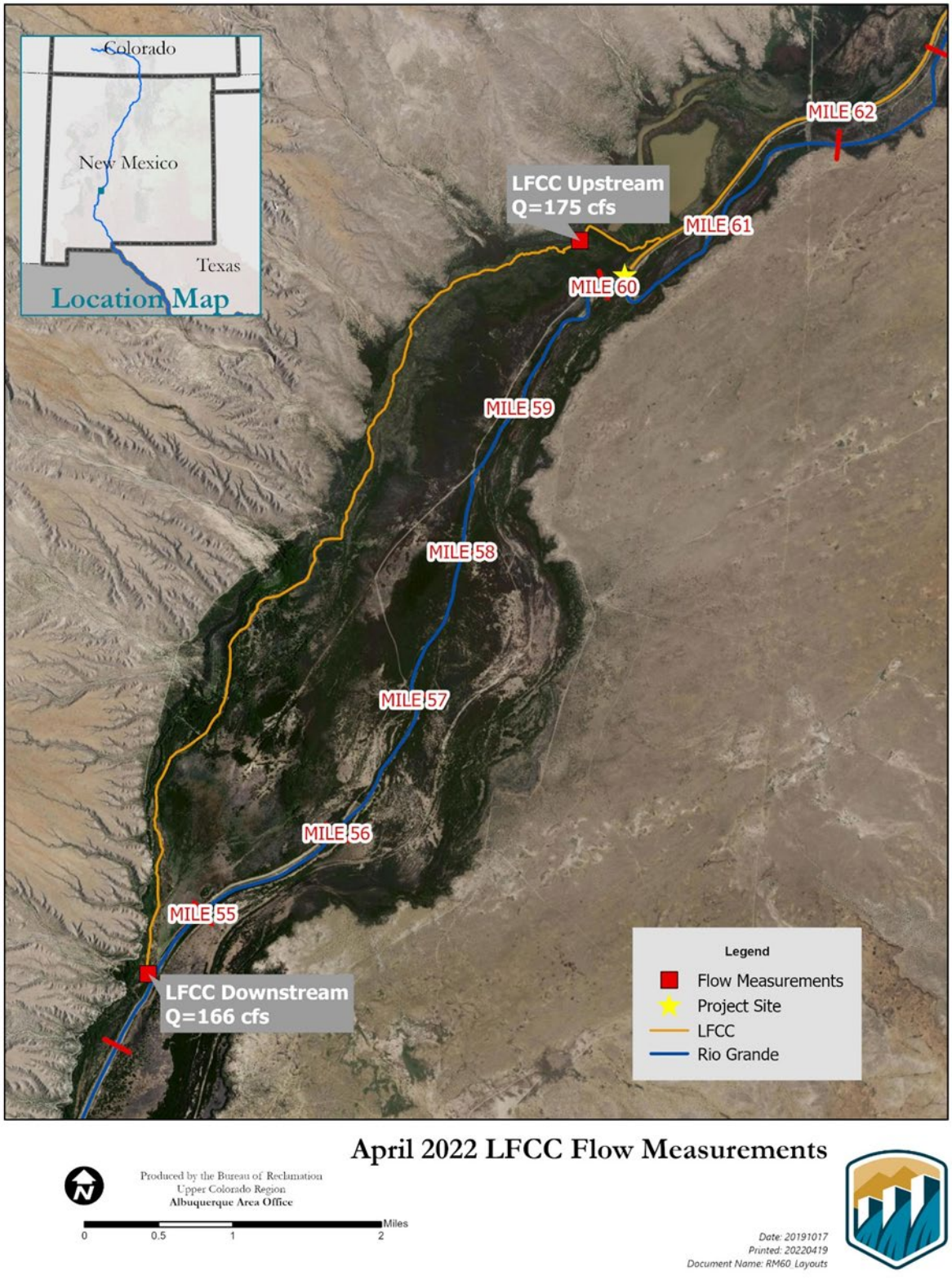


*Figure 3. LFCC flow measurements in March/April 2022*

#### *2.2.1.2 Water Control Infrastructure*

Flows will be controlled by a hydraulic check structure and gated culverts that will be installed in the LFCC upstream of RM 60 (Figure 5; Reclamation 2022a) prior to Project operations. The gates can be adjusted to achieve the given water surface elevation required to pass water to the habitat areas along LFCC West. The maximum design flow to pass through the proposed outfall of the LFCC to the river is 750 cfs. Water operations for the LFCC should not exceed the carrying capacity of the LFCC, and regular recurring maintenance of the LFCC will continue under the existing Categorical Exclusion Checklist for LFCC maintenance. This flow rate is based on the desire to pass additional flows through the LFCC using diversion of surface waters by the MRGCD as part of a potential future project and operation. Potential future source(s) of additional flows have not yet been identified, so are not addressed as part of this proposed Project; once identified, potential future additional flows will be subject to future NEPA compliance as needed. Currently, the LFCC capacity is limited to approximately 500 cfs.

Downstream of the Project's hydraulic check structure and gated culverts, Reclamation will install a rock-lined and earthen-bottom open channel (with a slope of 0.005 ft/ft) that will convey flows to the outfall opening in the levee (Figure 5; Reclamation 2022a). This opening will be created in the RM 60 levee embankment, and a downstream rock ramp will be installed to allow flows to transition into the river channel from the upstream LFCC. The approximate elevation drop from the outfall opening in the levee embankment to the river channel bed is 10 ft.

### 2.2.2 Installation and Maintenance of Temporary Water Control Infrastructure

The RM 60 Controlled Outfall Project Description (Section 9.2 Appendix B) is herein incorporated by reference [EA-22-03-30] for all proposed Project activities and Best Management Practices (Reclamation 2022a). Figure 5 shows a plan view of the RM 60 proposed outfall elements. Riprap will be taken from Ft. Craig stockpiles. Earthen fill will be taken from Val Verde pit or from excavation spoils if suitable. Spoil material will be spread on site and used in the soil cement flowable fill mixture. Identified locations and roads to riprap stockpile and Val Verde fill pit are shown on the map in Section 9.1 Appendix A. Length of culverts will be 80 feet (Reclamation 2022a).

Construction is expected to begin in January 2023, with completion of main outfall and LFCC West structures by April 15, 2023. However, the welding needed for installation of the automation and monitoring equipment for the outfall gates (described in Section 2.2.2.5) will likely occur in May 2023 due to acquisition timelines associated with the gate automation components. Any uncompleted work will occur after September 1, 2023 if needed. If any work other than welding needs to occur between April 15 and September 1, Reclamation will conduct migratory bird surveys and coordinate with the Service prior to work occurring. The following construction steps are expected for the Project, although not necessarily in the exact sequence listed.

1. Mobilize to the construction site.
2. Prepare the construction site and staging areas (mowing and grading, access improvement, any access ramps required).
3. Delivery of riprap and fill material to the Project staging area.
4. Establish an interim access road across the existing LFCC berm (Figure 6 in Section 2.2.2.3).

5. Clear and excavate the existing area protected by the berm across the LFCC to the required grade for culvert placement and construction of the check structure and the outfall channel.
6. Dewater the construction footprint area as required using pumping. If required, the pumped groundwater will be discharged to the LFCC downstream of the Project site (e.g., into LFCC West). If pumped groundwater is not required to be discharged into the LFCC downstream, it may be discharged into the river channel.
7. Raise the western LFCC embankment to a minimum elevation of 4,461 ft (NAVD 88) to contain flows with a freeboard of 3 ft. Establish an access road along this levee to the Lower Berm Opening.
8. Outfall Channel Construction
    a. Excavate the outfall channel from the outlet point of the gated culverts to the open outfall rundown.
    b. Excavate the open outfall rundown in the existing levee.
    c. Line the sides of the outfall channel with riprap.
    d. Construct a riprap landing in the river channel to prevent immediate formation of a scour hole.
    e. Place additional riprap slope protection on the bankline from the riprap landing through the outfall rundown.
9. Check Structure and Culvert Installation
    a. Excavate trenches to the grade required for placement of the culvert bedding for each of the 3 culverts. If unsuitable soils (clays, silt, or peat materials) are found to make up the culvert sub-grade, excavation of an additional 6 inches below the culvert bedding is recommended. Sheet piling (described below) may be required to prevent seepage during and after construction.
    b. Fill the culvert trenches with the bedding required for each off the 3 culverts.
    c. Prepare the soil cement mixture.
    d. Set the Corrugated Metal Pipe (CMP) culverts in place along with seepage collars and pour soil cement. Sandbags, steel cables, or other means may be used to weight the culverts in place and prevent them from floating. Allow soil cement to set and dry.
    e. Construct the embankment using earthen fill material. Fill placed around the CMP haunches should be compacted to a relative density of 70%.
    f. Install the culvert gates, gate structures and gate operator's catwalk.
    g. Place and compact fill in lifts above culverts to the grade of the access road.
    h. Loose riprap will be placed along the upstream embankment slope of the hydraulic check structure for erosion and wave protection.
    i. Grade and compact the access road across the hydraulic check structure and culverts.
10. Remove the existing upstream earthen berm and channel flows to the inlets of the three culverts. The gated culverts will be used as required to achieve the needed water level to maintain desired flow in the western habitat areas.

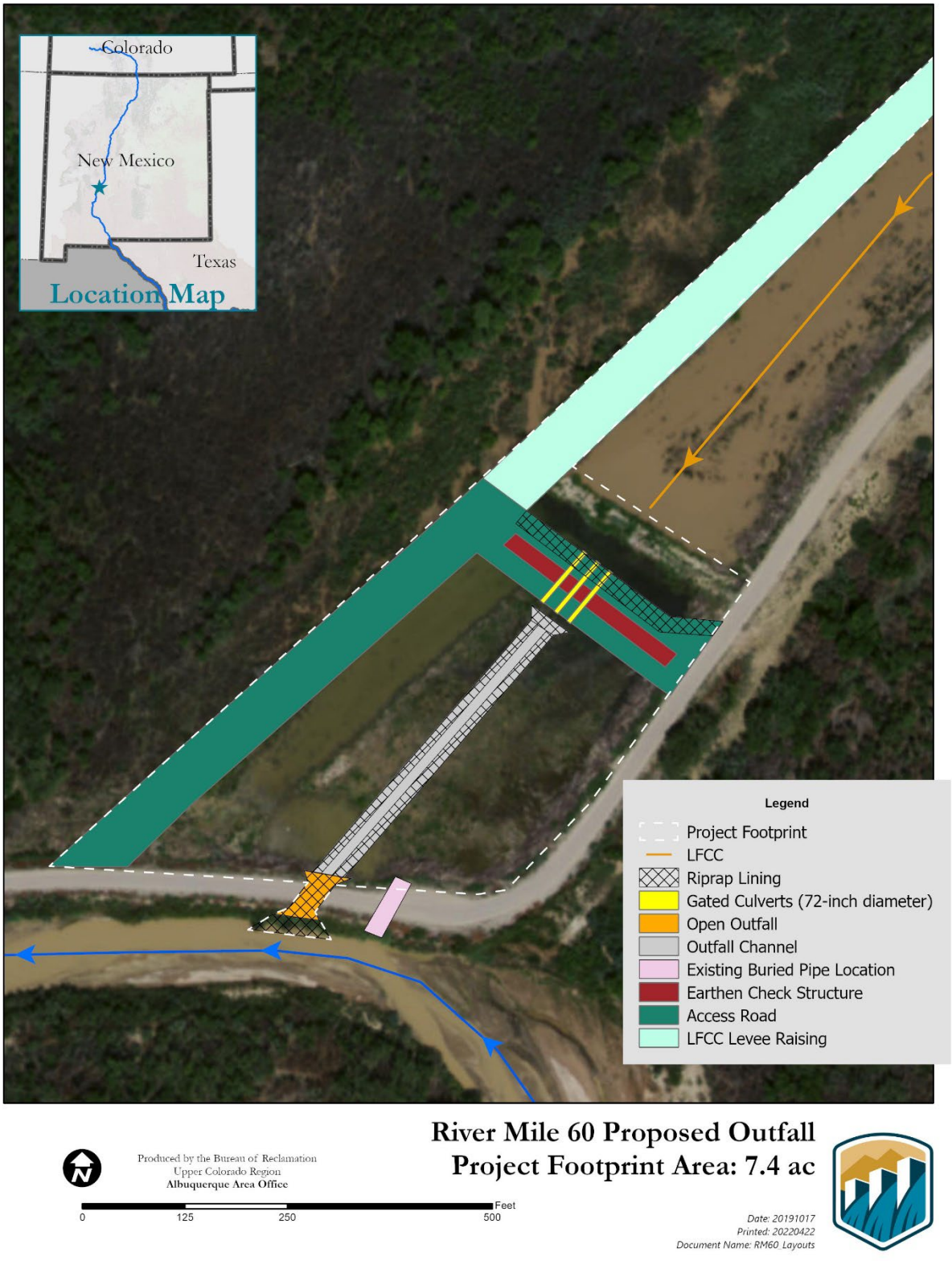


*Figure 4. RM 60 Proposed outfall elements plan view. The LFCC is not being raised, only the levee.*

#### *2.2.2.1 Staging Area*

Existing equipment and material staging will be along the existing levee road and parking areas (Reclamation 2022a).

#### *2.2.2.2 Dust Abatement*

If water is needed for dust abatement or to facilitate grading of roads, water may be pumped from the LFCC, irrigation drains, sumps, or secondary channels adjacent to the river in accordance with the dust abatement BMP in the Project Description (Section 9.2 Appendix B, Reclamation 2022a). If sufficient water is not available, it may be pumped from the Rio Grande consistent with the MRG Biological Opinion requirements for dust abatement.).

#### *2.2.2.3 Access*

Equipment access to the site will be along the existing levee road from the San Marcial equipment yard. Vehicular access from I-25 will be via the Ft. Craig exit (I-25 Exit 115 to NM 109, take Old US Hwy 85 North approx. 2.8 miles to Ft. Craig Road). Alternately the site can be accessed via the San Marcial exit (I-25 Exit 125 to NM 178) (Appendix 9.1).

An access road to accommodate passenger and tracked vehicles will be constructed over the proposed check structure and continuing along the west side of this section of the LFCC connecting to the levee road to the south (Figure 6). The road will be covered by a minimum of 3 feet of fill above the culverts to carry heavy tracked equipment loads. The equipment access road crossing the check structure will have 30-foot top width to accommodate equipment and the access road on the LFCC levee will have a 24-foot top width and 2:1 (horizontal: vertical) side slopes. The access road shall be constructed to allow the maximum turning radius of transport vehicles crossing the check structure.

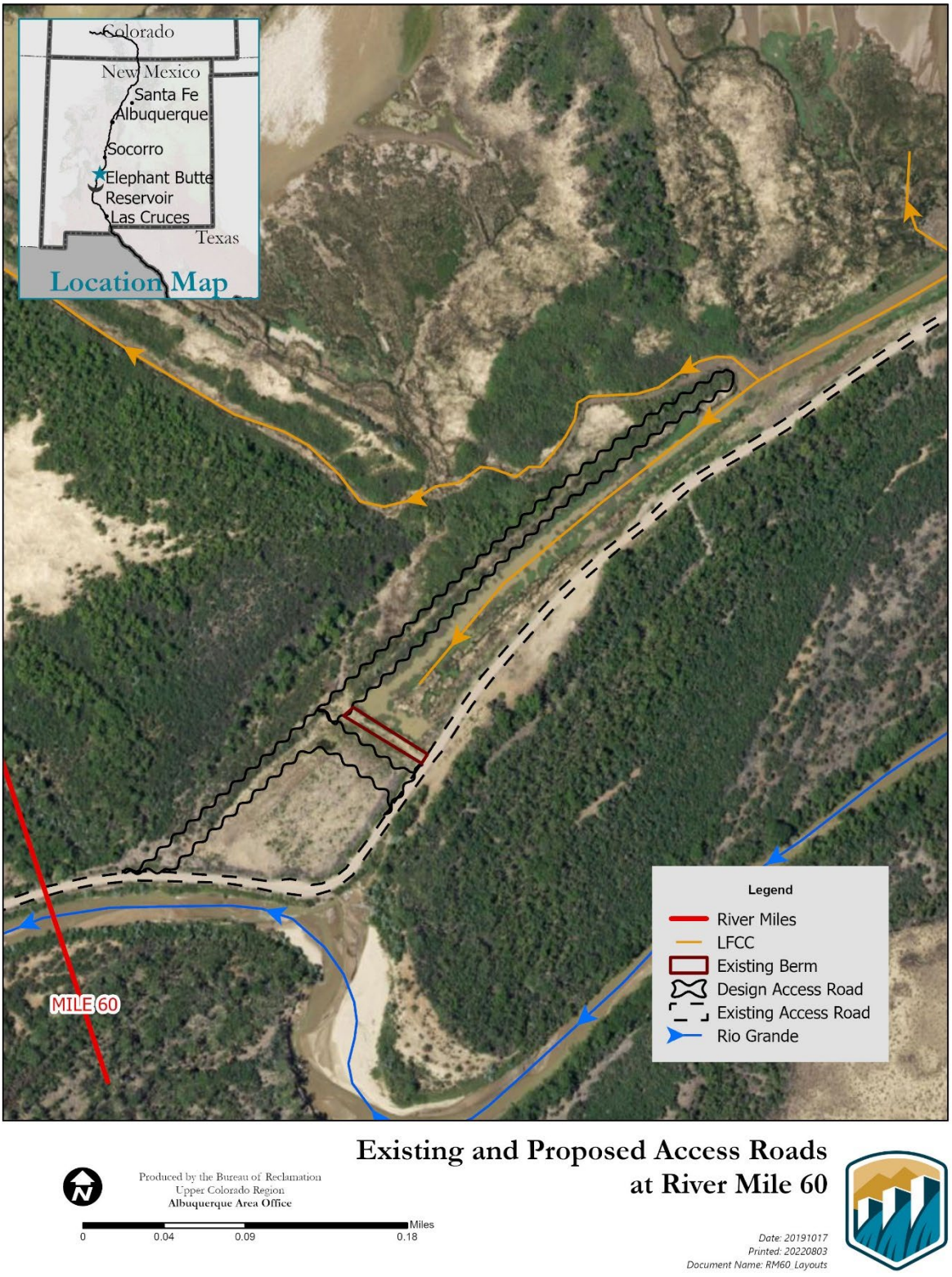


*Figure 5. Existing and Proposed Access Roads in RM 60 Project area.*

#### *2.2.2.4 Hydraulic Check Structure with Gated Culverts*

An earthen check structure will be constructed perpendicular and across the existing LFCC (Figure 5; Reclamation 2022a). The check structure will be approximately 300 feet in length and span the entire LFCC top width between the western road and existing levee. This structure will house three gated, 72-inch diameter corrugated metal pipe (CMP) culverts providing a total flow capacity of 750 cfs under a hydraulic head of approximately 2 feet. This structure will allow control of water levels in the LFCC and flows reaching the existing habitat areas west of the LFCC through the western overflow channel. The culverts will have a slope of 0.005 ft/ft and a longitudinal length of approximately 80 ft to accommodate the required road width on the check structure. The side slopes on the check structure will be 2:1 (horizontal: vertical). The upstream side slope of the earthen check structure will be rock lined for erosion protection using 9" riprap placed at a thickness of 1.5 ft.

The culverts will have inlet elevations of 4,450.4 ft (Figure 7). This elevation is 1–2 feet below the existing ground at this location and will be sufficient to drain all LFCC flows reaching this point. This elevation is approximately 6 feet above the measured elevation of the LFCC thalweg near the westernmost levee opening (Pond Outlet) (Southwest Water Design LLC, 2022). The top elevation of the culvert inlets will be 4,456.4 ft, and the crest elevation of the check structure will be 4,460 ft (NAVD 88), approximately the same elevation of the existing levee road on the east side of the LFCC.

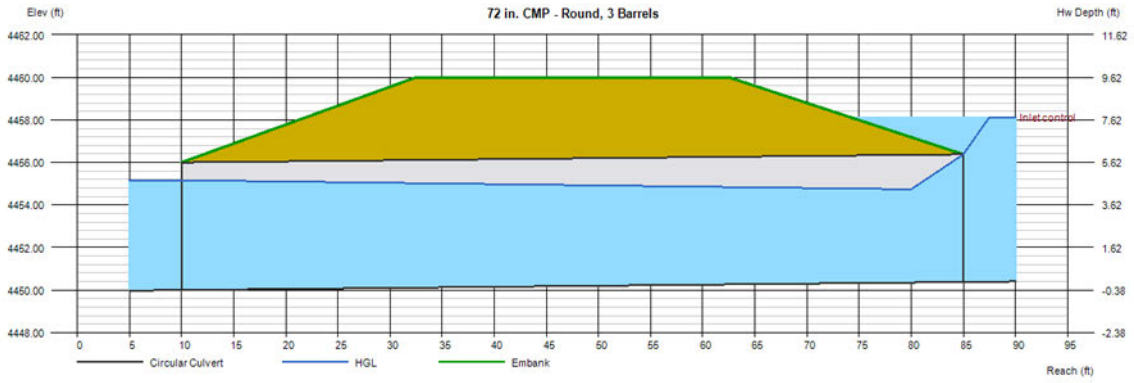


*Figure 6. Profile section of the proposed 72-inch diameter gated culvert with a simulated 750 cfs flow rate.*

Earth fill material will be hauled in from the Val Verde fill pit near Ft. Craig. Riprap material will be hauled in from the existing riprap stockpiles near Ft. Craig. Further dewatering of the construction area may be needed to adequately construct the foundation for the culverts and subgrade (compaction) needed for the hydraulic check structure. Sheet piling (described below) may be required to prevent seepage during and after construction. Soil cement is recommended to be used as the pipe embedment and backfill for the gated culverts to also help with seepage control, to minimize piping of material around the installed culverts, and to avoid "floating" of the installed pipes following construction. Seepage collars on each culvert will be used to also reduce post-construction water seepage (flow lines along the pipe axis) through the spoil embankment.

Sheet pile may be used at the upstream end of the culverts as an aid in construction and an additional measure to mitigate longitudinal seepage. The top elevation of the sheet pile will be 2–3

feet above the invert elevation of the culvert inlets, and cut-outs will be made in the sheet pile to provide a vertical support for the culverts along with acting as a partial upstream headwall. The sheet pile will extend laterally 5 feet to each side of the culvert array, or otherwise as material is available. Available sheet pile may be cut into smaller pieces if required. The sheet pile will be driven using a hydraulic hammer excavator attachment. Sheet pile may be driven up to a depth of 20 feet.

#### *2.2.2.5 Outfall Gate Automation*

MRGCD will automate and add measurement equipment to the gates to the river from the Low Flow Conveyance Channel (LFCC) to the Rio Grande at RM 60 (RM 60 gates). The monitoring will provide the benefit of gaging discharge to the river from the LFCC. The automation of the RM 60 gates will enhance control of discharge as well as water surface elevation upstream of the RM 60 gates which in turn controls discharge to the LFCC West. The automation will include radio telemetry that will enable remote, near real-time monitoring of flows and water surface elevations by MRGCD and Reclamation. Radio telemetry provides the ability to operate the gates remotely (change discharge and water surface elevation set points) from the MRGCD General Office in Albuquerque. These gates will be operated in coordination with the partners on the Project and would follow plans set forth as a part of any AM plan developed as part of the Project.

The installation of the headgates to the culvert pipes will be done after pipes are installed in the ground. The headgates will need to be installed before the outfall becomes operational or if installed after the gates are opened, when that area of the LFCC has been dewatered. The headgates will be installed on the pipes themselves and will not increase the footprint of the Project. The equipment needed to install the headgates are a loader, an excavator, and a backhoe. The devices for measuring the discharge to the LFCC West will include an enclosure that houses a battery, a remote terminal unit, a water level sensor, and a solar panel welded either to the frame of the headgate or to a pipe installed on the ditch-bank. An antenna will be installed on the pipe or the enclosure for radio telemetry. The housing will be installed out of the water, but PVC will be installed in the water for the water level sensors. The equipment needed to install the measurement devices will include a welder, a backhoe, and bobcat with an auger. Preliminary work with the backhoe and bobcat would occur before April 15th, but the welding would likely occur in May due to acquisition timelines.

Automation of the RM 60 gates will include welding an enclosure to the frame of each of the headgates that would house an actuator, a remote terminal unit, water level sensors and gate position sensors. A 20' x 2" structural pipe would be installed on the ditch bank for the radio antenna to provide telemetry. A single power cabinet would be installed on or near the headgates that would house batteries and solar panels. The power cabinet would be connected to each of the actuator enclosures with conduit. Installation of the actuators will be done out of the water, but PVC conduit will be installed and placed in the water to house the water level sensors. The equipment needed to install the actuators are a welder, backhoe, and a bobcat with an auger. Preliminary work with the backhoe and bobcat would occur before April 15th, but the welding would likely occur in May due to acquisition timelines.

The described automation and measurement equipment can be easily removed when the Project has ended.

#### *2.2.2.6 Outfall Channel*

A channel will be constructed to carry flows from the gated culverts to the outfall structure at a continuous slope of 0.005 ft/ft. This channel will have a 26-foot earthen bottom width and rock-

lined side slopes at a 2:1 (horizontal: vertical) slope (Figure 5; Reclamation 2022a). The side slopes will be rock lined for erosion protection. The channel slopes will be lined using 9"" riprap placed at a thickness of 1.5 ft.

Spoil material from channel excavation will be spread on site and used in the soil cement mixture. Organic material will be piled onsite and burned or chipped and spread.

### 2.2.2.7 Open Outfall to Main River Channel

Flows passing the check structure and gated culvert will flow downstream through the outfall channel to an open outfall and into the main river channel (Figure 5; Reclamation 2022a). The open outfall will be excavated into the existing levee and will have an outlet invert elevation of 4,448 ft. This elevation will ensure that river flows do not back into the LFCC during normal flows as well as provides sufficient slope to keep sediment from accumulating between the proposed gated culvert and open outfall. A bottom width of 26 feet, minimum depth of 6 feet, and side slopes of 2:1 (horizontal: vertical) will contain the required flow rate of 750 cfs with a flow depth of approximately 3 feet and a channel freeboard near 3 feet (Figure 8; Reclamation 2022a). The outfall structure will require a rock ramp and a landing with riprap protection, given that a large scour hole will otherwise develop in the existing riverbed. This location will need to be monitored and will be periodically maintained, given the large elevation drop from the outfall to the riverbed. The density of the placed rock material is greater than the riverbed sediments, so any rock material placed along and into the scour hole will settle and be displaced over time. Periodic maintenance would include placement of riprap with an excavator stationed on the levee.

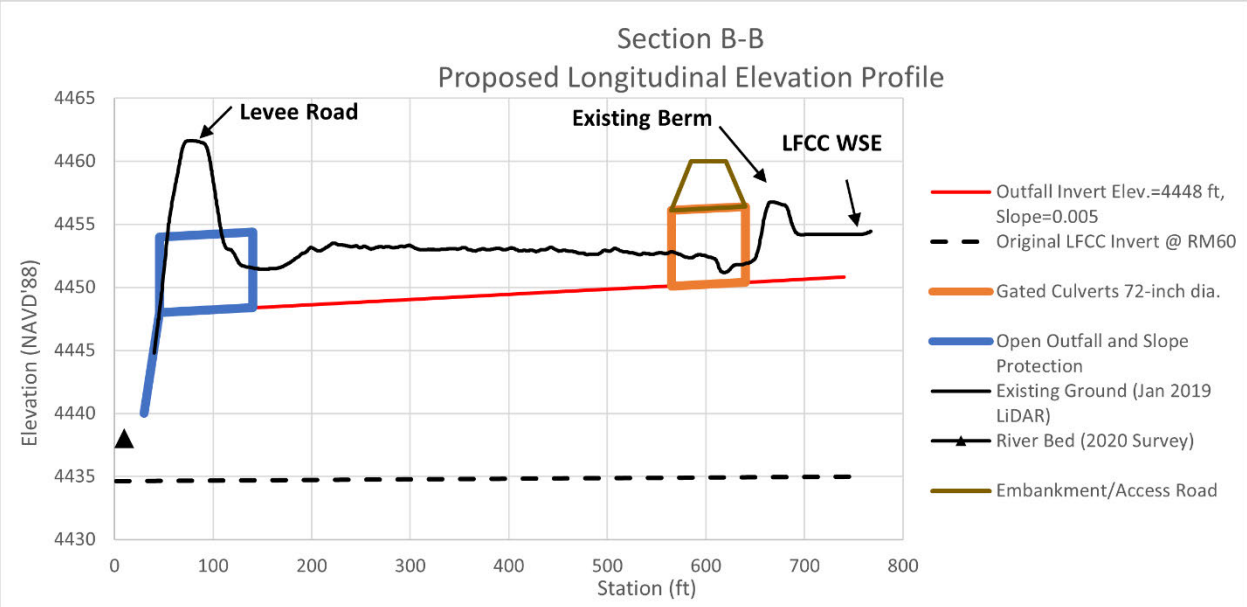


*Figure 7. Proposed longitudinal elevation profile and Project components along Section B-B (Reclamation 2022a,).*

### 2.2.2.8 Raising of LFCC Western Levee

The existing western embankment of the LFCC will need to be raised using imported fill material to contain the flows intended to pass through the proposed outfall (Figure 5, Reclamation 2022a). Fill will be imported from the Val Verde fill pit. Spoils from excavation may be used if suitable. Currently the western levee containing the LFCC is at approximately 4456 feet elevation, which is up

to 10 feet lower in elevation than the eastern LFCC levee and road. The proposed gated culverts have crown elevations at the inlet of 4456.4 feet, and an expected hydraulic head of approximately 2-feet is expected at the 750-cfs flow rate. Therefore, the western LFCC levee road in the Project area should be raised to at least 4461.5 feet to have a minimum 3-foot freeboard at the maximum expected flow rate. This levee will also function as a road and provide access to the west-side LFCC levee openings, should work be required at those locations in the future. Additional LFCC levee road work may eventually be necessary upstream of the Project area; maintenance of the LFCC levee roads is covered under CE-22-007-1- MRG LFCC Vegetation and Sediment Maintenance Project.

#### *2.2.2.9 LFCC West Culverts and Extension of West Levee Road*

Three to five 48-inch diameter CMP culverts of approximately 40-foot length will be installed in the lower LFCC western embankment opening that currently overflows to the west of the main LFCC (Figure 5; Reclamation 2022a). These will not be installed until after the outfall structures have been completed, with installation expected to occur spring 2023. There may be need for additional flow control structures (culverts and gates) to be installed at LFCC levee openings that feed the ponded area (Upper Embankment Opening in Figure 1). The need for these additional structures will be determined through AM and the additional structures at the Upper Embankment Opening are not covered in this EA.

Since culvert installation in the wet is difficult, the construction crew will need to isolate the site of the LFCC West culverts to evaluate the subgrade. That would be accomplished by driving sheet pile, or placing large sandbags, or a combination of both, to redirect the flows around the installation site. The flow redirection may be partial, diverting flows around the immediate area of the channel for the installation of two of the culverts at first, dewatering that area, installing the 2 culverts, then passing flows through those culverts while the third culvert area is dewatered and the culvert is installed. This option would allow flows to continue in LFCC West during installation. The more likely option is completely blocking the flow from the entire installation site before dewatering. The dewatering would discharge the water back into the LFCC West downstream of the installation site. While the culverts are being installed, pumps could be installed in the LFCC upstream of the installation site to discharge water from the LFCC into the LFCC West downstream of the installation site, if Reclamation biologists determine it is necessary for vegetation health. Under either option, the crew will dewater the site in accordance with BMPs (Section 4.2), establish the subgrade, install the culverts, and backfill over the culverts. If sheet pile is used, it would be left in place (not blocking flows), but sand bags would be removed if used.

Immediately after the LFCC West culverts are installed, a road will be constructed over the LFCC West culverts to connect the western levee road. A haul truck will dump fill material at the end of the road where the culverts are. A dozer will spread the material into the LFCC West channel over the culvert pipes until the excavator can use the placed material as a platform. Then an excavator will use the platform to pick up the fill material and place it between the culverts to prevent shifting. Once the culverts are secure, the material will continue to be hauled and spread with a dozer. Fill material will be pit-run on existing access roads from Valverde pit; no additional gravel will be hauled in to cap the levee road. The dozer and excavator will remain in the dry on the levee road or constructed platform.

In addition to automating the gates to the river, the MRGCD has proposed to install the headgates on the LFCC West culverts and the equipment to measure discharge through the culverts to the LFCC West. Installing headgates and gaging will provide the ability to monitor and maintain the

required discharges to the LFCC West. If AM later determines that operation of the LFCC gates at San Acacia Dam is needed, the headgates and gaging will also help ensure any water diverted from the river into the LFCC at San Acacia Diversion Dam is discharged back to the river at the RM 60 outfall. It will be possible to both monitor and maintain the necessary discharge through the LFCC West gates without automating the gates to the LFCC West, but automation may be installed either concurrently with the outfall gate automation in May or after Sept 1 2023. The equipment and process to do so would be the same as outlined above for automation of the RM 60 outfall gates. Although it is not expected, if installation of LFCC West gates were to occur during nesting season, the action would first be coordinated with the Service to avoid impacts to migratory birds or assess incidental take of flycatcher and/or cuckoo under the 2016 MRG BO in accordance with the BMPs. Automation of the LFCC West gates will require backhoe or bobcat activity, which would occur before April 15th; however, the final step of the automation installation is welding which would likely occur in May.

### 2.2.3 Material Quantities

The estimated earthwork quantities required for Project construction are shown in Table 1 below.

*Table 1. Estimated earthwork quantities.*

| Item | Units | Maximum Expected Quantity |
|---|---|---|
| LFCC Embankment Raising (Fill) | Cu yd | 17,200 |
| Earthen Check Structure (Fill) | Cu yd | 10,000 |
| Riprap bed and side slope Material (Fill) | Cu yd | 2,400 |
| Berm Removal (Cut) | Cu yd | 3,700 |
| Outfall Channel Excavation (Cut) | Cu yd | 5,900 |

### 2.2.4 Summary of the proposed action(s) phased approach

The proposed actions covered in this EA are to cover a temporary Project to install and operate an outfall on the LFCC at RM 60 with an expected design life of up to five years that will remain in place until LSARI develops a permanent solution for this area. The planning and implementation of the proposed Project has been expedited to meet the urgent water delivery need and therefore may have limitations. Adaptive management will assess the need for additional design and/or changes, and the proposed Project would aid in the development of a long-term water operations plan for the area. The proposed Project should be considered experimental and an opportunity to gain important data through AM, and inform the longer-term needs of the river, LFCC, and habitat areas, while meeting the goal of no negative impacts to the health of the existing threatened and endangered species habitat. Reclamation will use AM as the impact assessment process as described in the adaptive management section.

# 3 Affected Environment and Environmental Consequences

## 3.1 Resources Considered but Eliminated from Further Study

| Resource | Rationale for Elimination from Further Study in this EA |
|---|---|
| Water Rights | Existing water rights would not be affected because no changes to those rights are part of the Proposed Action and delivery of water would continue according to priority. No new water rights are part of the Proposed Action. Therefore, there would be no effect to water rights from the Proposed Action. |
| Land Use | No changes to land use are part of the Proposed Action. Therefore, there would be no effect to land uses. |
| Air Quality/Sound | Air quality would be affected only temporarily and minimally by the proposed action as this is a water operation and construction of temporary water infrastructure. During construction, BMP's will be utilized to keep fugitive dust down on roads being utilized by heavy equipment. The EA covers a construction project and initial experimental operations of the outfall. There will be large construction equipment operating in the area, and the equipment operation will have minimal short-term effects on air quality. Initial operations of the outfall should have little effect on air quality with respect to water movement through the outfall. The gates will be operated automatically via actuator or with a diesel-powered gate opener, which would have minimal short-term effects on air quality.<br><br>This is a very remote and isolated area, more than 20 miles from residential areas, and there should be no negative impacts on sound from the operation of construction equipment or operation of the gate opener. |

| | |
|---|---|
| Environmental Justice | EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs all federal agencies to develop strategies for considering environmental justice in their programs, policies, and activities. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations of the execution of federal, state, local, and tribal programs and policies (EPA 2020). Reclamation reviewed the proposed Project under EPA's Environmental Justice (EJ) guidance. No EJ communities are within the proposed Project area (closest residences are more than 20 miles away). Accordingly, the proposed Project does not potentially impact any identified EJ community. |

## 3.2 LFCC Water Flows at RM60

### 3.2.1 RM 60 Affected Environment

Water flows will require the initial AM and experimental operations to better characterize flow paths in the RM 60 Project area, which are conceptually diagrammed in Figure 9 below. While the upstream LFCC San Marcial USGS gage has a long period of record for measurements, the specific flow rates for the LFCC at RM 60 and to the western bird habitat along LFCC West are currently difficult to measure. Table 2 and Table 3 below show an analysis of recent San Marcial gage data (Reclamation 2022b). The LFCC further downstream near RM 60 is not as uniform or controlled as the upstream gage location since it has differing split flow conditions; the intervening losses/gains are unknown. Two flow data points in the LFCC West downstream of the pond outlet were taken in late March/early April 2022 by Southwest Water Design (Figure 4, Southwest Water Design 2022).

*Table 2. Probability of exceedance daily average flow rates (1991 - 2021).*

| | **Probability of Exceedance** | | |
|---|---|---|---|
| | **90%** | **50%** | **10%** |
| *Irrigation Season (April `5 – Sept 1)* | 65 cfs | 232 cfs | 400 cfs |
| *Non-Irrigation Season (Sept 2 – April 14)* | 78 cfs | 205 cfs | 373 cfs |

*Table 3. Probability of exceedance daily average flow rates (2011 - 2021).*

| | **Probability of Exceedance** | | |
|---|---|---|---|
| | **90%** | **50%** | **10%** |
| *Irrigation Season (April 5 – Sept 1)* | 48 cfs | 161 cfs | 291 cfs |
| *Non-Irrigation Season (Sept 2 – April 14)* | 63 cfs | 158 cfs | 248 cfs |

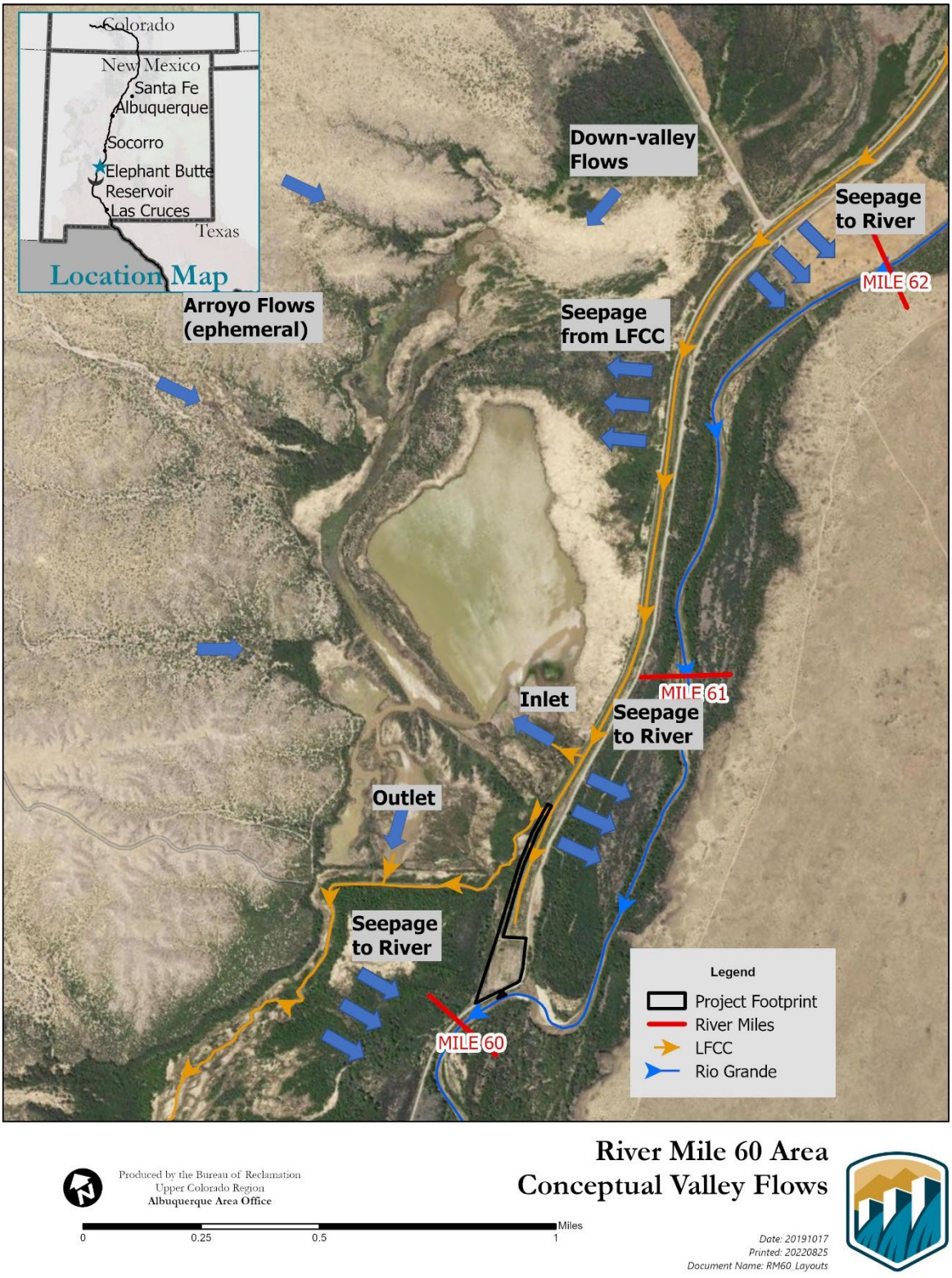


*Figure 8. Conceptualized flow paths in the RM 60 area.*

## 3.2.2 Environmental Consequences

### *3.2.2.1 No Action Alternative*

Water deliveries to the Reservoir may be less efficient, which may result in a longer time to address New Mexico's current debit status and/or affect Rio Grande Compact compliance in the future. The area may continue to adjust naturally, which may or may not provide water for the listed avian species habitat because some parts of the LFCC West are becoming filled with vegetation and may become blocked without human intervention.

### *3.2.2.2 Proposed Alternative*

Water conservation efforts upstream of the Project could increase flows in the LFCC at the proposed RM 60 outfall site and upstream sections of the LFCC. These flows would be within the typical operating range of the LFCC over the last 20 years, in accordance with the 2016 MRG BO, and coordinated with the Service. Therefore, no environmental impacts are expected.

A possible benefit of operation of the RM 60 outfall is reduction of the frequency of excavation and channel clearing in the LFCC that has historically been needed to maintain continuity of flows.

The operation of the outfall will continue to deliver flows to the LFCC West in order to meet the goal of no negative impacts to the health of the bird habitat and wetlands along the LFCC West. As described in the Section 4.1, Adaptive Management and Monitoring, the health of the bird habitat will be monitored during experimental operations and no changes are expected as a result of the operation of the outfall. Operation of the RM60 outfall will be consistent with the 2016 MRG BO and MRGCD has agreed that no additional river drying will occur as a result of experimental operations of the RM60 outfall.

When water is released from the RM60 outfall, it will enter the water already in the river channel. The released water will be within the amount of water typically carried by the river and thus, is not expected to cause any environmental changes. The riprap apron will prevent erosion from occurring and maintenance of the apron will occur as needed.

The pond near RM 60 will not be negatively impacted by the operation of the outfall nor is it expected to significantly contribute to proposed water flow for the experimental operations of the outfall covered under the proposed Project. If significant changes to the pond, other than minor temporary water level fluctuations, are observed during operation of the RM 60 outfall, the outfall will be closed and the need for additional compliance will be assessed by the AM Team.

The fail-safe option with this Proposed Alternative is to close the gates on the outfall culverts to allow full flow to the LFCC West, maintaining the current condition.

# 3.3 Clean Water Act Jurisdiction, Wetlands, and Riparian Vegetation

## 3.3.1 Affected Environment

Reclamation has reviewed the definition of irrigation exemption in the Clean Water Act (CWA) regulations and determined the LFCC meets the definition of an irrigation ditch as it both delivers irrigation water and captures irrigation return flows from agricultural fields. The LFCC then conveys the irrigation return flows to the Reservoir with minimized losses to evaporation and ground infiltration. The water is then stored in the Reservoir before it is delivered downstream for agricultural uses. Therefore, the Project's impact to waters of the U.S., including wetlands, is non-jurisdictional under the CWA. The U.S. Army Corps of Engineers (Corps) has concurred with this approach (Section 9.5 Appendix C).

There is riparian vegetation in the Project area, on the levee road and along and in the LFCC. This vegetation was previously removed in this area as part of routine recurring LFCC maintenance under CE-22-007-1- MRG LFCC Vegetation and Sediment Maintenance Project.

The operation of the outfall will continue to deliver flows to meet the goal of no negative impacts to the health of the bird habitat and wetlands along the LFCC West. As described in the Section 4.1, Adaptive Management and Monitoring, the health of the bird habitat will be monitored during experimental operations and no changes are expected as a result of the operation of the outfall. Operation of the RM60 outfall will be consistent with the 2016 MRG BO and MRGCD has agreed that no additional river drying will occur as a result of experimental operations of the RM60 outfall.

## 3.3.2 Environmental Consequences

### *3.3.2.1 No Action Alternative*

Under the No Action Alternative, no impacts to waters of the U.S. would occur. Dewatering would not occur and would not have a temporary impact on vegetation. Water deliveries to the Reservoir may be less efficient, which may result in a longer time to address New Mexico's current debit status and/or affect Rio Grande Compact compliance in the future. Some parts of the LFCC West are becoming filled with vegetation and may become blocked without human intervention.

### *3.3.2.2 Proposed Alternative*

If needed, dewatering surface/ground water to let the infrastructure be built is a temporary impact and localized to the construction footprint. The dewatering would discharge the water back into the LFCC West downstream of the installation site. While the culverts are being installed, pumps could be installed in the LFCC upstream of the installation site to discharge water from the LFCC into the LFCC West downstream of the installation site, if Reclamation biologists determine it is necessary for vegetation health. Riparian vegetation would be expected to recover with no lasting effects.

# 3.4 Cultural Resources

## 3.4.1 Affected Environment

Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations require Federal agencies to consider the effects of their undertakings (e.g., projects or permits) on historic properties. Historic properties are legally considered to be those properties (cultural resources) eligible for listing on the National Register of Historic Places (NRHP). To be eligible for listing, a property must have "the quality of significance in American history, architecture, archeology, engineering and culture" that can be "present in districts, sites, buildings, structures, and objects" and which must "possess integrity of location, design, setting, materials, workmanship, feeling, and association" and meet at least one of a set of four criteria relating to association with historical events, historically significant people, distinctive characteristics of a period or style, and/or are likely to yield information important to prehistory or history. Cultural resources consist of discrete areas of human activity, occupation, or use, evidenced by material remains, historical documents, or oral interviews. They include archaeological and architectural resources, as well as traditional cultural properties (TCPs). Archaeological resources are spatially finite areas containing physical traces of past human activity both on and within the ground. Architectural resources are built-environment resources, typically consisting of historical buildings and structures. TCPs are locations that derive their significance from traditional values of a cultural group such as an Indian tribe or local community. All types of cultural resources can provide information and connections to past lifeways.

To comply with Section 106 of the NHPA, Federal agencies must consult on the effects of their undertakings on historic properties with the State Historic Preservation Officer, Native American Tribes, other stakeholders, and the public. The Project vicinity has long been used by humans, who left behind material remains in the form of prehistoric archaeological sites, historic archaeological sites and localities, and locations of traditional religious and cultural importance to Indian tribes and local communities. For management purposes, these remains take the form of sites, artifacts, buildings, structures, districts, ruins, features, and landscapes with cultural importance. With a few exceptions, these remains must be at least fifty years old. In the case of TCPs, the period of traditional use of that place must also be at least fifty years old. Considerable information is available from archeological resources within the Middle Rio Grande Valley. Archaeological sites in the valley span nearly the entire known period of human occupation in North America.

Before the cultural resources inventory fieldwork, a records search of previously recorded cultural resources and previously conducted cultural resource investigations within the proposed Project's area of potential effects (APE) and surrounding vicinity was performed through a review of the files available in the New Mexico Cultural Resources Information System database and at the Archaeological Records Management Section (accessed 6/14/2022). The records search identified fifteen previously recorded cultural resources and two previously conducted investigations within 500 m of the Project APE, including the materials pit and rip-rap stockpile near Fort Craig.

Thirteen of the previously documented sites are listed as prehistoric and two are listed as historic. Three of the sites are listed as eligible under Criterion D, one is listed as not eligible, and the remaining eleven have no determination of eligibility listed. There are two previous surveys listed in NMCRIS. NMCRIS-58318 was completed by SWCA in 1998 and covered 6,840 acres. A total of 70 sites was documented during that inventory. The second listed survey is NMCRIS-79146, also

completed by SWCA in 2002 for 24. 4 acres. No cultural resources were encountered during that survey. Additionally, the Marshall and Walt surveys in the early 1980s documented numerous sites on the east side of the river. None of these sites is within the Project APE and there will be no impact to these known cultural resources.

The LFCC as a Cultural Resource:
The LFCC was constructed by Reclamation in the 1950s to aid the State of New Mexico in delivering waters obligated to Texas under the Rio Grande Compact (Compact). Construction of the channel also served to improve agricultural drainage and to supplement irrigation water supplies to both the Bosque Del Apache National Wildlife Reserve as well as irrigators of the Middle Rio Grande Conservancy District. The riprap-lined channel currently parallels about 56 miles of the Rio Grande from San Acacia to River Mile 60. Historically, the LFCC conveyed up to 2,000 cfs to the Reservoir and has been credited with assisting New Mexico to significantly decrease its Compact compliance deficit. The LFCC use-life was limited due to increased storage in the Reservoir in the early to mid-1980s that buried the last 15 miles of the channel and the outfall (where the LFCC drains into the Rio Grande). The LFCC currently functions only as a passive drain for seepage and irrigation return flows.

### 3.4.2 Environmental Consequences

#### *3.4.2.1 No Action Alternative*
Under the no action alternative, there would be no construction activities associated with River Mile 60 within the LFCC and no impacts to any cultural resources in the Project Area. Recurring impacts from erosional events will continue.

#### *3.4.2.2 Preferred Alternative*
The construction of the preferred alternative will include in-channel installation of a hydraulic check structure with automated gated culverts. Below this new infrastructure there will be a rock-lined, earthen bottom open channel. A cut will be made in the 1980s levee/road and a downstream rock ramp constructed for stream flow transition to the river. Additionally, the original LFCC levee/road on the west will be rebuilt with 20—30 feet of fill material and automated gated culverts will be installed in the LFCC West.

The LFCC was constructed in the 1950s but has not, to date, been documented as a cultural resource. The proposed construction actions will have direct impact to the historic LFCC, and thus there will be an effect to an undocumented historic cultural resource. The effects can be mitigated by documenting the portion of the LFCC within the APE on a Historic Cultural Property Inventory form with an eventual aim of conducting an Historic American Engineering Record of the channel within the proposed APE. Impacts to this cultural resource would be minimized through design considerations, BMPs, and mitigated in consultation (Section 9.6 Appendix F) under the Programmatic Agreement with the State Historic Preservation Office as appropriate.

## 3.5 Threatened, and Endangered Species, and Critical Habitat

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to

federally threatened, endangered and proposed species. Table 4 lists the federally listed species that could occur in this area, and all were covered in the 2016 BO.

*Table 4. Federally listed species that could occur in the Project area.*

| Species | Listing Status | Critical Habitat |
|---|---|---|
| Rio Grande Silvery Minnow *Hybognathus amarus* | Endangered | No designated critical habitat in the Project area. |
| Southwestern Willow Flycatcher *Empidonax traillii extimus* | Endangered | Designated critical habitat in the Project area |
| Yellow-billed Cuckoo *Coccyzus americanus* | Threatened | Designated critical habitat in the Project area |

### 3.5.1 Affected Environment

This Proposed Action tiers off the 2015 Programmatic Biological Assessment and the USWFS 2016 Final Biological and Conference Opinion for Bureau of Reclamation, Bureau of Indian Affairs, and Non-Federal Water Management and Maintenance Activities on the Middle Rio Grande, New Mexico (USFWS 2016). Species and habitat life history requirements are described in both environmental documents. This Project is an included project under the 2016 MRG BO, per Reclamation's memorandum to the Service (Section 9.3 Appendix C).

#### *3.5.1.1 Rio Grande Silvery Minnow*

The Rio Grande Silvery Minnow (*Hybognathus amarus*; silvery minnow) is a federally and state listed endangered fish species. The species currently occurs in only 7% of its former geographic range and its current range now encompasses four reaches of the Rio Grande that are separated by dams: 1) Cochiti Reach, 2) Albuquerque Reach, 3) Isleta Reach, and 4) San Acacia Reach. The silvery minnow was listed as endangered in 1994 due to habitat loss, declining abundance, and because the species could be expected to become extinct in the foreseeable future due to continued threats to the species and its habitats.

Critical habitat was designated on February 19, 2003 (Service 2003). The critical habitat designation extends from Cochiti Dam downstream to the utility line crossing at RM 62 on the Rio Grande upstream of the Reservoir delta in Socorro County, excluding all pueblo lands. Thus, the Project area occurs outside of the critical habitat designation.

#### *3.5.1.2 Southwestern Willow Flycatcher*

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*; flycatcher), a federally endangered species, is a small passerine bird and is one of 11 flycatchers in the genus Empidonax (Family Tyrannidae) breeding in North America and is one of four subspecies of the flycatcher currently recognized (Service 2002). The historical breeding range for the species included southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico, but the quantity of suitable habitat within that range is much reduced from historical levels (Service 2002). The flycatcher may inhabit areas from near sea

level to over 8,500 feet, but it is primarily found in lower elevation riparian habitats. Critical habitat for the species was designated most recently in January 2013 and occurs within the Project area. The 2022 flycatcher survey results are included as Section 9.4 Appendix D.

#### *3.5.1.3 Western Yellow-billed Cuckoo*

The Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*; cuckoo), a federally threatened species, is one of two subspecies of Yellow-billed cuckoo currently recognized in the United States (Service 2014b). The historical breeding range for the species began in southwestern British Columbia and was generally west of the Continental Divide of the U.S. through the southern Rockies into New Mexico. The line then diverges from the Continental divide and follows the divide between the Rio Grande and Pecos River Basins in New Mexico and continues to the U.S.-Mexico border in the Big Bend Area of Texas (Service 2014b). Currently the species no longer breeds in Western Canada and the Northwestern U.S. Critical habitat for the species was designated in April 2021 and occurs in the Project area. The 2022 cuckoo survey results are included as Section 9.4Appendix D.

### 3.5.2 Environmental Consequences

The proposed action may affect and is likely to adversely affect species and critical habitat of threatened and endangered birds and endangered fish in the Project area, and no effect to fish critical habitat. Potential for effects to these species from the Proposed Action and the No Action Alternative are presented in Table 5.

*Table 5. Effect determinations for Federally listed species and critical habitat determinations.*

| *Species* | *Effect Determination* | *Critical Habitat Determination* |
|---|---|---|
| Rio Grande Silvery Minnow *Hybognathus amarus* | May affect and is likely to adversely affect. | No effect since the Project area is downstream of designated critical habitat. |
| Southwestern Willow Flycatcher *Empidonax traillii extimus* | May affect and is likely to adversely affect. | May affect and is likely to adversely affect. |
| Yellow-billed Cuckoo *Coccyzus americanus* | May affect and is likely to adversely affect. | May affect and is likely to adversely affect. |

### 3.5.3 No Action Alternative

Under the No Action alternative, flows in the LFCC will be similar to the historical record and the habitat in the Project area and along LFCC West will continue to age and change. The LFCC West may continue to adjust naturally, which may or may not provide water for the listed avian species habitat because some parts of the LFCC West are becoming filled with vegetation and may become blocked without human intervention.

## 3.5.4 Proposed Alternative

### *3.5.4.1 Rio Grande Silvery Minnow*

The Project has the potential for incidental take of silvery minnow due to the construction of the open outfall to the main river channel. The open outfall will consist of approximately 0.15 acres of riprap placed into the Rio Grande with a total of up to 0.25 acres of channel bed disturbance occurring during construction between January and April 2023. This is the only portion of the proposed Project that would have a direct effect and the potential for incidental take of silvery minnow which is known to occupy the river in this area (Dudley et. al 2022). The rest of the Project construction will be conducted away from the flowing water of the Rio Grande and will be confined to the LFCC and drain areas where the species has not been collected during annual surveys recently conducted by Reclamation biologists.

Because it is necessary to construct the open outfall to the main river channel to make the Project operational, the Project may affect and is likely to adversely affect the silvery minnow. The Project footprint is downstream of the extent of the species critical habitat so the Project will have no effect on silvery minnow critical habitat. Despite the potential for adverse effects to the species, measures taken during construction will aim to minimize any potential impacts. The Project's construction plan is designed to minimize the interaction with the wetted habitat of the Rio Grande to minimize impacts to the aquatic environment. Incidental take for construction of this Project will be encompassed within Reclamation's annual accounting and reporting to the Service for the 2016 BO, which will include post-project refined acreages across these types of covered projects.

Operation of the outfall is not expected to have any effects to the silvery minnow because there will be no increase in drying due to the experimental water operations of the RM 60 outfall. These operations will be in accordance with the 2016 MRG BO and coordinated with the Service.

### *3.5.4.2 Southwestern Willow Flycatcher and Yellow-billed Cuckoo*

The Project may affect and is likely to adversely affect the flycatcher and cuckoo critical habitat. The construction of the controlled outfall at RM 60 is expected to directly impact approximately 3 acres of suitable and 1.5 acres of moderately suitable habitat for the flycatcher (Siegle and Moore 2022a), and an additional 1.5 acres of suitable habitat for the cuckoo (Siegle and Moore 2022b). Project effects on the flycatcher and cuckoo critical habitat will occur in areas where vegetation removal is necessary for construction of the Project. Areas where vegetation will be removed will include areas where the hydraulic check structure, the access road, raising of the LFCC western embankment, and the LFCC embankment culvert will be constructed, so no additional effects to critical habitat other than those realized during vegetation removal are anticipated from these activities. The staging area being used for the Project has previously been disturbed and will not cause additional effects to the flycatcher or cuckoo critical habitat. Operation of the new outfall will ensure that water is continued to be delivered to the LFCC West to meet the goal of no negative impacts to the health of the existing riparian habitat between RM60 and the current LFCC confluence with the Rio Grande (at river mile 54.5). Incidental take for this Project will be encompassed within Reclamation's annual accounting and reporting to the Service for the 2016 Biological Opinion, which will include post-project refined acreages across these types of covered projects.

Construction will begin in January 2023 and is expected to be completed before April 15, with the exception of welding in May for gate automation and monitoring equipment. Welding is not expected to affect the nesting activity of the flycatcher or cuckoo; however, there were 18 flycatcher

territories and 1 cuckoo territory within ¼ mile of the welding area in 2022. Prior to welding, Reclamation will conduct nesting bird surveys in the area. Also, the territories will be monitored during the 2023 nesting season as part of the regular survey effort. If take occurs due to the welding, it will be reported in the 2023 annual MRG BO report to the Service. If any other construction activity extends into nesting season, Reclamation will conduct nesting bird surveys in the area periodically during nesting season and coordinate with the Service if new nesting sites or territories are identified that might be impacted by the Project. Coordination with the Service will ensure that adequate measures are taken to minimize impacts to any additional nesting sites that are detected and anticipated to be impacted during Project construction.

# 3.6 Indian Trust Assets

## 3.6.1 Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian tribes or individuals. The Department of the Interior's policy is to recognize and fulfill its legal obligations to identify, protect, and conserve the trust resources of federally recognized Indian tribes and tribal members, and to consult with tribes on a government-to-government basis whenever plans or actions affect tribal trust resources, trust assets, or tribal safety (see Departmental Manual, 512 DM 2). Under this policy, as well as Reclamation's ITA policy, Reclamation is committed to carrying out its activities in a manner which avoids adverse impacts to ITAs when possible, and to mitigate or compensate for such impacts when it cannot. All impacts to ITAs, even those considered nonsignificant, must be discussed in the trust analyses in NEPA compliance documents and appropriate compensation or mitigation must be implemented.

Trust assets may include lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. Impacts to ITAs are evaluated by assessing how the action affects the use and quality of ITAs. There are no known ITAs in the Project area. Therefore, the proposed action does not impact any ITA resources. Any action that adversely affects the use, value, quality, or enjoyment of an ITA is considered to have an adverse impact to the resources.

## 3.6.2 Environment Consequences

### *3.6.2.1 No Action Alternative*

The No Action Alternative would have no effects to ITAs.

### *3.6.2.2 Proposed Alternative*

The Proposed Alternative would have no effects to ITAs.

# 3.7 Cumulative Effects

Cumulative effects under NEPA are the direct and indirect effects of a proposed project alternative's incremental effects, when they are added to other past, present, and reasonably foreseeable actions regardless of who carries out the action (40 CFR, Part 1508.7).

Other ongoing activities along the Rio Grande can negatively impact water quality, erosion, channel maintenance, sediment levels and riverine habitats. These include municipal wastewater discharges, urban runoff, agricultural runoff, riparian clearing, and chemical use for vegetation control and crops. Recreation along and in the riparian zone, urban and industrial growth, stocking of exotic and predator fish, and riparian clearing without revegetation could also affect multiple resources.

The Project is being phased, with an immediate short-term solution and initial AM, followed by a longer-term operations plan and AM process (Section 4.1 Adaptive Management and Monitoring). Then the Lower San Acacia Reach Improvements (LSARI) (formerly Evaluation of San Acacia Reach Option (ESARO)) will determine a permanent solution. Any short-term temporary solution should not preclude any longer term or permanent solutions. The northern Bosque del Apache (BDA) realignment is being planned and there is also infrastructure work within BDA being planned, both of which may influence water flows in the river or the LFCC near the RM60 Project area.

When combined with the effects of other cumulative actions, the effects of the Proposed Action would be largely beneficial and not contribute to any negative cumulative impacts on any resource(s) or threatened or endangered species or critical habitat.

# 4 Environmental Commitments

To minimize the potential impacts identified and analyzed above, Reclamation will follow the commitments and BMPs laid out in the Project Description (Section 9.2 Appendix B), the 2016 MRG Biological Opinion, and the following adaptive management strategies.

## 4.1 Adaptive Management and Monitoring

Experimental Operations (EO) and initial AM will be conducted by Reclamation with an interagency Adaptive Management Team at RM 60 over 2 years. EO will focus on automated gate operations to understand how gate operations (gate height) can be used to achieve the desired split in flow between the river channel and the Low Flow Conveyance Channel (LFCC) West. Also, EO will develop rating curves to measure flows passing through the culverts. This will be conducted in 2023.

Initial AM scenarios will be performed in 2023 and 2024 to focus on understanding how to operate the RM 60 outfall to maximize deliveries to the Reservoir and meet the goal of no negative impacts to the health of bird habitat in the LFCC West. AM will also be used to understand how groundwater is impacted by surface flows and what role groundwater plays in maintaining habitat. Also, AM scenarios will be considered that will evaluate the use of the LFCC and the RM 60 outfall to mitigate drying and wetting events in the river channel that may impact silvery minnow survival. Furthermore, AM will assess the efficiencies of water conveyance through the river channel versus the LFCC West.

Monitoring will be conducted by Reclamation during both EO and initial AM. There will be gages at the RM 60 outfall and LFCC West culverts, as well as river channel gages above and below RM 60

and within the LFCC West. The gages will be used to assess the effectiveness of the outfall for increasing deliveries to the Reservoir. There will also be at least 5 ground water wells within the LFCC West. The ground water wells will be monitored as a leading surrogate to determine the impact of reducing flows to the LFCC West and impacts to vegetation within the bird habitat. Bird habitat current conditions were evaluated in July/August 2022 during the annual flycatcher and cuckoo surveys (Section 9.4 Appendix D) and will continue to be conducted annually during summer months. To safeguard the LFCC West bird habitat, minimum flows will be developed for each season based on past LFCC flows (San Marcial gage) and the results of the monitoring during EO and AM scenarios. If the well monitoring indicates negative impacts to the bird habitat may be occurring, the RM 60 outfall will be closed to restore flows to current conditions and the AM Team will determine what additional compliance may be needed.

The information and analyses during the 2 years of EO and initial AM operations will be used to develop a longer-term operations manual for the RM 60 outfall. The AM team will determine if additional compliance is needed at that time.

## 4.2 Best Management Practices

All applicable BMPs will be adhered to in the EA as described in 2016 BO and Project Description (Section 9.2 Appendix B, Reclamation 2022a).

# 5 Consultation and Coordination

- Middle Rio Grande Conservancy District, Albuquerque, New Mexico
- New Mexico Interstate Stream Commission, Albuquerque, New Mexico
- U.S. Fish and Wildlife Service, Albuquerque Ecological Services Office, Albuquerque, New Mexico
- New Mexico State Historic Preservation Office, Albuquerque, New Mexico
- U.S. Army Corps of Engineers, Albuquerque District, Albuquerque, New Mexico

# 6 List of Preparers

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- James Fluke, Hydraulic Engineer, Albuquerque Area Office
- Jen Bachus, Division Manager, Albuquerque Area Office

- John Cater, Archeologist, Albuquerque Area Office
- Mark Nemeth, Division Manager, Albuquerque Area Office
- Raul Sanchez, General Biologist, Albuquerque Area Office
- Robert Padilla, Group Supervisor, Albuquerque Area Office

# 7 List of Reviewers

- Environment and Lands Division, Albuquerque Area Office
- Technical Service Division, Albuquerque Area Office
- Water Management Division, Albuquerque Area Office
- Facilities Management Division, Albuquerque Area Office
- Program Management Group, Albuquerque Area Office

# 8 References

Dudley, R.K., and S.P. Platania. 2022. Rio Grande Silvery Minnow Population Monitoring Program Results from 2021. Report to the U.S. Bureau of Reclamation, Albuquerque Area Office.

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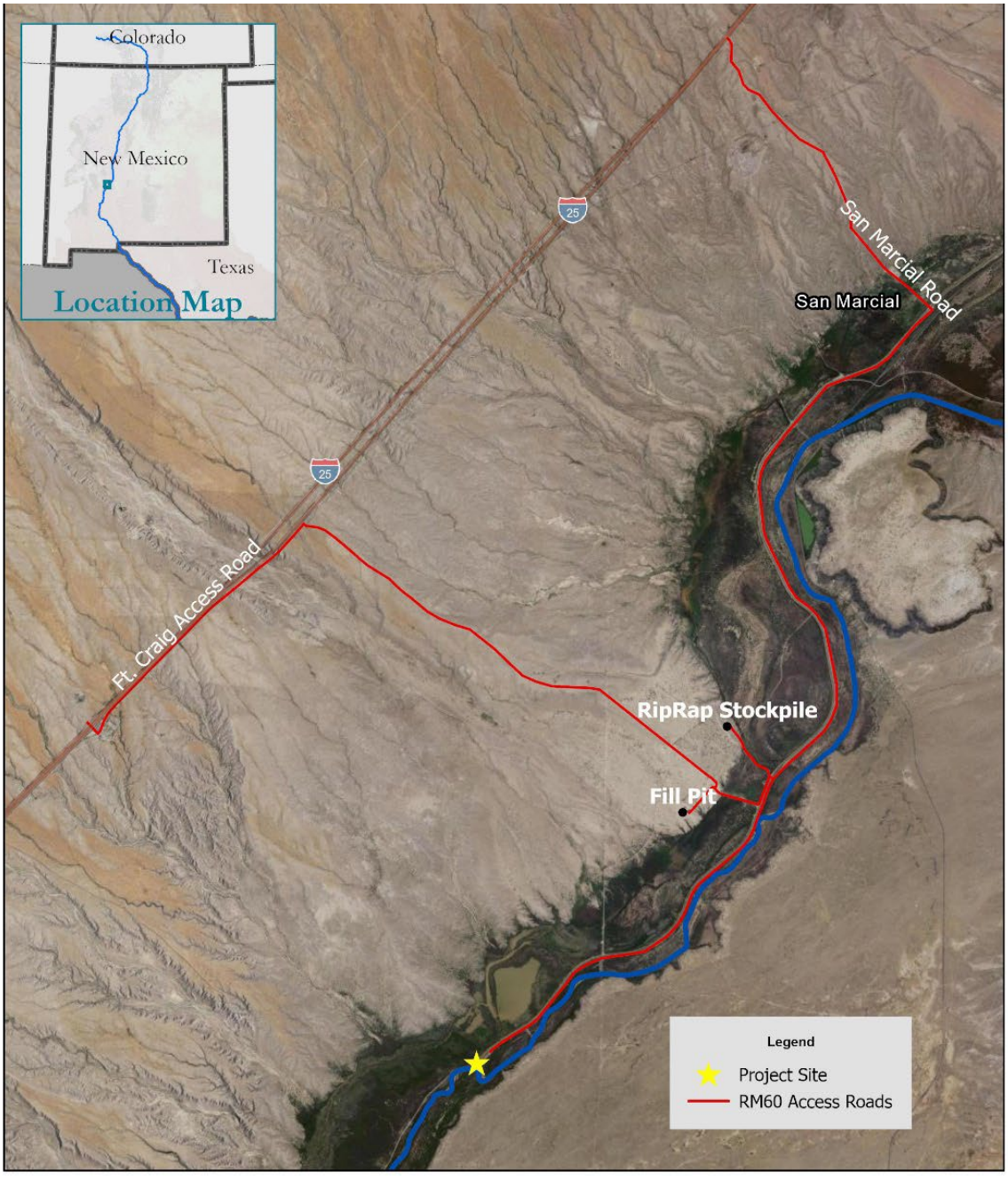
Siegle, R. and S. Moore. 2022b. Western Yellow-billed Cuckoo Breeding Habitat Suitability, 2021. Middle Rio Grande, New Mexico. Report to U.S. Bureau of Reclamation Albuquerque Area Office, U.S. Bureau of Reclamation Denver Technical Services Center.

# 9 Appendices

## 9.1 Appendix A: River Mile 60 Access Route




River Mile 60 Access Routes

Produced by the Bureau of Reclamation
Upper Colorado Region
Albuquerque Area Office

0 5,000 10,000 20,000 Feet

Date: 20191017
Printed: 20220512
Document Name: RM60_Layouts

## 9.2 Appendix B: River Mile 60 Controlled Outfall Project Description

BUREAU OF RECLAMATION

# River Mile 60 Controlled Outfall Project Description

## Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

# River Mile 60 Controlled Outfall Urgent Implementation Technical Recommendation

## Middle Rio Grande Project, New Mexico
## Upper Colorado Basin Region

*prepared by*

**Albuquerque Area Office**
**Technical Services Division**
**James Fluke, Hydraulic Engineer**
**Cameron Herrington, Senior Hydraulic Engineer**
**Robert Padilla, Group Supervisor**
**Mark Nemeth, Division Manager**

Cover Photo: Aerial view of the River Mile 60 (RM 60) project site.

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# Project Background and Purpose

The Low Flow Conveyance Channel (LFCC) flows alongside the Rio Grande from San Acacia Diversion Dam (SADD) to its outfall to the Rio Grande at River Mile (RM) 54.5. The LFCC was originally constructed in the 1950's and was operated as a surface water diversion at SADD downstream to Elephant Butte from the 1950's to the 1980's. The LFCC carried lower magnitude flows continuously to the Elephant Butte Reservoir while the main river channel conveyed flows that exceeded the LFCC's capacity. However, owing to nearly full reservoir levels in the mid-1980's and buildup of sediment in the main river channel, the Rio Grande main channel eventually migrated west at RM 60 (see Figure 1). When this occurred a culvert was installed to connect the LFCC with the main river channel. This culvert has since been buried beneath the levee road by deposited lake sediments as the reservoir filled in subsequent wet years. The old culvert is now at an estimated elevation near the bed of the existing river channel.

Currently, the LFCC functions as the main valley drain upstream of RM 64. Owing to falling reservoir levels since the late 1990's, the river channel bed has incised in this area and currently flows at an elevation lower than the existing LFCC bed near RM 60. The LFCC is currently perched above the river channel between Ft. Craig (RM 64) and RM 60. At RM 60, the riverbed is approximately 22 ft below the adjacent levee road (Figure 3) (Southwest Water Design LLC, 2019). As a result, valley flows tend to concentrate and drain into the main river channel in this section.

The LFCC departs on to a westerly flow path from its constructed channel at RM 60. At the terminus of the constructed LFCC near RM 60 a berm and the levee road currently prevent LFCC flows from flowing directly into the river (Figure 2). A backwater is induced by this condition, and sediment has accumulated in the LFCC upstream of RM 60. This accumulation of sediment has reduced the LFCC channel slope from the originally constructed slope of 0.0005 ft/ft to a near zero slope in the few miles of the LFCC upstream of RM 60. This section of the LFCC requires frequent excavation and channel clearing by Reclamation crews to maintain continuity of flows. Currently the area that will contain the proposed river outfall sits at an elevation of 4,450 ft (NAVD 88), nearly 15 ft above the designed invert of the LFCC in this location (4,435.6 ft; NAVD 88).

Alongside the western edge of the LFCC is a large ponded area that is inundated much of the time with open water. This area is fed by seepage of water from the LFCC as well as valley groundwater and flows from western arroyos.

Downstream of the ponded area the LFCC overflows continue westward. Flows in this section come directly from the LFCC western embankment openings upstream of RM 60 and initially flow due west then due south. The LFCC then eventually flows into the Rio Grande channel near RM 54.5. The LFCC south of RM 60 is not a designed feature and does not have a clearly defined channel for much of this lower 7-mile length before reaching the Rio Grande main channel. Numerous Southwestern Willow Flycatcher (SWFL) nesting sites have been documented in the area fed by the LFCC overflows and this area is known to provide suitable habitat for Western Yellow Billed Cuckoo, both of which are native federally listed species in the Middle Rio Grande.

The purpose of the project described herein is to provide better controlled drainage of LFCC flows at RM 60 directly into the river channel (at a point further upstream than current) in support of efficient water delivery to Elephant Butte Reservoir under the Rio Grande Compact. This should improve downstream water delivery to Elephant Butte Reservoir and benefit water users along with riverine areas downstream. Concurrent with this purpose the project intends to also provide continuity of flows to the existing adjacent western habitat areas at RM 60 that support native federally listed species.

To achieve these purposes, flows will be controlled by a hydraulic check structure and gated culverts that will be installed in the LFCC upstream of RM 60 (Figure 6, Figure 8). The gates can be adjusted to achieve the given water surface elevation required to continue to pass water to the habitat areas through the western openings in the LFCC embankment. The design flow that must be passed by the proposed outfall of the LFCC to the river is approximately 750 cubic feet per second (cfs). This flow rate is based on the desire to pass additional flows through the LFCC using diversion of surface waters by the Middle Rio Grande Conservancy District (MRGCD) in the future. Currently, the LFCC upstream of this point has known constrictions that limit LFCC flows to approximately 500 cfs.

Downstream of the hydraulic check structure and gated culverts, a rock-lined, earthen-bottom open channel will convey flows to the main river channel at a slope of 0.005 ft/ft (Figure 6). An opening will be created in the RM 60 levee embankment, and a downstream rock ramp will be installed to allow flows to transition into the river channel from the upstream LFCC. The approximate elevation drop from the outfall opening in the levee embankment to the river channel bed will be 10 ft.

It should also be noted that this project is being implemented to help address emergency drought-related conditions in the Middle Rio Grande (MRG) valley and extremely low reservoir storage conditions at Elephant Butte Reservoir. Article 7 of the Rio Grande Compact is currently under effect and is triggered when Rio Grande Project combined storage at Elephant Butte and Caballo reservoirs are below 400,000 acre-feet. The MRG experienced below-normal runoff volumes in 2020, 2021, and 2022. Combined with above average runoff in 2019, this has led to accrued debt by the State of New Mexico in its deliveries downstream to the State of Texas. Additionally, the International Boundary and Water Commission (IBWC) has annual international treaty obligations for delivery of 60,000 acre-feet from the Rio Grande Project storage to the Republic of Mexico.

The implementation of this project is being done under very urgent and near-emergency drought conditions, so the described work in the report should be considered as a temporary measure and project with an intended design and service life of 2–4 years. The planning and implementation of this work has been expedited and may be to a less robust standard than a more permanent facility due to the urgent nature of the project. This project still requires long-term planning and design work along with a more permanent engineered system. The identified work in this report should not preclude any more long-term project needs. This project should be considered experimental and an opportunity to perform future adaptive management work for the longer-term needs of the river, LFCC, and habitat areas.

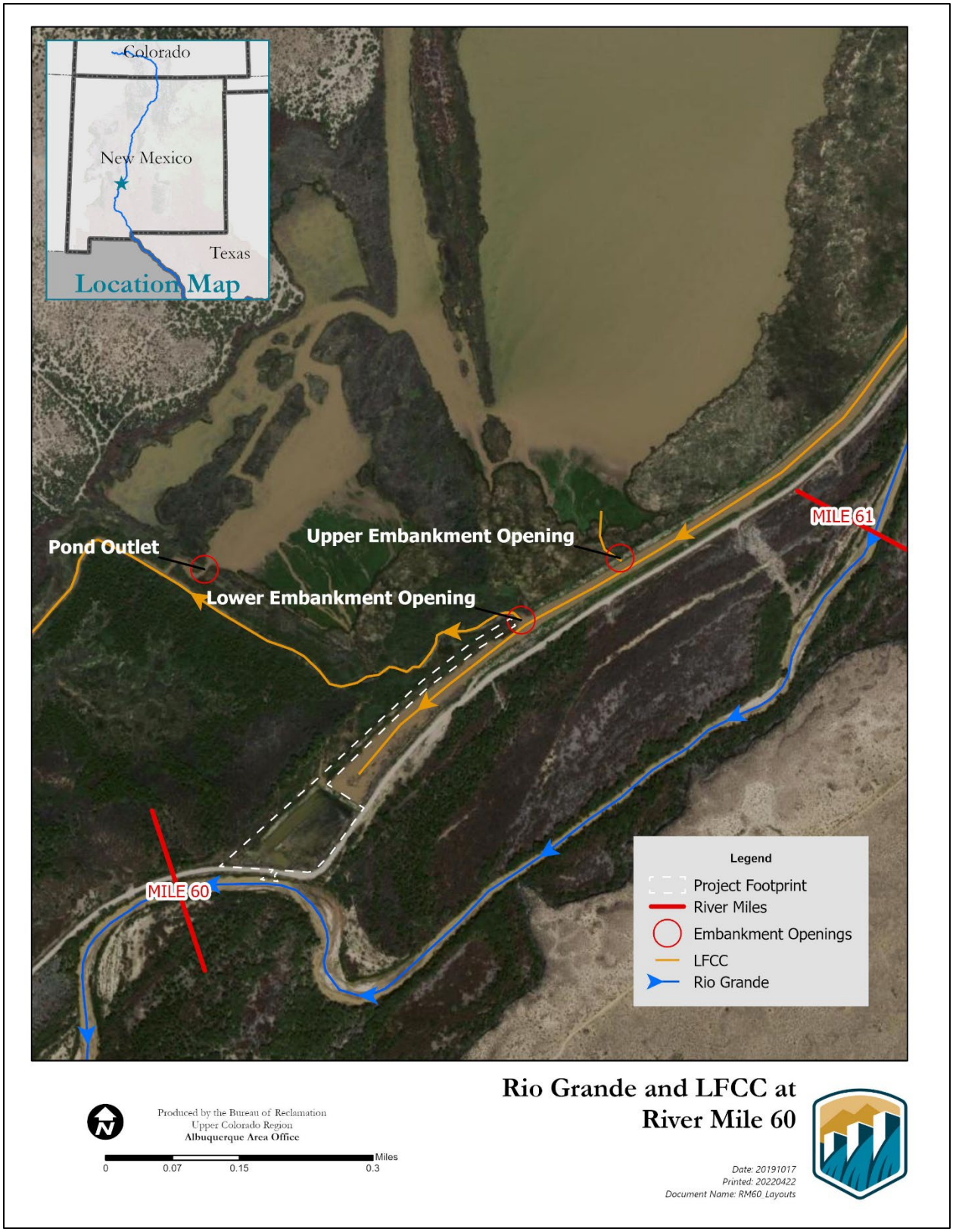


Figure 1: River Mile 60 (RM 60) Location Map

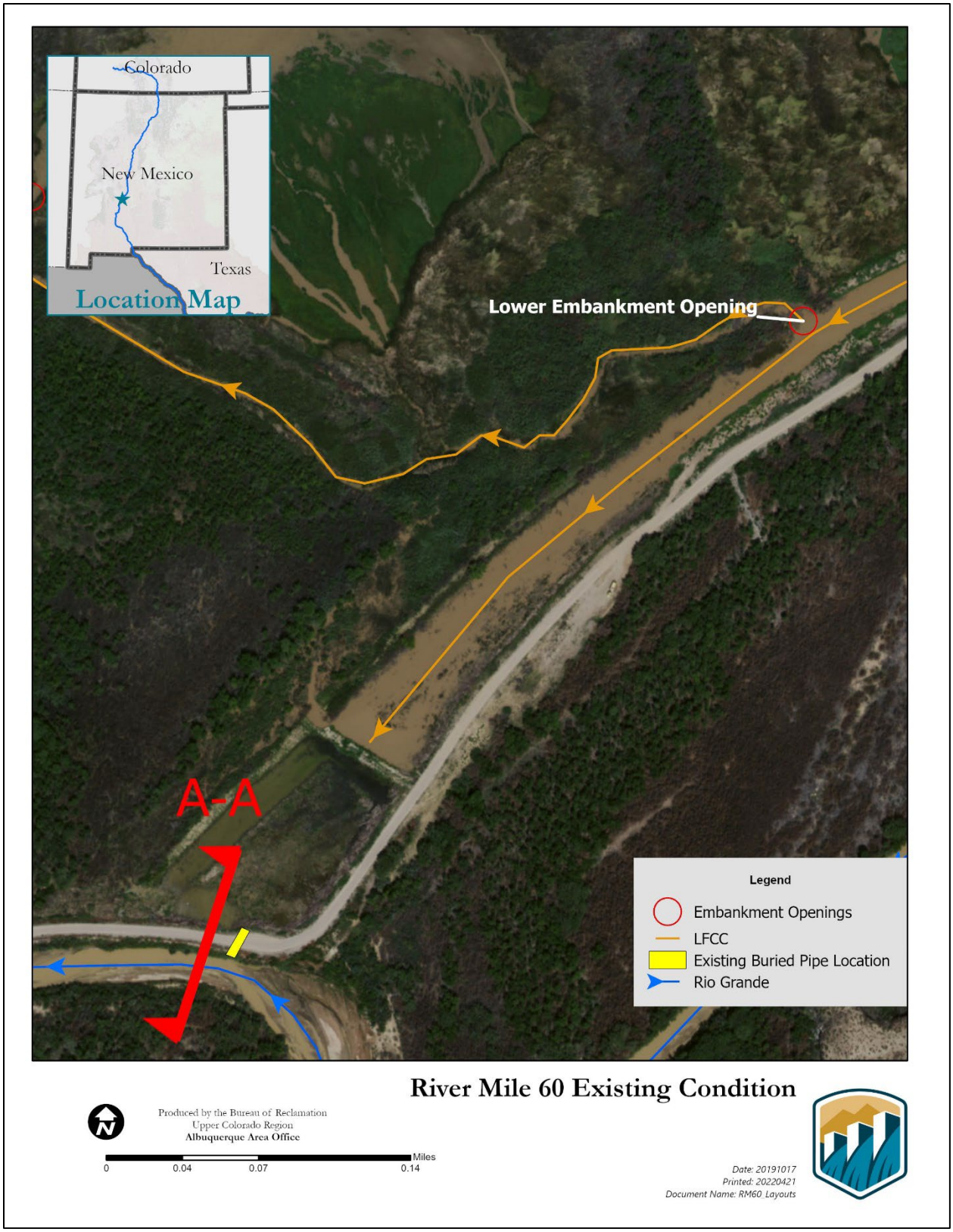


Figure 2: Location of Existing River Mile (RM) 60 Buried Culvert and Existing Channel Cross Section.

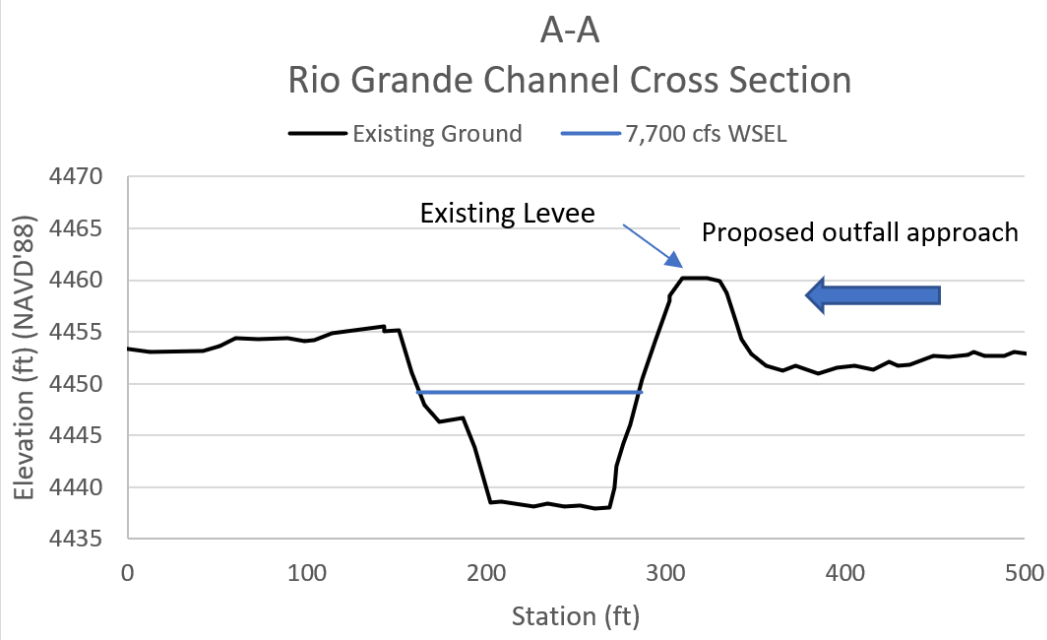


Figure 3: Cross-sectional elevation profile of Section A-A (see Figure 2) looking downstream. The main river channel is in the center.

# Project Components

## 1. Hydraulic Check Structure with Gated Culverts

An earthen check structure will be constructed perpendicular and across the existing LFCC (Figure 6, Figure 8). The check structure will be approximately 300 feet in length and span the entire LFCC top width between the western O&M road and existing levee. This structure will house three gated, 72-inch diameter corrugated metal pipe (CMP) culverts providing a total flow capacity of 750 cfs under a hydraulic head of approximately 2 feet. This structure will allow control of water levels in the LFCC and flows reaching the existing habitat areas west of the LFCC through the western overflow channel. The side slopes on the check structure will be 2:1 (horizontal: vertical). The upstream side slope of the earthen check structure will be rock-lined for erosion protection using 9" riprap placed at a thickness of 1.5 ft. 24" riprap will be used at the toe of the embankment slope for stability.

Earth fill material will be hauled in from the Val Verde fill pit near Ft. Craig. Riprap material will be hauled in from the existing riprap stockpiles near Ft. Craig.

The culverts will have a slope of 0.005 ft/ft and a longitudinal length of approximately 80 ft to accommodate the required road width on the check structure. The culverts will have inlet elevations of 4,450.4 ft (Figure 4: Profile section of the proposed 72-inch diameter gated culvert with a simulated 750 cfs flow rate.). This elevation is 1–2 feet below the existing ground at this location and

will be sufficient to drain all LFCC flows reaching this point. This elevation is approximately 6 feet above the measured elevation of the LFCC thalweg near the westernmost levee opening (Pond Outlet) (Southwest Water Design LLC, 2022). The top elevation of the culvert inlets will be 4,456.4 ft, and the crest elevation of the check structure will be 4,460 ft (NAVD 88), approximately the same elevation of the existing levee road on the east side of the LFCC. The earthen check structure will have 2 feet of freeboard at the design flow rate of 750 cfs.

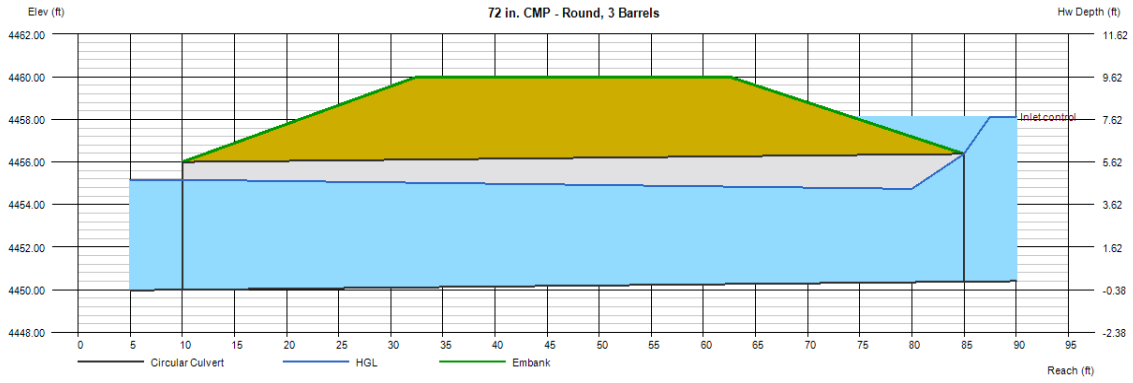


Figure 4: Profile section of the proposed 72-inch diameter gated culvert with a simulated 750 cfs flow rate.

Further dewatering of the construction area may be needed to adequately construct the foundation for the culverts and subgrade (compaction) needed for the hydraulic check structure. Soil cement is recommended to be used as the pipe embedment and backfill for the gated culverts to also help with seepage control, to minimize piping of material around the installed culverts, and to avoid "floating" of the installed pipes following construction. Seepage collars on each culvert will be used to also reduce post-construction water seepage (flow lines along the pipe axis) through the spoil embankment.

Sheet pile may be used at the upstream end of the culverts as an aid in construction and an additional measure to mitigate longitudinal seepage. The top elevation of the sheet pile will be 2-3 feet above the invert elevation of the culvert inlets, and cut-outs will be made in the sheet pile to provide a vertical support for the culverts along with acting as a partial upstream headwall. The sheet pile will extend laterally 5-feet to each side of the culvert array, or otherwise as material is available. Available sheet pile may be cut into smaller pieces if required. The sheet pile will be driven using a hydraulic hammer excavator attachment. Sheet pile may be driven up to a depth of 20 feet.

## 2. Outfall Channel

A channel will be constructed to carry flows from the gated culverts to the outfall structure at a continuous slope of 0.005 ft/ft. This channel will have a 26-foot earthen bottom width and rock-lined side slopes at a 2:1 (horizontal:vertical) slope (Figure 5). The side slopes will be rock-lined for erosion protection. The channel slopes will be lined using 9" riprap placed at a thickness of 1.5 ft. 24" riprap will be placed at the toe of the channel slope as needed for stability.

Spoil material from channel excavation will be spread on site and used in the soil cement mixture. Organic material will be piled onsite and burned or chipped and spread.

## 3. Open Outfall to Main River Channel

Flows passing the check structure and gated culvert will flow downstream through the outfall channel to an open outfall and into the main river channel (Figure 6, Figure 8). The open outfall will be excavated into the existing levee and will have an outlet invert elevation of 4,448 ft. Excavated spoil material from channel excavation will be spread on site and used in the soil cement mixture. Organic material will be piled onsite and burned or chipped and spread. This elevation will ensure that river flows do not back into the LFCC during normal flows as well as provides sufficient slope to keep sediment from accumulating between the proposed gated culvert and open outfall. A bottom width of 38 feet, minimum depth of 6 feet, and side slopes of 2:1 (horizontal:vertical) will contain the required flow rate of 750 cfs with a flow depth of approximately 2.5 feet and a channel freeboard near 3 feet (Figure 5). The outfall structure will require a rock ramp and a landing with riprap protection, given that a large scour hole will otherwise develop in the existing riverbed. This location will need to be monitored and periodically maintained, given the large elevation drop from the outfall to the riverbed. The density of the placed rock material is greater than the riverbed sediments, so any rock material placed along and into the scour hole will settle and be displaced over time.

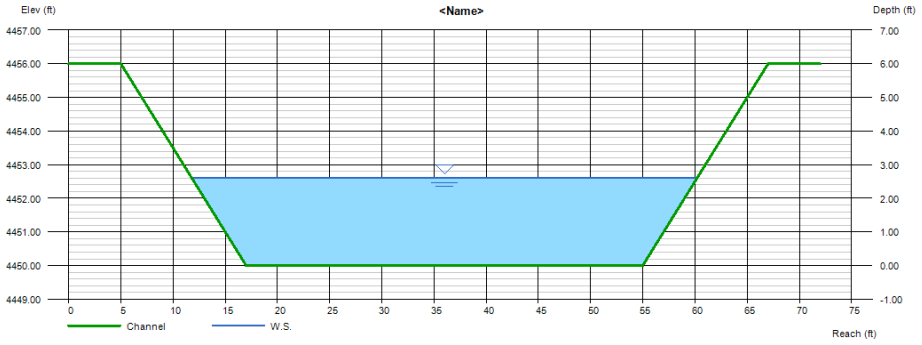


Figure 5: Typical cross-section of open outfall and outfall channel showing the flow depth at a flow rate of 750 cfs.

## 4. Access Road

An access road to accommodate passenger and tracked vehicles will be constructed over the proposed check structure and continuing on the existing levee road south of the proposed open outfall (Figure 8). The road should be covered by a minimum of 3 ft of fill above the culverts to carry heavy tracked equipment loads. The equipment access road crossing the check structure should have 30-foot top width to accommodate equipment and the access road on the LFCC levee should have a 24-foot top width and 2:1 (horizontal:vertical) side slopes. The access road shall be constructed to allow the maximum turning radius of transport crossing the check structure.

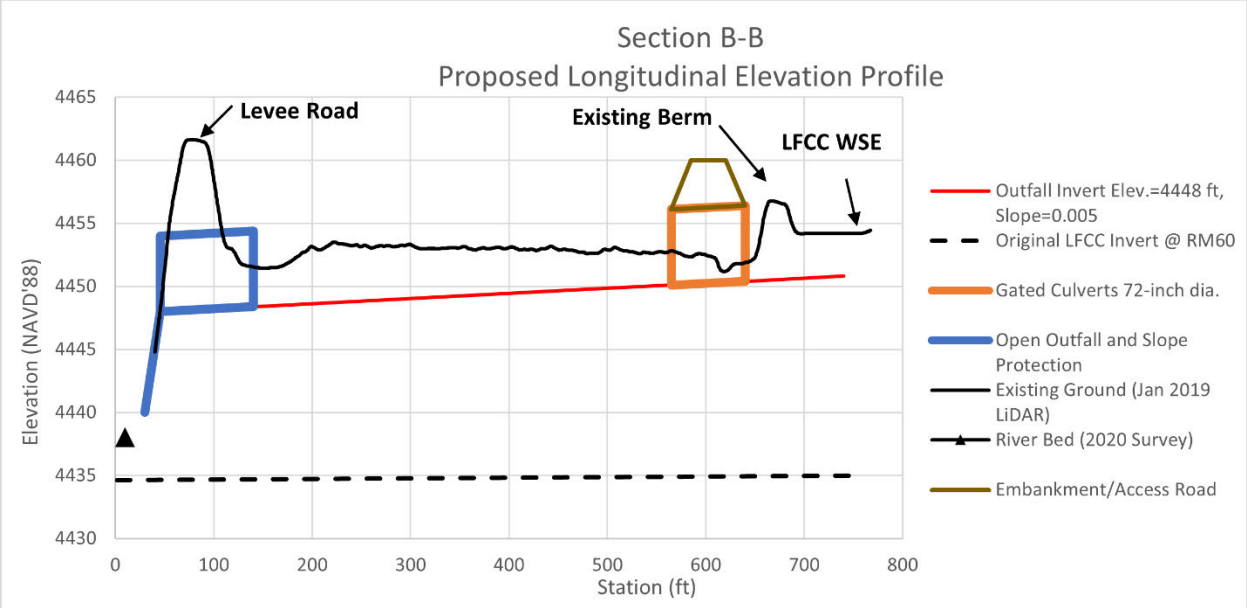


Figure 6: Proposed longitudinal elevation profile and project components along Section B-B (see Figure 7)

## 5. Raising of LFCC Western Embankment

The existing western embankment of the LFCC will need to be raised using imported fill material to contain the flows intended to pass through the proposed outfall (Figure 8). Fill will be imported from the Val Verde fill pit. Spoils from excavation may be used if suitable. Currently the western embankment containing the LFCC is at approximately 4,456 feet in elevation, which is up to 10 feet lower in elevation than the current eastern LFCC levee and road. The top of the proposed gated culverts have elevations at the inlet of 4,456.4 feet, and an expected hydraulic head of approximately 2-feet is expected at the 750 cfs flow rate. Therefore, the western LFCC levee road should be raised at least 5.5 feet or to an elevation of 4,461.5 feet to have a minimum 3-foot freeboard at the maximum expected flow rate. This western embankment will also function as a road and provide access to the west-side LFCC overflow openings, should work be required at those locations in the future.

## 6. LFCC Embankment Culvert

Two 72-inch diameter CMP culverts of approximately 40-foot length will be installed in the lower LFCC western embankment opening that currently overflows to the west of the constructed channel (See Figure 7). These will be installed at a time to be determined based on adaptive management operations and future system adjustment to those operations

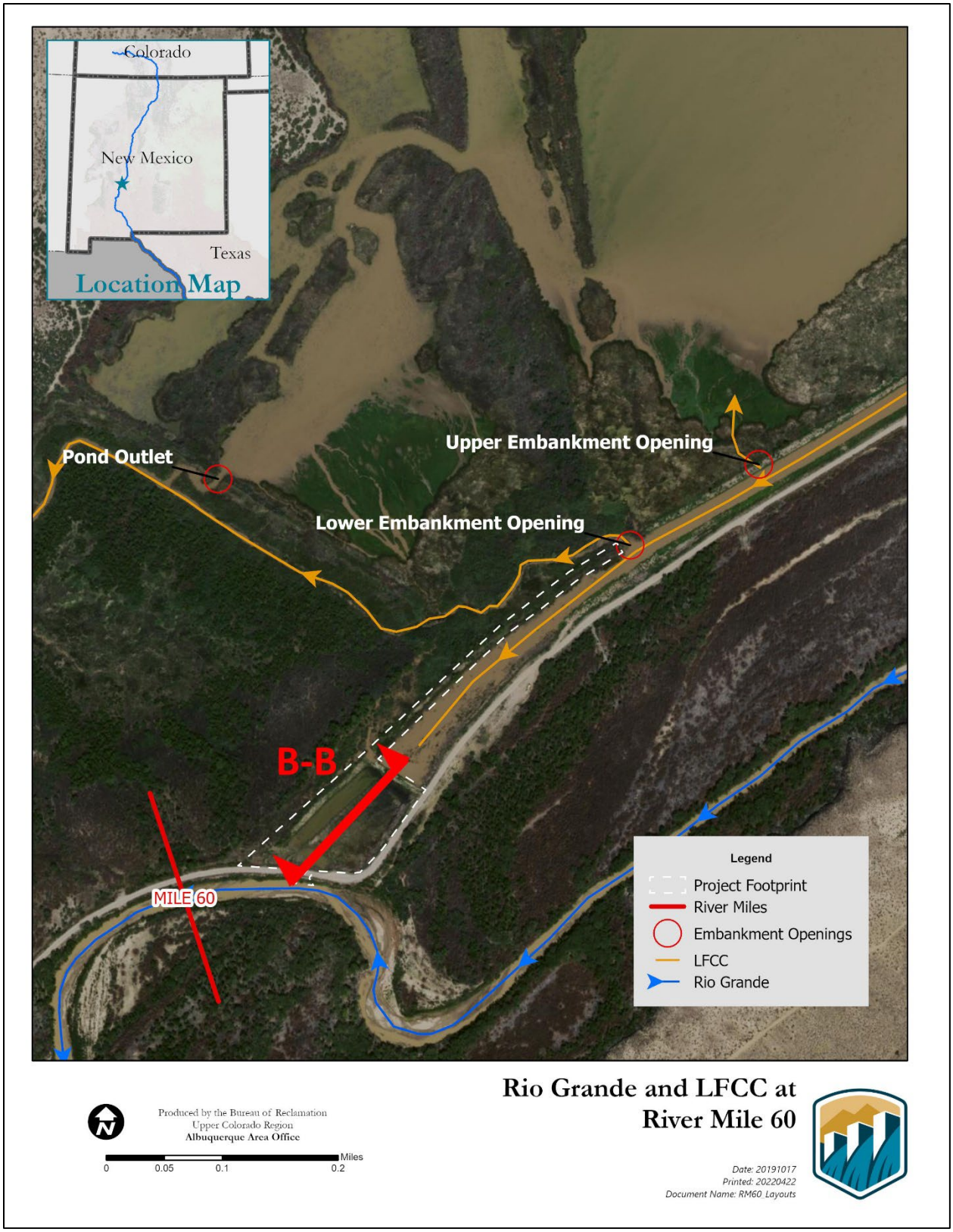


Figure 7: Proposed outfall alignment Section B-B (see Figure 6)

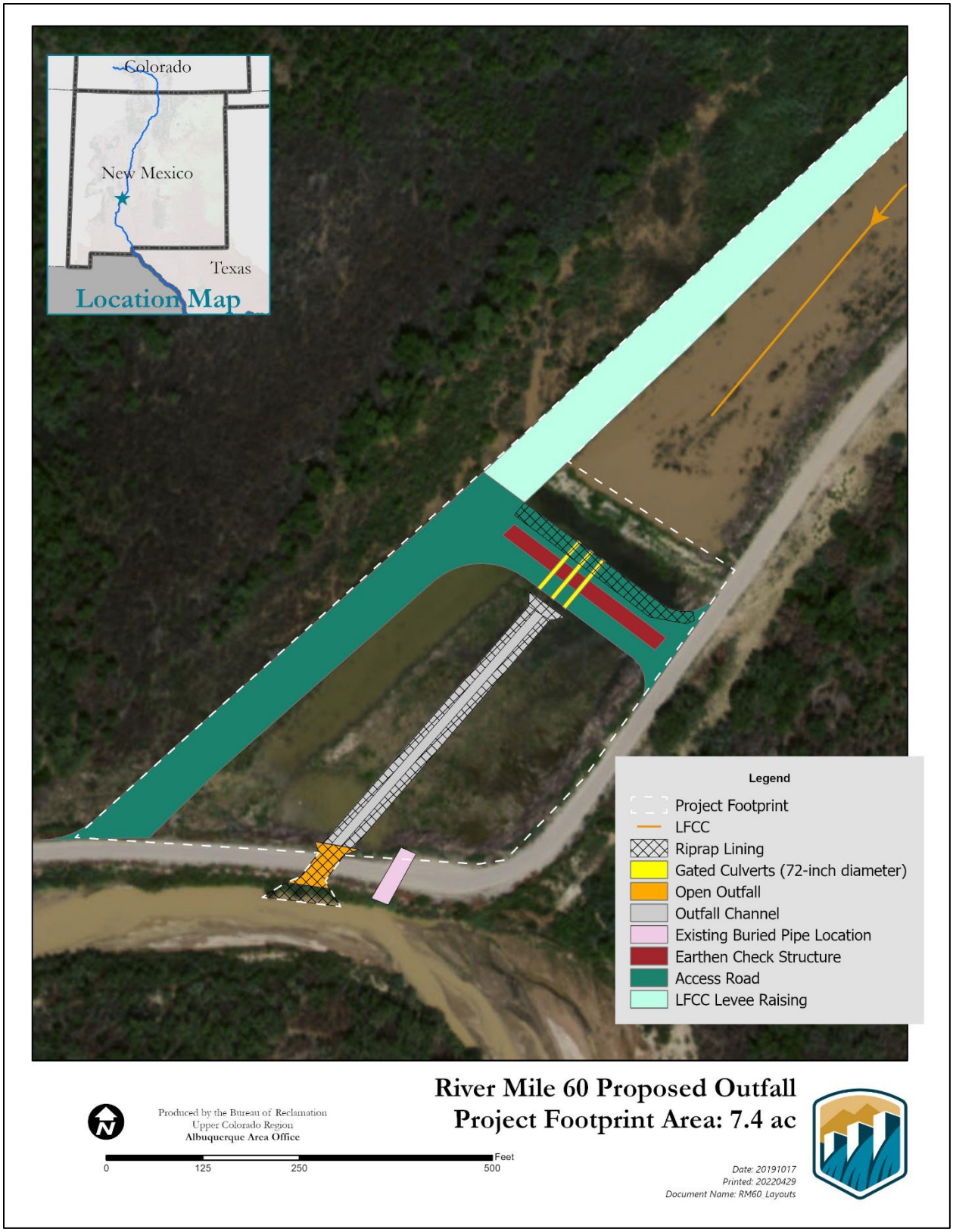


Figure 8: River Mile 60 (RM 60) Proposed Outfall project elements plan view.

# Sequencing

The following construction steps are expected for this project, although not necessarily in the exact sequence listed.

1. Mobilize to the construction site.
2. Prepare the construction site and staging areas (mowing and grading, access improvement, any access ramps required).
3. Delivery of riprap and fill material to the project staging area.
4. Establish an interim access road across the existing LFCC berm.
5. Clear and excavate the existing area protected by the berm across the LFCC to the required grade for culvert placement and construction of the check structure and the outfall channel.
6. Dewater the construction footprint area as required using pumping. If required, the pumped groundwater will be discharged to the LFCC upstream of the project site. If pumped groundwater is not required to be discharged into the LFCC upstream, it may be discharged into the river channel.
7. Raise the western LFCC embankment to a minimum elevation of 4,461 ft (NAVD 88) to contain flows with a freeboard of 3 ft. Establish an access road along this levee to the Lower Berm Opening.
8. Outfall Channel Construction
    a. Excavate the outfall channel from the outlet point of the gated culverts to the open outfall rundown.
    b. Excavate the open outfall rundown in the existing levee.
    c. Line the sides of the outfall channel with riprap.
    d. Construct a riprap landing in the river channel to prevent immediate formation of a scour hole.
    e. Place additional riprap slope protection on the bankline from the riprap landing through the outfall rundown. Use 24" riprap at the toe of the slope and 9" riprap placed at a thickness of 1.5 feet.
    f. Place 24" riprap rundown to the river channel.
9. Check Structure and Culvert Installation
    a. Excavate trenches to the grade required for placement of the culvert bedding for each of the 3 culverts. If unsuitable soils (clays, silt, or peat materials) are found to make up the culvert sub-grade, excavation of an additional 6 inches below the culvert bedding is recommended.
    b. Fill the culvert trenches with the bedding required for each off the 3 culverts.
    c. Prepare the soil cement mixture.
    d. Set the CMP culverts in place along with seepage collars and pour soil cement. Sandbags, steel cables, or other means may be used to weight the culverts in place and prevent them from floating. Allow soil cement to set and dry.
    e. Construct the embankment using earthen fill material. Fill placed above the level of the CMP haunches should be compacted to a relative density of 70% or to the density required to pass tracked equipment.
    f. Install the culvert gates, gate structures and gate operator's catwalk.
    g. Place and compact fill in lifts above culverts to the grade of the access road.
    h. Loose riprap will be placed along the upstream embankment slope of the hydraulic check structure for erosion and wave protection.

i. Grade and compact the access road across the hydraulic check structure and culverts.

10. Remove the existing upstream earthen berm and allow LFCC flows to reach the inlets of the three culverts. Excavated spoil material from channel excavation will be spread on site and used in the soil cement mixture. Organic material will be piled onsite and burned or chipped and spread. The gated culverts will be used as required to achieve the needed water level to maintain desired flow in the western habitat areas.

# Access

Equipment access to the site will be along the existing levee road from the San Marcial equipment yard. Vehicular access from I-25 will be via the San Marcial exit (I-25 Exit 125 to NM 178, cross the San Marcial bridge and continue southwest on the LFCC levee road) (Figure 9). Alternately the site can be accessed via the Ft. Craig exit (I-25 Exit 115 to NM 109, take Old US Hwy 85 North approx. 2.8 miles to Ft. Craig Road. Gate access is required).

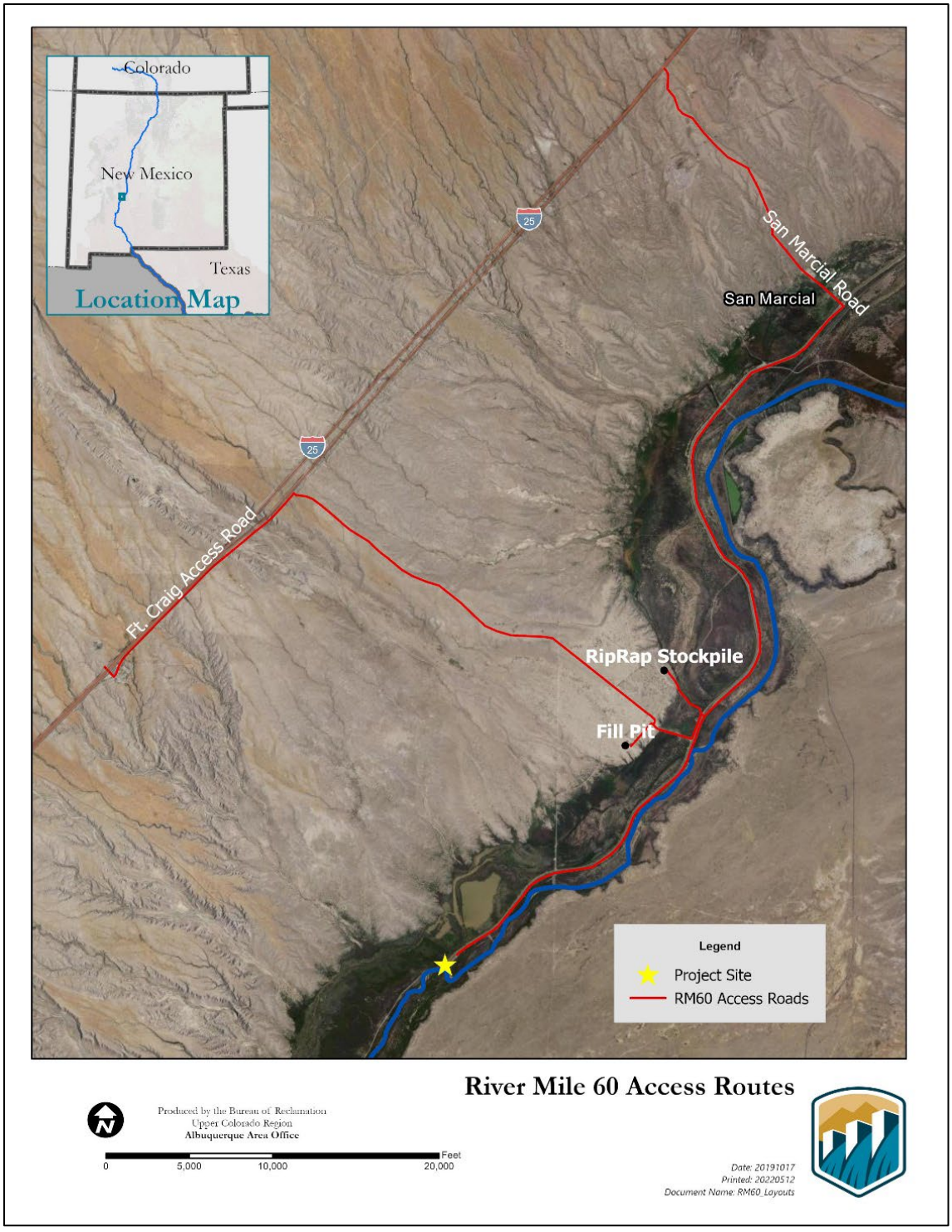


Figure 9: Vehicular access routes to the River Mile 60 (RM 60) project site and to the riprap stockpile and fill pit.

# Staging/Site Disturbance

Equipment staging will be along the existing levee road and parking areas.

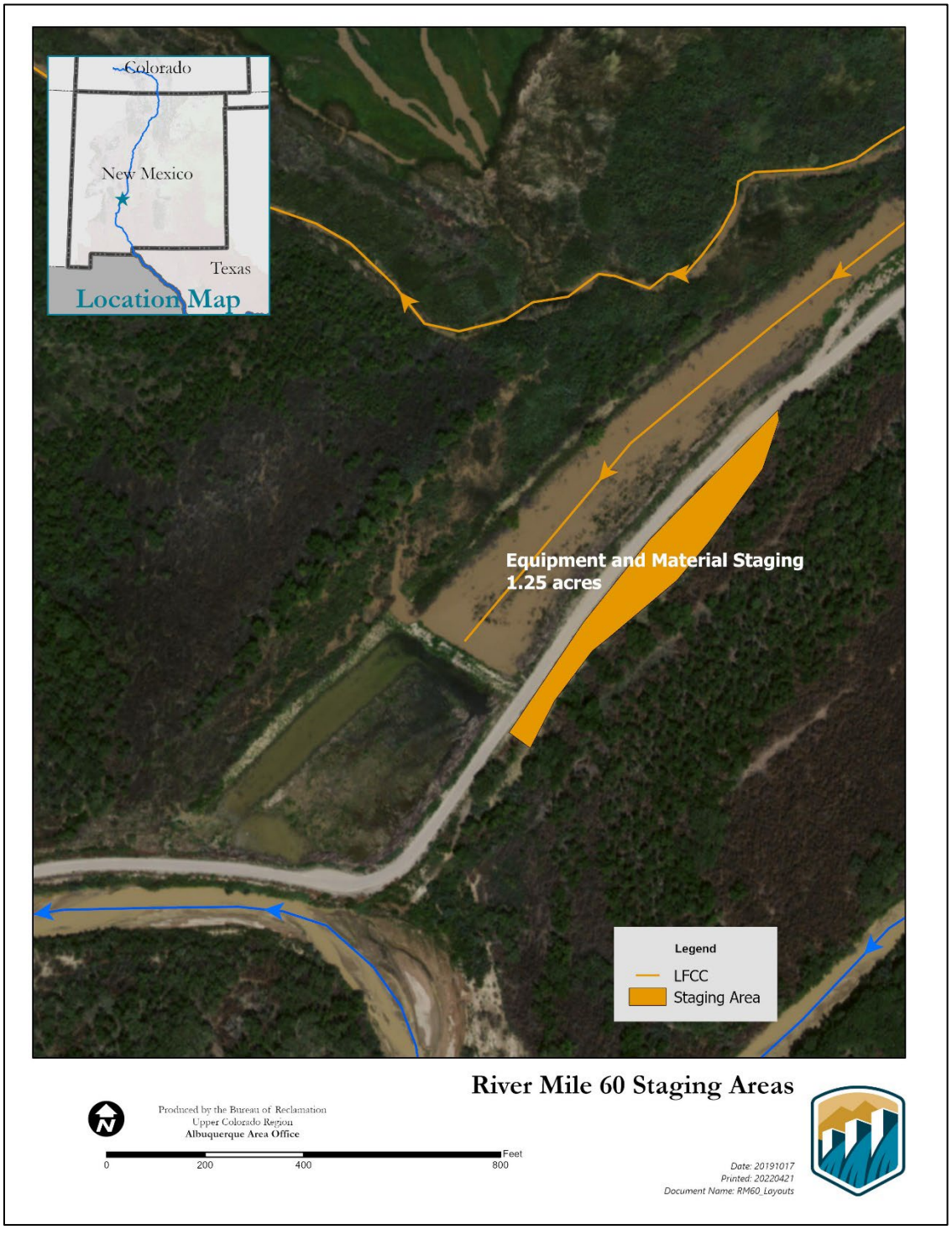


Figure 10: Equipment and material staging area for the River Mile 60 (RM 60) project site.

# Construction Operations

The following best management practices (BMPs) are intended to minimize the risk of effects from construction and maintenance activities related to river infrastructure maintenance and restoration. These BMPs apply generally to construction and/or maintenance activities, hereafter referred to as work, and may not be applicable in all cases. Updates to these BMPs will be provided to the Service as adaptive management indicates the need.

## Timing of the Proposed Action

1. The Action Agency/Project Proponent/Implementing Party will seek to avoid impacts to birds protected by the Migratory Bird Treaty Act (16 United States Code [U.S.C.] 703; MBTA), including the flycatcher and cuckoo, by conducting work activities outside of the normal breeding and nesting season (April 15 to August 15, or September 1 for work in suitable cuckoo habitat).

    1.1. If work is necessary between April 15 and August 15 (or September 1 for work in suitable cuckoo habitat), suitable/occupied migratory bird habitat will be avoided during the construction activities as much as possible, utilizing the most current annual survey results in conjunction with habitat suitability. The Action Agency will use current flycatcher and cuckoo monitoring data to avoid work within 0.25 miles of an active nest as much as possible. Coordination and consultation with the Service will occur prior to such work activities.

    1.2. Reseeding or revegetation may be accomplished by hand or by mechanized means, such as using a Truax imprinter followed by hand or tractor broadcast seeding (see section Vegetation Planting and Control below). Planting via mechanized means, includes using a hand-held or tractor-mounted auger. If mechanized means are used for either reseeding or replanting in the April 15 to August 15 timeframe (or September 1 for work in suitable cuckoo habitat), migratory bird surveys would be conducted immediately prior to the work to determine if any breeding birds are present. If birds are detected, Reclamation and/or the appropriate project partner(s) would coordinate with the Service to determine appropriate next steps.

2. The Action Agency will seek to avoid impacts to the New Mexico meadow jumping mouse by not conducting work activities from August 15 to October 31 if suitable mouse habitat is found during mouse habitat surveys conducted prior to work. Mouse habitat surveys will occur in early summer (June or July) or when vegetation that characterizes mouse habitat is most likely to be at its peak growth. If suitable mouse habitat is found, Reclamation and/or the appropriate project partner(s) will coordinate with the Service prior to work. Road maintenance such as grading and washout repair may be performed throughout the year to maintain safe access to and from the river, but vegetation control will not occur between April 15 and August 15 (or September 1 for work in suitable cuckoo habitat), as per MBTA measure 1 above.

## Water Quality

3. The Action Agency will obtain all applicable permits prior to implementation of the project, including Clean Water Act permits (CWA). The Action Agency will comply with the requirements of the CWA and other permits associated with the project, including required reporting to the appropriate authorities as needed and will not begin work until all required permits are obtained.

4. Silt fences and/or appropriate erosional controls will be used around the project site to manage water runoff in the site in accordance with Clean Water Act requirements.

5. The Action Agency will visually monitor for water quality in the areas below areas of river work before and during the work day. Water quality will be monitored during construction and after equipment operates in the river channel. Monitoring will include visual observations and may include direct sampling, as appropriate.

    5.1. If direct sampling is needed, water-quality parameters to be tested include pH, temperature, dissolved oxygen, and turbidity. Parameters will be measured both upstream and downstream of the work area.

    5.2. Responses to changes in water-quality measures exceeding the applicable standards would include reporting the measurements to the New Mexico Environment Department Surface Water Quality Bureau and moving construction activities away from the shore.

## Equipment and Operations

6. Reclamation-led work activities that have the potential for adverse impacts will be monitored by properly trained Reclamation personnel in order to ensure compliance. Non-Reclamation partners will have an onsite environmental monitor during all work activities that have the potential for adverse impacts in order to ensure compliance. Also, an environmental monitor will regularly assess other activities to ensure compliance.

7. The Action Agency will operate equipment in an area as little as possible to minimize disturbance of sediments. When operating equipment within the wetted channel, the following practices will be used to minimize disturbance of sediments:

    7.1. Minimize movement of equipment, and;

    7.2. Minimize contact with the riverbed when not operating equipment.

8. Each individual operator will be briefed on local environmental considerations specific to the project tasks.

9. Minimize impact of hydrocarbons: To minimize potential for spills into or contamination of aquatic habitat:

9.1. Hydraulic lines will be checked each morning for leaks and periodically throughout each work day. Any leaky or damaged hydraulic hoses will be replaced.
9.2. All fueling will take place outside the active floodplain with a spill kit ready. Fuel, hydraulic fluids, and other hazardous materials may be stored on site overnight, but outside the normal floodplain, not near the river or any location where a spill could affect the river.
9.3. All equipment will undergo high-pressure spray cleaning and inspection prior to initial operation in the project area.
9.4. Equipment will be parked on pre-determined locations on high ground away from the river overnight, on weekends, and holidays.
9.5. Spill protection kits will be onsite, and operators will be trained in the correct deployment of the kits.
9.6. External hydraulic lines are composed of braided steel covered with rubber. When there is increased risk of puncture such as during mastication while removing vegetation, external hydraulic lines will be covered with additional puncture-resistant material, such as steel-mesh guards, Kevlar, etc. to offer additional protection.

10. Equipment will be removed from the channel in the event of high storm surges.

11. To allow fish time to leave the area before in-water work begins, equipment will initially enter the water slowly. In-water work will be fairly continuous during work days, so that fish are less likely to return to the area once work has begun.

12. Riprap to be placed in the water will be reasonably clean to the extent possible. If there are large clumps of soil bigger than 1 foot within the riprap, those clumps will be set aside during the loading or placing operations.

13. Whenever possible, airboats will be operated through the center of the channel to minimize disturbance to aquatic species, including minnows.

## Access and Staging

14. Impacts to terrestrial habitats will be minimized by using existing roads whenever possible. In general, equipment operation will take place in the most open area available, and all efforts will be made to minimize damage to native vegetation and wetlands (also see section titled *Vegetation Replanting and Control* below).

15. All necessary permits for access points, staging areas, and study sites would be acquired prior to construction activity.

## Vegetation Replanting and Control

16. A variety of revegetation strategies may be used: stem and pole cuttings (Los Lunas Plant Materials Center 2007b); long stem transplants (Los Lunas Plant Materials Center 2007a); and upland planting with and without a polymer, zeolite, or similar compound to maximize soil water retention (Dreesen 2008). Planting techniques may vary from site to site, and may consist

of buckets, augers, stingers, and/or water jets mounted on construction equipment. In some areas, a trench may be constructed to facilitate the placement of a significant number of plants, specifically stem and pole cuttings. Seeding would be accomplished using a native seed drill, where feasible, and spread with a protective covering which would provide moisture to the seeds.

17. Vegetation control may consist of mechanical removal, burning, mowing, and/or herbicide treatment. Herbicides will be used when non-chemical methods are unsuccessful or are not economically feasible (see section Herbicide and Pesticide Use below).

    17.1. Vegetation control will be completed between August 15 (or September 1 for work in suitable cuckoo habitat) and April 15. Any need for deviations from this work window would be considered on a project-specific basis and coordinated with the Service. If work is planned within two weeks before April 15 or after August 15 (or September 1 for work in suitable cuckoo habitat), the Action Agency will conduct additional surveys, if warranted, to determine the presence of breeding flycatchers, cuckoos, or other breeding birds. Reclamation and/or the appropriate project partner will coordinate monitoring and work activities with the Service, as appropriate, if bird nests are found.

18. Native vegetation at work sites will be avoided to the extent possible. If large, native woody vegetation (primarily cottonwood), needs to be trimmed or removed, they will be replaced at a ratio of 10:1. When and where possible, small, native woody vegetation will be removed or harvested at the appropriate season to use for revegetation work at another location in the project area or at another project site. Native vegetation that cannot be replanted may be mulched (mulch will be removed or spread on site at a depth of three inches or less) or temporarily stockpiled and used to create dead tree snags or brush piles in the project area upon completion.

19. Nonnative vegetation that is removed at work sites will be mulched, burned, or removed offsite to an approved location. Mulched vegetation may also be spread on site at a depth of three inches or less.

## Herbicide and Pesticide Use

20. The use of chemical herbicides or pesticides may be necessary to control undesirable plant species around stockpile sites and storage yards and also to prevent the spread of invasive species in areas cleared for maintenance activities. It also may be necessary to spray or control: arthropods (spiders, ants, cockroaches, and crickets) that pose a safety problem or are a nuisance in buildings and facilities; birds (pigeons and swallows) roosting in building structures that are considered a nuisance; and mice that get into structures and/or equipment. Since the application of herbicides and chemical spraying is tightly controlled by State and Federal agencies, Reclamation will follow all State and Federal laws and regulations applicable to the application of herbicides, including guidelines described by White (2007). Herbicides or pesticides will not be directly applied to or near water unless they are labeled for aquatic use and appropriate buffers will be observed. Communication with the Service would occur prior to any application to sites with threatened or endangered wildlife species. Reclamation would follow

the Albuquerque Area Office Integrated Pest Management Plan and Pesticide General Permit (Reclamation 2015) when applying herbicides or pesticides. The non-Reclamation project partners will follow their agencies' herbicide/pesticide guidance, if applicable. Herbicides or pesticides may be applied using low pressure spray rigs mounted to OHVs, trucks and trailers with spray bars, or backpack sprayers (for spot applications). Treatments will be conducted by trained and approved personnel observing appropriate buffer distances and label directions. Treatment will not take place when winds exceed 10 miles per hour or when rain is forecasted for the local area within 48 hours of application. Care will be taken when mixing or applying any herbicide to avoid runoff onto the ground or into the water. Surfactants may also be added to certain herbicides to maximize herbicide/pesticide performance and minimize retreatments.

## Dust Abatement

21. If water is needed for dust abatement or to facilitate grading of roads, water may be pumped from the Rio Grande, irrigation drains, sumps, or secondary channels adjacent to the river. During irrigation season (March 1 to October 31), water will not be pumped from the river but will be pumped from the irrigation drains if possible. Pumping from the river is not expected to be needed between April 15 and August 15 (or September 1 in suitable cuckoo habitat); however, if pumping is needed between May 1 and July 1 (emergencies only), Reclamation and/or the appropriate project partner(s) will coordinate with the Service to avoid impacts to minnow eggs and larvae. Outside of the irrigation season, an amount not to exceed 5% of river flows at the time of pumping may be drawn from the Rio Grande. Pumping is short duration (minutes) for filling whatever water transport equipment is used. Sumps or secondary channels adjacent to the river will be used, whenever feasible. Pump intake pipes will use a 0.25 in (0.64 cm) mesh screen at the opening of the intake hose to minimize entrainment of aquatic organisms.

## Other Measures

22. All treatment and control areas will be monitored for three years following construction to determine the effectiveness of the methods implemented and identify project-related hydrologic and geomorphic alterations. The monitoring will consist of biological, vegetation, geomorphic, and hydrologic monitoring, as appropriate to the project design and purpose.

23. The BA partners will monitor flows for two years following construction of side channels and, if flows at the nearest gage exceed the target inundation flows, will monitor the side channel for minnow entrapment in accordance with the appropriate protocol. After two years, it may be determined in coordination with the Service that further monitoring is unnecessary.

24. All project spoils and waste will be disposed of offsite at approved locations or may be used on site as appropriate to the project purpose, consistent with applicable environmental requirements.

25. All work projects will have a contract in place for the rental of portable restroom facilities during the duration of the project.

# Material Quantities

The estimated earthwork quantities required for project construction are shown in Table 1 below.

Table 1: Estimated Earthwork Quantities

| Item | Units | Maximum Expected Quantity |
|---|---|---|
| LFCC Embankment Raising (Fill) | Cu yd | 17,200 |
| Earthen Check Structure (Fill) | Cu yd | 10,000 |
| Riprap bed and side slope Material (Fill) | Cu yd | 2,400 |
| Berm Removal (Cut) | Cu yd | 3,700 |
| Outfall Channel Excavation (Cut) | Cu yd | 5,900 |

# Revision History

May 5, 2022: Initial version completed

May 12, 2022: Added language to indicate riprap will be taken from the Ft. Craig stockpiles, and earthen fill will be taken from Val Verde pit or from excavation spoils if suitable. Add language to indicate spoil material will be spread on site and used in the soil cement flowable fill mixture. Locations and access to the riprap stockpile and Val Verde fill pit were included on the access map. Added full list of standard construction BMP's for Reclamation projects. Removed reference to sheet pile following technical discussion. Length of culverts will be 70 feet rather than 75 feet following technical discussion.

May 17, 2022: Added a paragraph describing that a sheet pile cutoff wall may be used at the upstream end of the culverts to aid in setting of the culverts and as an additional protection against seepage. In addition, added a paragraph describing the installation of two culverts at the LFCC embankment opening at a time to be determined based on adaptive management operations and future system adjustment to those operations.

July 17, 2022: Culvert lengths will be 80-feet to avoid cutting the 40-foot supplied culvert sections. The width of the outfall channel will be 38-feet following field discussion. 24-inch riprap will be placed as part of the outfall to the river channel and will also be used as needed at the base of the riprap lined side slopes.

# Works Cited


1. Southwest Water Design, LLC. November 2019. Final Report Cross Section Surveys EB Reach 1000 Foot Lines September to October 2019. Task Order # 140R4018F0032 / Contract # R13PC43001. Albuquerque, NM. 844 p.
2. Southwest Water Design, LLC. April 2022. Final Report Cross Section Surveys and Discharge Measurements Low Flow Conveyance Canal – EB Reach. Task Order # 140R4021F0058 / Contract # 140R4019D0006. Albuquerque, NM. 41 p.

## 9.3 Appendix C: ESA Memo Under 2016 MRG BO

United States Department of the Interior

BUREAU OF RECLAMATION
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

IN REPLY REFER TO:
ALB-704
2.2.1.06

VIA ELECTRONIC MAIL ONLY

Memorandum

To: Shawn Sartorius, Ph.D.
Field Supervisor
U.S. Fish and Wildlife Service New Mexico Ecological Services Field Office

From: Jennifer Faler, P.E.
Area Manager

Subject: Notification of Included Project under the Middle Rio Grande Biological and Conference Opinion (02ENNM00-2013-F-0033) for River Mile 60 Controlled Outfall Construction

The December 2016 *Final Biological and Conference Opinion for Bureau of Reclamation, Bureau of Indian Affairs, and Non-Federal Water Management and Maintenance Activities on the Middle Rio Grande, New Mexico* (2016 BiOp) covers the Bureau of Reclamation's river maintenance and restoration activities in the Middle Rio Grande following the standard Best Management Practices (BMPs), as described.

Reclamation is proposing to provide controlled return flows from the Low Flow Conveyance Channel (LFCC) into the Rio Grande at River Mile 60 (RM60) to improve water delivery to Elephant Butte Reservoir. To achieve this purpose a hydraulic check structure with gated culverts, that will allow for the control of water into the Rio Grande while maintaining the capacity to continue to deliver water through the current LFCC west of RM60, will be constructed. An essential component of the project is to maintain habitat for endangered species that occur in the area by being able to continue to deliver water through the existing LFCC west downstream to the current confluence with the Rio Grande. The project is being implemented to help address drought related conditions in the Middle Rio Grande valley and extremely low reservoir storage conditions at Elephant Butte Reservoir. The implementation of this project is being done under very urgent and near-emergency drought conditions and should be considered a temporary measure and project with an intended design and service life of 2–4 years. The project would start in August 2022, depending on the outcome of all compliance and project preparations. Attached we transmit to the U.S. Fish and Wildlife Service (Service) a project description that includes relevant information on the project, including the purpose and need, area affected, confirmation of the standard BMPs that apply to the project, and a map of the project location.

This project is a covered project under the 2016 BO and has the potential for incidental take of Rio Grande Silvery Minnow (*Hybognathus amarus*) due to the construction of the open outfall to the main river channel. The open outfall will consist of approximately 0.15 acres of riprap placed into the Rio Grande with a total of up to 0.25 acres of channel bed disturbance occurring during construction. This is the only portion of the proposed project that would have the potential for incidental take of Rio Grande Silvery Minnow. The rest of the project construction will be conducted away from the flowing water of the Rio Grande and will be confined to the LFCC where the species has not been collected during annual surveys recently conducted by Reclamation biologists. Because it is necessary to construct the open outfall to the main river channel to make the project operational, the project may affect and is likely to adversely affect the Rio Grande Silvery Minnow. The project footprint is downstream of the extent of the species critical habitat so there are no impacts to Rio Grande Silvery Minnow critical habitat. Despite the potential for adverse effects to the species, measures taken during construction will aim to minimize any potential impacts. The project's construction plan is designed to minimize the interaction with the wetted habitat of the Rio Grande to reduce impacts to the aquatic environment.

The project may affect and is likely to adversely affect Southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher) and yellow-billed cuckoo (*Coccyzus americanus*) critical habitat. The construction of the controlled outfall at RM 60 is expected to impact approximately 1.5 acres of suitable habitat for the yellow-billed cuckoo. Additional impacts to habitat for the flycatcher from ongoing maintenance (3.0 acres of suitable habitat and 1.5 acres of moderately suitable habitat) have already occurred and have been accounted for in a previous memorandum sent the Service titled "Notification of Included Project under the Middle Rio Grande Biological and Conference Opinion (02ENNM00-2013-F-0033) for Mowing, Vegetation Removal, and Road Maintenance within the Low Flow Conveyance Channel Near River Mile 60 in the Middle Rio Grande." In addition, the project will ensure that water is continued to be delivered through the LFCC west to maintain existing riparian habitat between RM60 and the current LFCC confluence with the Rio Grande (at river mile 54.5).

The potential for impacting flycatchers and the yellow-billed cuckoo during construction of the project due to noise and ground disturbance cannot be discounted but is likely to be minimal. Two flycatcher nesting territories (70 and 363 meters from the project footprint) and one yellow-billed cuckoo territory (113 meters from the project footprint) were observed within 400 meters of the proposed project area during the 2021 bird survey season. The identified flycatcher and yellow-billed cuckoo territories from last season will not be disturbed by any of the constructed project components but may be affected during project construction due to noise and activity in the area. Since it is necessary to conduct work activities during the bird nesting season, the project may affect and is likely to adversely affect the flycatcher and yellow-billed cuckoo. Reclamation will conduct nesting bird surveys in the area periodically during nesting season and coordinate with the Service if new nesting sites or territories are identified that might be impacted by the project. In addition, take of flycatcher and yellow-billed cuckoo nesting sites and territories will be evaluated after project construction and bird monitoring is conducted during the 2022 season. If necessary, additional coordination with the Service will be conducted to ensure that adequate measures are taken to minimize impacts to any additional nesting sites that are detected and anticipated to be impacted by the project during construction.

An operational plan will be developed concurrently during project construction to ensure that water deliveries through the LFCC to the Rio Grande at the RM60 Outfall will be conducted in manner that does not adversely affect Endangered Species Act (ESA)-listed fish, birds and or their habitat upstream or downstream of the project area. If through the development of the operational plan it is determined that additional impacts to threatened and endangered species may occur, then additional compliance would be necessary as those actions would not be covered under this compliance which is specifically for the construction of the outfall at RM60. Examples of actions that may be proposed in the future operational plan include take of minnow in the river channel upstream of the RM60 project due to changes in diversions at San Acacia Diversion Dam to the LFCC, bird or habitat impacts along west LFCC due to changes in water delivery through that area, and/or any changes in flow to the existing wetland pond that would alter the current extent of wetlands in the area. If any of these or additional actions are anticipated through the development of the operational plan, then additional compliance will be necessary to account for those actions.

RM 60 Controlled Outfall construction will be encompassed within Reclamation's annual accounting and reporting to the Service for the 2016 BiOp, which will include post-project refined acreages across these types of covered projects. If conditions for this project change substantially or the applicable standard BMPs cannot be followed, we will coordinate further with the Service to ensure appropriate ESA coverage is in place.

We look forward to continuing working jointly with the Service on implementation of activities under the 2016 BiOp, and we appreciate the Service's collaborative efforts leading to the final BiOp, which presents a science-based, achievable path forward under the ESA, and provides for streamlined coverage for individual projects.

If you have any questions or concerns, please contact Ann Demint, Project Manager, at (505) 462-3654 or Eric Gonzales, General Biologist, at (505) 462-3597. For Text Telephone Relay Service access, call the Federal Relay System Text Telephone (TTY) number at (800) 877-8339.

Attachment: (Project Description)

cc: Mr. Rolf Schmidt-Peterson
Director
N.M. Interstate Stream Commission
P.O. Box 25102
Santa Fe, NM 87504-5102

Mr. Jason M. Casuga
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# 9.4 Appendix D: Southwestern Willow Flycatcher and Yellow-billed Cuckoo Survey Results, Population Trends and Habitat in the Upper Elephant Butte Reservoir Delta

United States Department of the Interior

BUREAU OF RECLAMATION
P.O. Box 25007
Denver, CO 80225-0007

IN REPLY REFER TO:

86-68290
2.2.1.06

December 13, 2022

VIA ELECTRONIC MAIL ONLY

MEMORANDUM

To: Bureau of Reclamation
Albuquerque Area Office
Attention: ALB-611 Ann Demint, ALB-713 Chris Grosso

From: David Moore
Wildlife Biologist
Bureau of Reclamation Technical Service Center
Denver, CO

Subject: Southwestern Willow Flycatcher and Yellow-billed Cuckoo Survey Results, Population Trends and Habitat in the Upper Elephant Butte Reservoir Delta

Introduction

The federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*; hereafter SWFL) was documented in the upper end of the Elephant Butte Reservoir pool immediately following its listing in 1995. A handful of territories were recorded in 1996 and 1997 in primarily native willow habitat between the Rio Grande channel and the western channel near RM 60. This population expanded, peaking in 2009 (Figure 1), as the quantity of suitable habitat increased in the reservoir delta during the 10-year reservoir recession, and quickly comprised the majority of SWFL territories in the Middle Rio Grande (Figure 2). The SWFL population declined between 2009 and 2018 and now appears to be increasing (survey data for 2020 and 2021 are incomplete due to COVID-related staff restrictions). The majority of occupied habitat for the SWFL is adjacent to and supported by the western channel (Figure 3 and Figure 4). Formal surveys for the federally threatened yellow-billed cuckoo (*Coccyzus americanus occidentalis*; hereafter YBCU) were first conducted in the upper Elephant Butte Reservoir delta in 2009. A small breeding population has been documented annually (Figure 1) utilizing habitat similar to that used by breeding SWFLs.

The SWFL breeds in riparian habitats along rivers, streams, or other wetlands, where relatively dense growths of trees and shrubs are established, near or adjacent to surface water or underlain by saturated soil (USFWS 2002). Hydrology is important as it not only supports the vegetative species composition and structure preferred by SWFLs, but also provides microclimate characteristics and a prey base necessary for successful reproduction. Ninety percent of SWFL nests in the Middle Rio Grande between 2004 and 2021 were within 100 meters of water (Moore

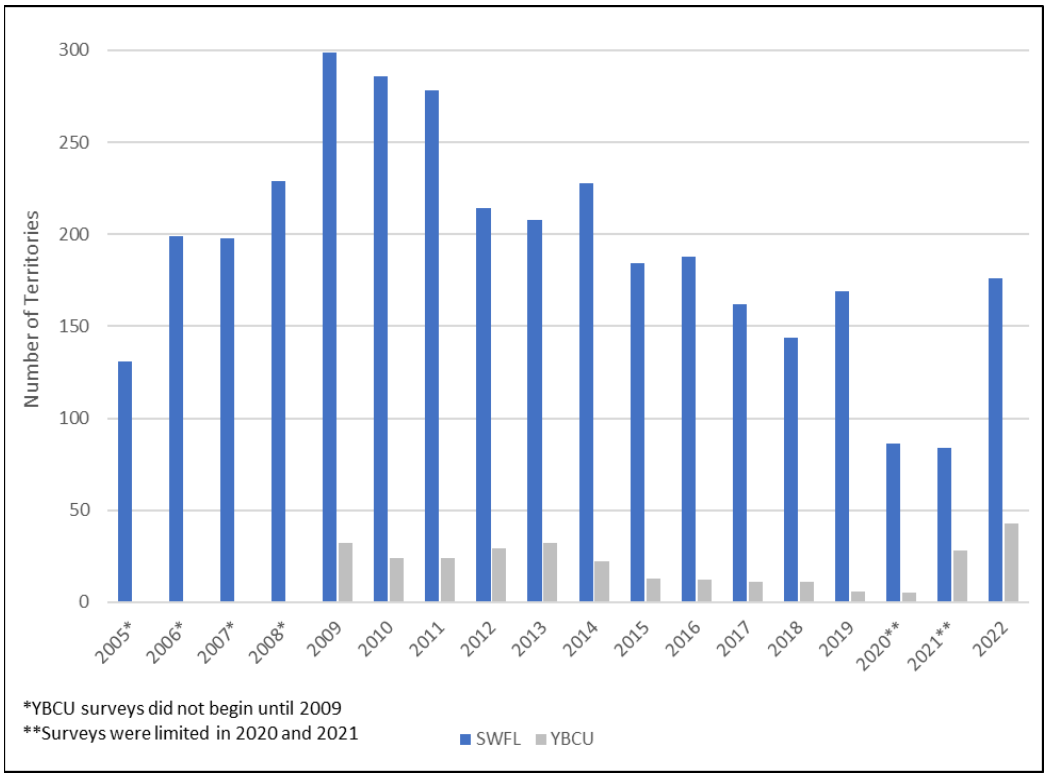


Figure 1. SWFL and YBCU territory numbers by year in the upper delta of Elephant Butte Reservoir (River Mile 54 to 64).

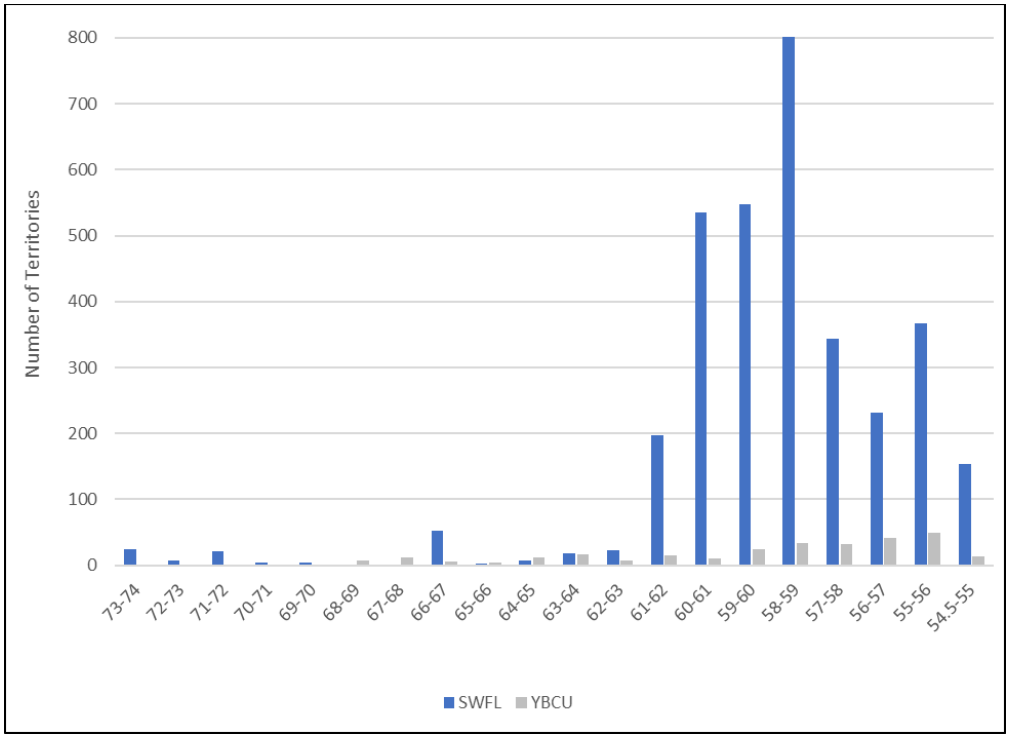


Figure 2. Southwestern willow flycatcher and yellow-billed cuckoo territory numbers by River Mile, 2005 to 2022.

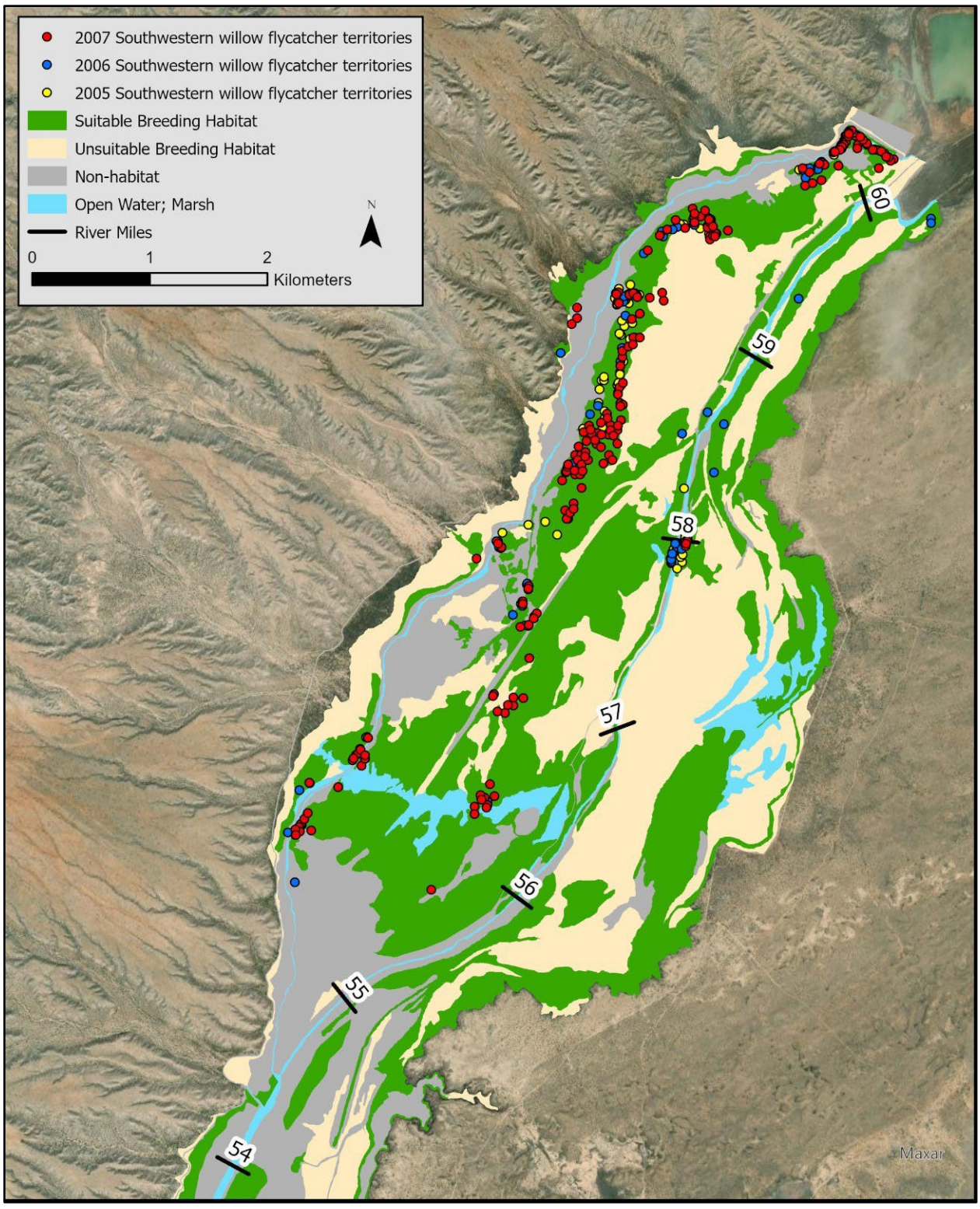


Figure 3. Historical (2005 to 2007) Southwestern willow flycatcher territories and habitat suitability (2005) in project area.

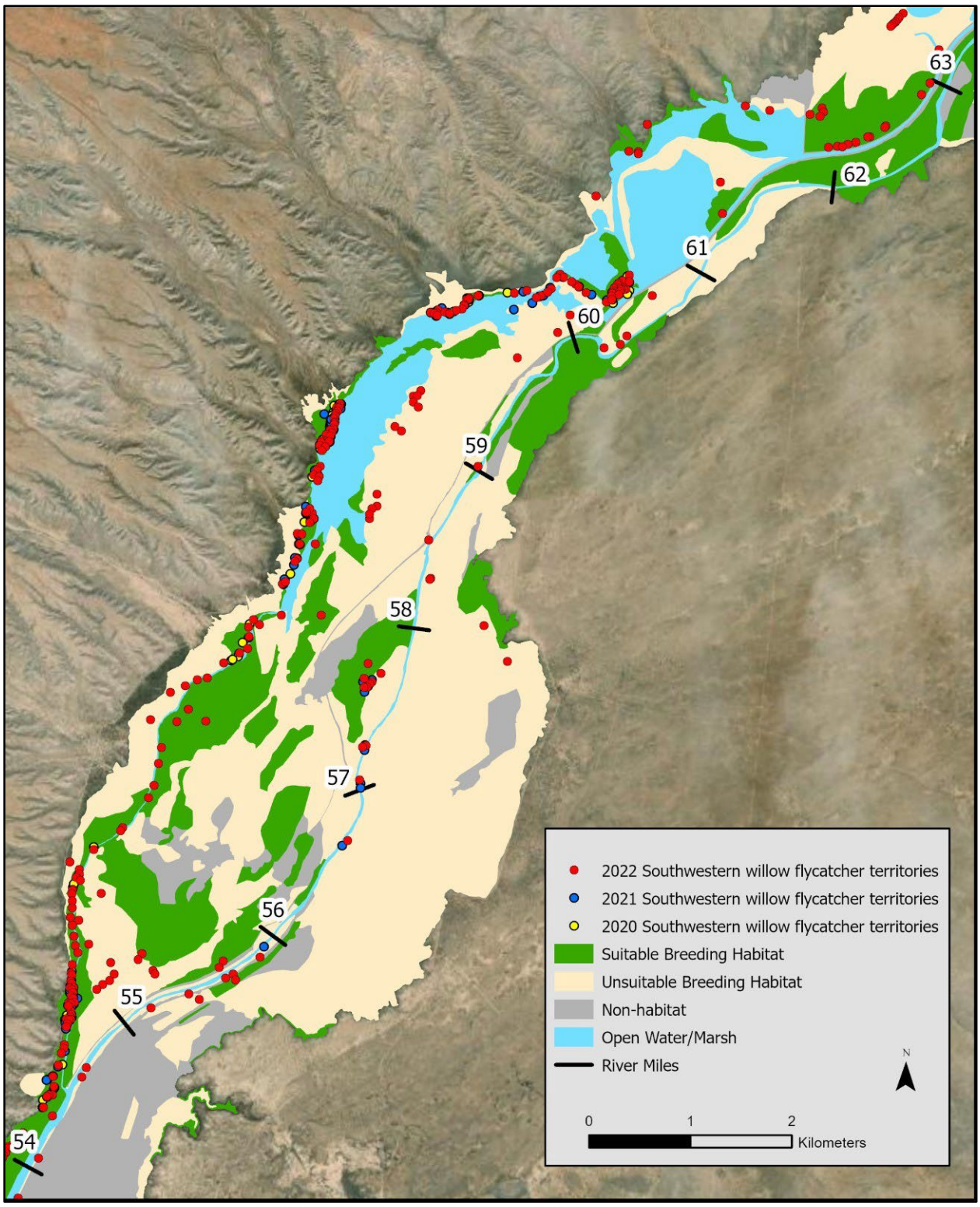


Figure 4. Recent (2020 to 2022) Southwestern willow flycatcher territories and habitat suitability (2021) in project area.

2022). The timing of hydrologic inputs (via the snowmelt-dominated hydrograph) is important as well, as higher flows and the potential for flooding in late spring and early summer benefit habitat maintenance, seedling establishment, and SWFL territory selection. Within the Middle Rio Grande, the highest quality SWFL breeding habitat is dominated by willows and contains saturated soils or flooded conditions throughout the SWFL breeding and vegetative growing seasons (April to October). Occupied sites usually consist of dense vegetation in the patch interior, or an aggregate of dense patches interspersed with openings. In most cases this dense vegetation occurs within the first 3 to 4 m (10 to 13 ft) above ground. These dense patches are often interspersed with small openings, open water or marsh, or shorter/sparser vegetation, creating a mosaic that is not uniformly dense. Suitable breeding habitat in the Elephant Butte delta consisted of nearly monotypic stands of Goodding's willow (*Salix gooddingii*) until 2005. It is now comprised of a mixture of Goodding's willow, coyote willow (*Salix exigua*) and exotic saltcedar (*Tamarix* sp.).

2022 Avian Surveys

Protocol surveys for the SWFL and YBCU were conducted within the Elephant Butte Reservoir delta between river miles 54 and 61 during the summer of 2022 (Figure 5). All suitable habitat within 25 previously established survey sites was surveyed according to the respective survey protocol for each species. Additionally, nest searching and monitoring was conducted for any SWFLs suspected of breeding.

A total of 163 SWFL territories were documented during 2022 surveys. These included 25 unpaired males and 138 breeding pairs. The 138 pairs produced 178 nests. Of these nests, fates of 33 were unknown and 81 successfully fledged young – a 56 percent success rate. Native vegetation, composed primarily of willow species, was dominant at 55 percent of nest sites, while saltcedar dominated 3 percent and 41 percent of nest sites contained a mix of willows and saltcedar. The vast majority of nests (88 percent, n=145) were within 50 meters of surface water and 43 nests were above either saturated soil or flooded conditions while active. YBCU surveys documented 146 detections from which 36 territories were delineated.

Habitat Conditions

Riparian habitat conditions for SWFLs in the upper 7 miles of the delta have declined since 2005 as shown in Figure 3 and Figure 4. This decline has been aided by drought and age/senescence of habitat but was also exacerbated by the headcut that moved through the reach in 2005. For the following habitat comparison, SWFL is used as a surrogate for YBCU as YBCU was not federally listed until 2014 and YBCU habitat in the upper Elephant Butte Reservoir delta was first mapped in 2016. In 2005, during the peak of habitat quantity and quality in the upper delta, 2,570 acres of suitable SWFL habitat were mapped between river miles 54.7 and 60.6. In 2021, 1,321 acres of suitable SWFL habitat were mapped. Surface water often covered much of the western floodplain during the early and mid-2000s. In recent years, there has been very little flooding within this area. Additionally, as shown in Figure 6, occupied SWFL habitat began a slow transition from almost entirely native in 2005 to roughly a third native in 2021.

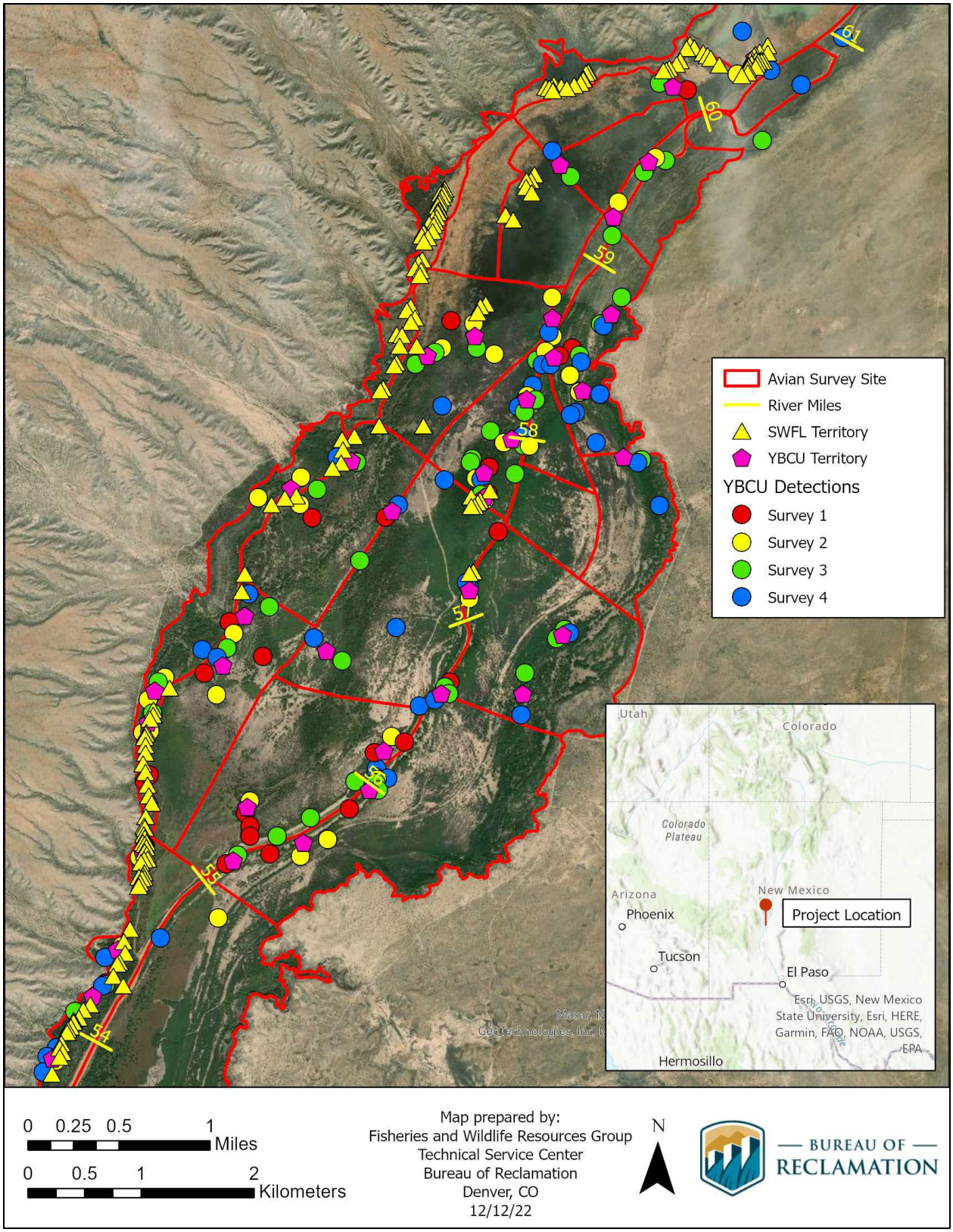


Figure 5. 2022 SWFL territories and YBCU detections and delineated territories within the upper Elephant Butte Reservoir delta, River Miles 54 to 61.

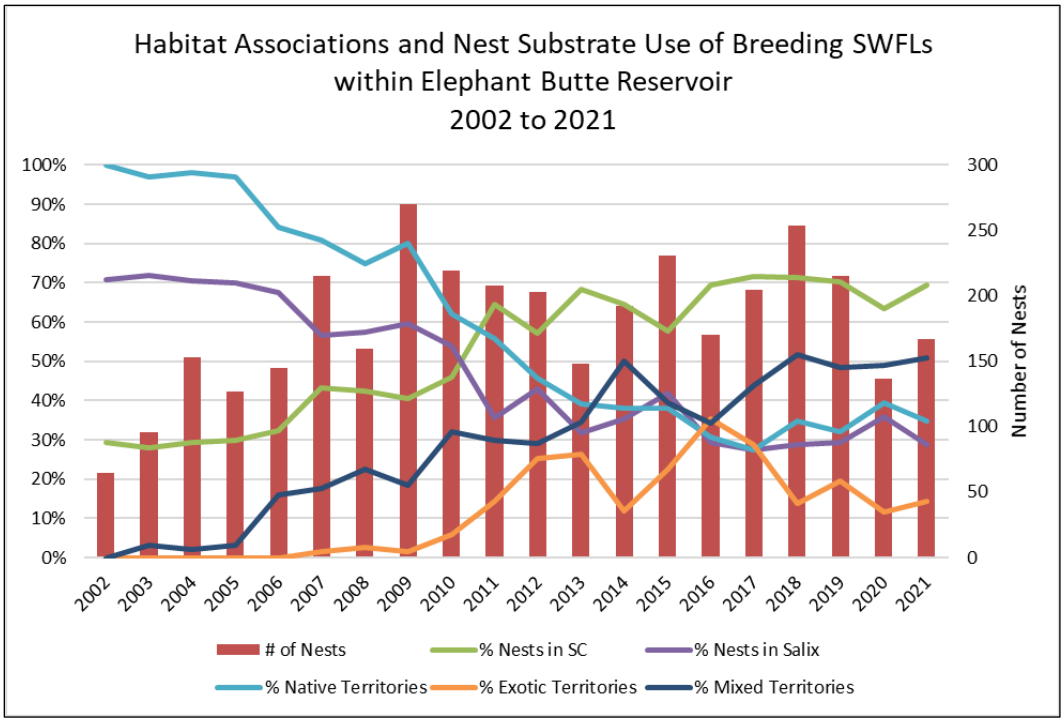


Figure 6. Habitat associations of breeding SWFLs within the Elephant Butte Reservoir delta between 2002 and 2021.

Average daily flows in the LFCC (San Marcial gage) for the 5-year periods ending in 2005 and 2021 averaged 173 and 169 cfs, respectively, during the entire year and 163 and 176 cfs, respectively, during the growing season (April 1 to September 30). Instantaneous flows exceeded 500 cfs, peaking at 534 cfs, on one day (May 28, 2005) during 2001 to 2005; flows exceeded 500 cfs on 12 days in three different years during 2017 to 2021, peaking at just under 1300 cfs in July 2018 (15-minute data). Thus, data suggest that LFCC peak flows were not responsible for the decline in both quantity and quality of SWFL habitat within the upper delta. To the contrary, the high flows observed in 2019 (Figure 7) may be contributing to the recent development of suitable habitat that has promoted the expansion of the SWFL population in the reach.

Surface flows are only one component of SWFL habitat and territory establishment, which depend on complicated interrelated factors. Depth to the water table is another component, often but not always tied to surface flows in adjacent water courses. A shallower water table is necessary to support native riparian vegetation (less than 2 m deep for mature coyote willow in the Middle Rio Grande – USFWS 2016). Seedling recruitment of cottonwood and willow species require periodic flows on exposed sand bars where groundwater is less than 1 m from the surface (Stromberg 1993). Additionally, Shafroth et al. (2000) emphasized the importance of change in groundwater depth relative to a previous condition or pattern as opposed to the absolute depth to the water table on Goodding's willow survival. Results of this study showed that a site along the Bill Williams River in Arizona, where the lowest observed groundwater depth in one year (6.5 ft; 2.0 m) was 3.6 ft (1.1 m) lower than the previous year (2.8 ft; 0.9 m), had 92 to 100 percent mortality of cottonwood and Goodding's willow saplings. Vegetation impacts are often not immediately observed following significant alterations to surface flows and/or depth to

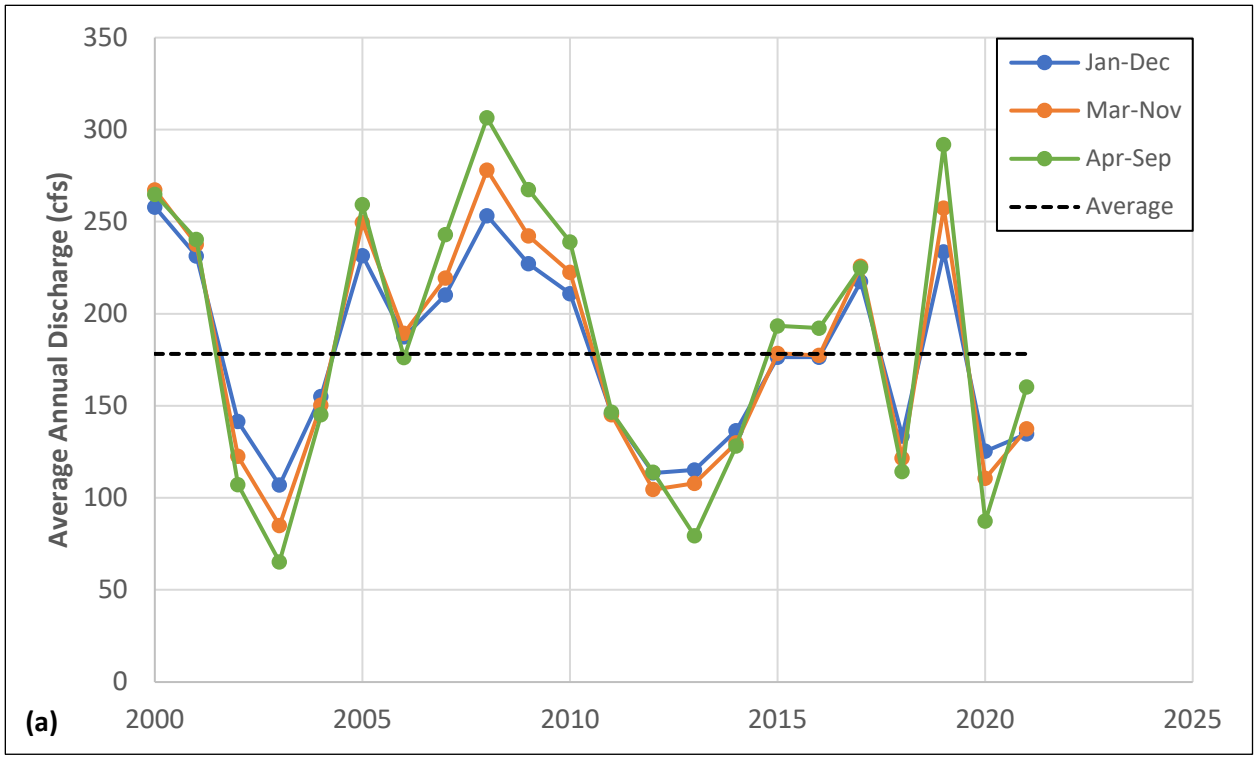


Figure 7. LFCC discharge at San Marcial for 2000 to 2021 with a daily average flow of 178 cfs.

groundwater. It is likely that this lag effect contributed to habitat decline in the late 2000s and early 2010s following the 2005 headcut and river channel degradation. This degradation caused the Rio Grande channel to become a drain for the surrounding floodplain, or at least prevented it from contributing to the shallow water table present in the upper delta during the early and mid-2000s.

References

Moore, D. 2022. 2021 Middle Rio Grande Southwestern Willow Flycatcher Study Results– Selected Sites Along the Rio Grande from Isleta Pueblo to Elephant Butte Reservoir, New Mexico. Bureau of Reclamation, Technical Service Center, Fisheries and Wildlife Resources. Denver, Colorado.

Shafroth, P.B., J.C. Stromberg, and D.T. Patten. 2000. Woody Riparian Vegetation Response to Different Alluvial Water Table Regimes. Western North American Naturalist 60(1):66-76.

Stromberg, J.C. 1993. Fremont Cottonwood-Goodding's Willow Riparian Forests: A Review of Their Ecology, Threats, and Recovery Potential. Journal of the Arizona-Nevada Academy of Science. 27(1):97-110.

U.S. Fish and Wildlife Service. 2016. Final Biological and Conference Opinion for Bureau of Reclamation, Bureau of Indian Affairs, and Non-Federal Water Management and Maintenance Activities on the Middle Rio Grande, New Mexico. Consultation Number 02ENNM00-2013-F-0033. December 2, 2016.

U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O.

## 9.5 Appendix E: USACE Concurrence with Irrigation Exemption under CWA

**DEPARTMENT OF THE ARMY**
**CORPS OF ENGINEERS, ALBUQUERQUE DISTRICT**
**200 EAST GRIGGS AVE.**
**LAS CRUCES, NM**
**88001**

November 3, 2022

Regulatory Division

SUBJECT: No Permit Required – Action No. SPA-2022-00399, Maintenance Exemption for the Low Flow Conveyance Channel at Rio Grande River Mile 60

Ann Demint
Bureau of Reclamation
555 Broadway Blvd NE

Albuquerque, NM 87102

Dear Ms. Demint:

This letter responds to your request for a determination of Department of the Army permit requirements for the proposed Maintenance Exemption for the Low Flow Conveyance Channel at Rio Grande River Mile 60 located at approximately latitude 33.59 North, longitude -107.054 West, in Socorro County, New Mexico. The work, as described in your email, will consist of irrigation flows being controlled by a hydraulic check structure and gated culverts that will be installed in the LFCC upstream of RM 60. Downstream of the hydraulic check structure and gated culverts, a rock-lined, earthen-bottom opening will be created in the RM 60 levee embankment to convey LFCC irrigation flows to the main river channel. A downstream rock ramp will be installed to prevent erosion as irrigation flows transition into the river channel from the upstream LFCC. We have assigned Action No. SPA-2022-00399 to this project. Please reference this number in all future correspondence concerning the project.

Based on the information provided, we have determined that a Department of the Army permit is not required since the activity is exempted from regulation by a specific provision of the Clean Water Act as implemented by the U.S. Army Corps of Engineers (Corps) regulations at 33 CFR 323.4(a) because the activity consists of construction or maintenance of irrigation ditches or the maintenance of drainage ditches in accordance with 33 CFR 323.4(a)(3).

Please note that the Corps did not make a determination of geographic jurisdiction under any of our permitting authorities for this project.

Please also note that a Corps permit decision does not constitute approval of project design features, nor does it imply that the construction is adequate for its intended purpose. Additionally, a Corps permit decision does not authorize any injury to property

or invasion of rights or any infringement of federal, state, or local laws or regulations. The responsible party and/or any contractors acting on behalf of the responsible party must possess the authority and any other approvals required by law, including property rights, in order to undertake the proposed work.

It should be noted that the Corps Albuquerque District-Civil Works, Water Management Section, conducts water control operations which may affect flow levels within the Rio Grande basin. For current river basin flow data within the Albuquerque District, please visit the Water Management Section website at https://w3.spa.usace.army.mil/wc/htmlrpts/CurrentConditions.htm. For more detailed and historic flow data, please visit the Corps Water Control website at https://www.spa.usace.army.mil/Missions/Civil-Works/Water-Control/.

This determination applies only to this project. Other project proposals require a new determination. If your plans change, please contact our office for a reevaluation of permit requirements.

If you have any questions, please contact me at (575) 652-4574 or by e-mail at Justin.C.Riggs@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at https://regulatory.ops.usace.army.mil/customer-service-survey/

Sincerely,

Justin Riggs
Regulatory Manager for
Southern New Mexico and West Texas

# 9.6 Appendix F: SHPO Concurrence

Michelle Lujan-Grisham
Governor

STATE OF NEW MEXICO
**DEPARTMENT OF CULTURAL AFFAIRS**
**HISTORIC PRESERVATION DIVISION**

BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 FAX (505) 827-6338

December 2, 2022

Dr. John Cater
Bureau of Reclamation
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

Re: San Acacia Low Flow Conveyance Channel (LFCC), Socorro County (HPD log 118647/117840)

Dear Dr. Cater:

Thank you and the Bureau of Reclamation (BOR) for providing the new documentation for the San Acacia low flow conveyance channel, and updated LA forms for five archaeological sites. We have several comments about the documentation.

First, in our previous consultation we requested a report, a NIAF, an HCPI and updated LA forms for previously recorded archaeological sites in the APE. To the best of my knowledge, we did not receive a report with the current consultation. Please note that a report provides historic contexts for evaluating National Register of Historic Places (NRHP) eligibility for properties identified during inventories. This is especially important for evaluating the Low Flow Conveyance channel and its contribution to the Middle Rio Grande Conservancy District (MRGCD). Likewise, a historic context describing the association between LA 110417 and Fort Craig is needed for a thorough NRHP evaluation. In the future, please provide complete reports so we have the information we need to support the NRHP evaluations.

Second, we understand that LA 56817, LA 119465, and LA 119466 have been destroyed by surface mining in materials pit,or buried by materials stockpiles. I have entered the eligibilities for these properties as unevaluated.

The SHPO concurs that HCPI 53534, LA 110417, and LA 119464 are eligible for the National Register of Historic Places. Of these HCPI is also eligible as a contributing structure to an unidentified MRGCD historic district.

The SHPO also concurs that the undertaking will not affect historic properties.

If you have any questions or comments, please feel free to call me directly at 505-827-4225 or email me at bob.estes @state.nm.us.

Best regards,

John R. (Bob) Estes  Ph.D.
HPD Staff Historic Preservation Specialist