

## Chapter 2: Alternatives

### 2.1 Introduction

The Federal action addressed in this Environmental Assessment (EA) is the protection of the Drain Unit 7 Extension spoil levee with riprap. Several other alternatives were considered (Appendix A: DU7 Alternatives Jan 10, 2007 Report), including use of bioengineering techniques, but the unique conditions at this site resulted in selection of riprap as the most feasible alternative. The design calls for placement of riprap along the river side of the Drain Unit 7 Extension spoil levee for a length of 650 feet. Construction will be performed in two phases.

### 2.2 Proposed Action

The preferred alternative selected for this Project involves protection of the Drain Unit 7 Extension spoil levee with riprap. Several other alternatives were considered, including use of bioengineering techniques (environmental enhancements), but the unique conditions at this site resulted in selection of riprap as the preferred alternative. The design calls for placement of riprap along the river side of the levee for a length of 650 feet. Construction will be performed in two or more phases. The planned approach to the phasing is as follows:

Phase 1 would address the most severely eroded portion of bankline, 250 linear feet within the active river channel, from approximately 2+50 to 5+00. Work within the river channel will take up to two months, and would be completed between November 1, 2008 and April 15, 2009.

Phase 2 would address the remaining area of concern (the remaining 400 linear feet, with 250 linear feet within the active river channel and 150 linear feet out of the water, to bring the total to 650 linear feet). This work would require approximately 2 months and would be completed some time between September 1, 2009 and April 15, 2010.

The Phase 1 and 2 work described above will address the area where the river is currently eroding the levee and approximately 150 feet of levee just upstream, where future erosion is anticipated due to migration of the active river channel (Figure 1). It is possible that the channel migration will continue beyond the 150 feet of riprap protection, in which case a second project would be implemented to increase the length of the riprap protection. The area will be monitored closely and the second project implemented before channel migration reaches the end of the riprap placed under this project. Work to be accomplished under this project is summarized below and covered in more detail in the Project Description as Phase 1. Phase 2 of the Project Description describes the potential work under a second project, to be implemented if needed.

For the Project covered by this document, 500 linear feet of the riprap would be placed within the active river, and 150 feet on a dry terrace. For the portion of riprap to be placed in the active

river channel (0+00 to 5+00), two layers of riprap would be placed against the existing bankline: (1) a 60-inch thick primary layer for protection of the bankline; (2) an additional layer of self launching riprap placed against the primary layer. The primary riprap layer will be keyed into the river channel a depth of up to five feet to form a toe trench which will provide scour protection for a portion of the 15-foot design scour depth. The remaining ten feet of scour protection will be provided by the self launching riprap. This riprap would fall into the scour hole as needed.

For the dry terrace area (5+00 to 6+50), riprap would be placed to form a self-launching windrow, parallel and adjacent to the levee. This riprap would fall in place to provide bankline protection if the active river channel migrates toward the levee, as shown in Figure 1.

Bioengineering features incorporated into the riprap design are as follows:

0+00 to 0+72: Riprap would be keyed into the bankline to provide a smooth transition between the riprap and the natural bankline, and to ensure that the riprap is not flanked (eroded at the downstream end) during the design discharge. This would require excavation of the bankline and that excavated material would be placed over the riprap to reconstruct the bankline so as to match the natural bankline. Willow poles would be planted in the reconstructed embankment along the edge of the river; their root systems would help hold the embankment in place. It is anticipated that the willows would not grow to a significant height, as this area is routinely mowed to allow for dam and drain maintenance activities.

5+00 to 6+50: Willows and/or cottonwoods would be planted between the levee and the self-launching riprap windrow. A trench would be excavated to allow planting of the willows at the groundwater level. It is anticipated that once these trees become established, the root system will serve as protection for the levee in the event that the self-launching riprap is ineffective.



Figure 2: Location picture of riprap area in river channel.

## 2.3 No Action Alternative

Under the No Action Alternative Reclamation would not place any riprap, only routine operations and maintenance (O & M) would be taken to prevent erosion at the Drain Unit 7 Extension spoil levee. Other ongoing O & M activities in the area generally consist of mowing the vegetation along the bank line slopes of the drain and levee and maintaining the condition of the access roads.

# Chapter 3: Affected Environment

## 3.1 Introduction

### Scope of Analysis

This section describes the current condition and trends of resources that may be affected by the proposed action and the environmental consequences of the proposed action and no action alternative. The information in this EA is derived primarily from the information in the Project Description and Biological Assessment.

Information from these documents is incorporated by reference and will not be repeated here unless needed to clarify discussions, to meet a legal requirement, to provide site-specific detail or to address changes in the resource baseline. Each aspect of the environment that would be affected by the proposed action is discussed to the level of detail commensurate with the potential for environmental impact. The greatest potential for impacts would be to water resources and biology. Other resources discussed in this chapter include cultural resources, Indian Trust Assets, and Environmental Justice.

### Study Area

Research, conducted by the Reclamation Facilities and Lands staff, indicates that land ownership for the proposed project features is within the Drain Unit 7 Extension right-of-way or the floodplain area where Reclamation has prescriptive rights for river maintenance activities.

The Sevilleta boundary is approximately 500 feet north of the project area. The spoil levee on the east side of the drain also serves as a roadway that provides access to parts of Sevilleta, and this road is used regularly by Sevilleta staff. The road will need to be closed for up to four months for construction, but scheduling the work during the winter will minimize impacts to Sevilleta staff, as they can access the area served by this road from the north, by driving across the Rio Salado delta.

The general site area is also utilized by MRGCD for O & M of the Drain Unit 7 Extension, Socorro Main, and SADD. Work activities will be scheduled, such as performing work in the off-irrigation season, so as to not impact MRGCD operations. Provisions can also be made to make the road passable for MRGCD or Service staff for short periods during construction, provided that Reclamation is given sufficient advance notice.