

1. Introduction

Section 7(a) (2) of the Endangered Species Act (ESA) requires Federal agencies to consult with the U.S. Fish and Wildlife Service (Service) over any discretionary actions that the agency authorizes, funds, or carries out, which may affect a listed species or adversely modify its habitat. This is Part II of the biological assessment (BA) of the Bureau of Reclamation (Reclamation) and non-Federal water management and maintenance activities on the Middle Rio Grande (MRG) focusing on maintenance activities within the MRG. Reclamation actions, as well as the actions of non-Federal entities, are described in this BA. As such, submittal of this BA constitutes a request to initiate formal consultation with the Service for these actions.

This BA analyzes the effects of Reclamation's MRG river maintenance program (river maintenance) and other MRG maintenance activities, including operation and maintenance (O&M) activities on the Low Flow Conveyance Channel (LFCC) and Project drains, on federally protected species in the project area: the Rio Grande silvery minnow (*Hybognathus amarus*; silvery minnow [RGSM]), the southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher [SWFL]), and the Pecos sunflower (*Helianthus paradoxus*, sunflower), and the interior least tern (*Sternula antillarum athalassos*, tern). The bald eagle (*Haliaeetus leucocephalus*) was removed from the Federal list of threatened and endangered species in August 2007 and is, therefore, not considered in this BA. There is no requirement to discuss de-listed species in an ESA consultation, however, activities conducted in the course of river maintenance and other MRG maintenance activities will be conducted in accordance with the Bald Eagle Protection Act and the Migratory Bird Treaty Act.

The analysis presented in this section 7 consultation is based upon anticipated river and habitat conditions over the next 10 years under the proposed action. While the analysis period is used to estimate approximate numerical values for the purpose of facilitating an ESA assessment, the analysis period duration is not a representation of the desired ESA compliance period. As with Part I, water management, for activities described in this BA, Reclamation is requested that the Service issue a Biological Opinion (BiOp) without identifying any specific expiration date. If the proposed actions are modified or affect listed species in ways not considered in this BA, or if standard reinitiation triggers are reached, additional consultation will be requested in accordance with 50 Code of Federal Regulations (CFR) 402.16.

Reclamation's objectives for maintenance through this ESA consultation process are to provide information for the Service to analyze and provide take exemptions, thereby providing ESA coverage for maintenance activities on the

MRG. In this document, three types of maintenance activities are described: river maintenance, other Reclamation MRG maintenance, and Middle Rio Grande Conservancy District (MRGCD) maintenance. The State of New Mexico also has maintenance activities that are covered by this document; but since these maintenance activities fall within the described actions and effects of river maintenance and other Reclamation MRG maintenance, a separate section describing their specific maintenance is not included.

The described river maintenance actions portray activities believed to be geomorphically and ecologically viable that maintain the biological integrity and improves conditions of the listed species. A geomorphically viable activity considers the relationship between the river's sediment transport capacity and sediment supply. It is the imbalance between sediment transport capacity and sediment supply that is a key cause of most channel and flood plain adjustments (Lane 1955; Schumm 1977; Biedenharn et al. 2008). Factors affecting the imbalance between sediment transport capacity and sediment supply can be categorized as drivers of adjustment and controls on adjustment. Important drivers on the MRG include flow frequency, magnitude and duration; and sediment supply. There are several factors than can limit or control the effects of the drivers on channel adjustment and the observed reach characteristics. Controls of channel adjustment such as bank stability, bed stability, base level, flood plain lateral confinement, and flood plain connectivity influence the extent of effect that the drivers have on the observed characteristics of a reach. The relationship between sediment transport capacity and sediment supply helps predict future changes in observed geomorphic trends and the direction of possible river responses. An understanding of the relationship between sediment transport capacity and sediment supply provides the ability to develop river management practices that work with the river's adjustments and treat causes of channel instability, rather than treating symptoms of the channel's adjustments (Schumm et al. 1984).

River maintenance activities covered in this BA include river maintenance strategies (section 3.2 and 3.6.1), priority/monitored river maintenance sites (section 3.6.1 and 5.2.1), both of which involve the utilization of river maintenance methods (section 3.3). River maintenance support activities (section 3.6.4) and processes for identifying adaptive management work (section 3.4), unanticipated work (section 3.5), interim work (section 3.6), and new site work (section 3.6.1) are also described. The river maintenance strategies presented in this BA are an example of a geomorphically viable river management practice for the MRG. The implementation of river maintenance strategies on a reach scale represents a significant shift in addressing river maintenance concerns on the MRG; one that addresses the causes and not just symptoms of the observed geomorphic trends.

The described actions for Reclamation's other MRG maintenance (section 3.7) and the MRGCD's maintenance (section 3.8) describe operation and maintenance of MRG facilities and represent ecologically viable actions that maintain the biological integrity and improves conditions of the listed species.

In the described proposed action for maintenance activities, approximate numeric values are provided to allow for an evaluation of the programmatic effect of the maintenance work. To provide the ability to achieve ESA programmatic coverage, the framework for these details is provided in this proposed action. While specific project locations are not described in this BA, estimates are made as to the general type, amount, and distribution of future maintenance needs. Reclamation expects that, while these numbers are used to derive a total acreage, Reclamation would not be limited in the new BiOp by values like the number of sites in a given year and the future distribution of sites, but rather the resultant amount of programmatic take. This may involve annual sidebars to assess and ensure actions are complying with the issued overall take statement.