



DEPARTMENT OF THE ARMY  
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS  
4101 JEFFERSON PLAZA NE  
ALBUQUERQUE NM 87109-3435

November 23, 2015

Planning, Project & Program Management Division  
Project Management

Dear Sir or Madam,

The Albuquerque District, U.S. Army Corps of Engineers, has prepared a **Draft Supplemental Environmental Assessment [DSEA] for Repair of the Villanueva Diversion Dam, Pecos River, San Miguel County, New Mexico**. The Corps originally prepared an Environmental Assessment and signed a Finding of No Significant Impact for the project in November 2014. The DSEA describes a revised diversion plan that has been proposed to ensure a dry construction area and the safety of construction personnel. The original purpose, scope, and alternatives for repair have not changed from that described in the 2014 EA. The project is conducted as part of the Corps' Acequia Rehabilitation Program, and the cost-sharing sponsor is the NM Interstate Stream Commission.

Please provide any comments on the revised plan by December 24, 2015, to :

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An electronic copy of the DSEA, as well as the original EA and FONSI, is available at:

<http://www.spa.usace.army.mil/Missions/Environmental/EnvironmentalCompliance/Documents/EnvironmentalAssessmentsFONSI.aspx> .

Paper copies are available upon request.



US Army Corps  
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Albuquerque District

# DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT FOR REPAIR OF THE VILLANUEVA DIVERSION DAM, PECOS RIVER, SAN MIGUEL COUNTY, NEW MEXICO

U.S. Army Corps of Engineers  
4101 Jefferson Plaza NE  
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## 1. INTRODUCTION

### 1.1. Purpose of, and Need for, this Supplemental Environmental Assessment

This Draft Supplemental Environmental Assessment (“Draft SEA”) evaluates a revised plan for the repair of the diversion dam for the Villanueva Southside and Northside ditches on the Pecos River in San Miguel County, New Mexico. The dam is located approximately 1.5 miles upstream from the village of Villanueva, and is within Section 7, Township 12N, Range 15E.

In October 2014, the U.S. Army Corps of Engineers (“Corps”), completed the *Environmental Assessment for Repair of the Villanueva Diversion Dam, Pecos River, San Miguel County, New Mexico* (USACE 2014)<sup>1</sup> — subsequently referred to as the “2014 EA” through this Draft SEA. A Finding of No Significant Impact for the project was signed on November 5, 2014, by the Commander of the Albuquerque District of the Corps. A contract for construction was awarded and the contractor proceeded with preparatory activities to commence on-site work. It soon became apparent to both the contractor and the Corps that additional provision for diversion of river flow around the work site at the dam was required for access and worker safety. This Draft SEA evaluates the revised diversion plan, and includes some minor clarifications regarding construction activities. **The original purpose, scope, and alternatives for repair have not changed from that described in the 2014 EA.**

### 1.2 Project Background

The Villanueva Diversion Dam is a rock-filled gabion, concrete-capped structure built in 1992 by the Corps in 1992 (USACE 1991). The structure has a notched, step-down cross-section with a total water drop of about nine feet. Since its construction, the diversion dam has eroded severely on the downstream toe along its entire length. The most severe erosion is occurring at the right bank (looking downstream). The second-step gabions also are noticeably eroding and this step may soon fail. The gabion rock of the weir step-downs have eroded back upstream approximately five feet. The existing headwalls of the gated outlet are structurally sound and do not require rehabilitation. In its present condition, the dam will likely overturn as a result of the scouring and undermining of the structure if not stabilized.

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<sup>1</sup> A copy of the 2014 Environmental Assessment and Finding of No Significant Impact is available at <http://www.spa.usace.army.mil/Missions/Environmental/EnvironmentalComplianceDocuments/EnvironmentalAssessmentsFONSI.aspx> or by request from the Corps.

The dam diverts water to two ditch systems, one on each side of the Pecos River. These ditch systems serve to irrigate over 500 acres of farmland for more than 80 families who raise various crops, including feed for animals, vegetables, and fruit. The crops are a significant source of income for this farming community. Losing this dam to failure or to reduced effectiveness due to disrepair would be an economic hardship for the community.

The repair recommended in the 2014 EA involves stabilizing the structure on the downstream side with 30 wire-wrapped, rock-filled gabions. Gabions would be added along the entire length of the dam, widening the top and second steps. The lowest row of gabions would rest on the existing concrete-capped apron. The top and vertical surfaces of all existing and new gabions would be capped with concrete. **This recommended repair has not changed.**

### 1.3. Project Authorization

The Corps, at the request of the Villanueva acequia association and the New Mexico Interstate Stream Commission (“NMISC”), investigated the repair of the diversion dam under the authority of the Water Resources Development Act of 1986 (Public Law 99-662). Under Section 1113 of the Act, Congress found that New Mexico's acequias date from the eighteenth century and, due to their significance in the settlement and development of the western U.S., should be restored and preserved for their cultural and historic values to the region. The Act authorized the restoration and rehabilitation of irrigation ditch systems (*acequias*) in New Mexico. The Secretary of the Army was authorized and directed to undertake, without regard to economic analysis, such measures as are necessary to protect and restore New Mexico's acequias. The non-Federal cost-share of any work carried out under this section of the Act shall be 25 percent. For the Villanueva diversion dam repair project NMISC would provide the 25-percent local cost-share.

### 1.4. Regulatory Compliance

This document was prepared by the U.S. Army Corps of Engineers, Albuquerque District, in compliance with all applicable Federal statutes, regulations, and Executive Orders, including:

- National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*);
- Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 *et seq.*);
- U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR 230);
- Clean Air Act, as amended (42 U.S.C. 7401 *et seq.*);
- Clean Water Act of 1977, as amended (33 U.S.C. 1251 *et seq.*);
- Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*);
- Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (Executive Order 12898);
- Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*);
- Floodplain Management (Executive Order 11988);
- Protection of Wetlands (Executive Order 11990);
- National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*);
- Protection of Historic and Cultural Properties (36 CFR 800 *et seq.*);
- Protection and Enhancement of the Cultural Environment (Executive Order 11593);
- American Indian Religious Freedom Act (42 U.S.C. 1996); and
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 *et seq.*).

## **2. DESCRIPTIONS OF THE 2014 DIVERSION PLAN AND THE REVISED PLAN**

### **2.1. Description of the 2014 Diversion Plan**

During construction, the river's seasonally low flow of 20-50 cfs would be diverted through the notch in the dam crest and the sluicing trough along the left (north) abutment of the dam, returning to the channel approximately 35 feet downstream from the dam, and also downstream from the work zone along the dam's downstream face. Pumping may be employed to assist the diversion through the notch or, alternatively, over the crest of the dam. Water pumped over the dam could be directed toward one side of the channel while structural work was performed the dam on the opposite side of the channel. If needed, non-erodible cofferdams may be employed to prevent water from backing upstream into the work zone.

As previously stated, once site conditions were more accurately assessed, this plan was considered insufficient to ensure a dry work area and guarantee the safety of construction personnel.

### **2.2. Description of the Revised Diversion Plan**

An inflatable dam would be placed across the channel of the Pecos River just upstream from the dam to direct flow toward the north riverbank when inflated. An approximately 100-ft-long diversion channel would be excavated in the north bank to divert flow around the dam. The diversion channel would be 3 feet deep, 4-feet wide at the bottom, and 10-feet wide at the top. Material excavated from the channel would be temporarily deposited alongside the channel. The channel would be lined with an impervious liner to prevent erosion of the channel banks.

An area approximately 2,000 ft<sup>2</sup> (0.05 ac.) would be disturbed to accommodate the proposed diversion channel. After the proposed repair, the excavated spoil would be used to refill the channel. Fill within the channel would be compacted by equipment traffic to avoid overbanking river flows from eroding the bank along the filled diversion channel. To further avoid the possibility of future erosion, riprap would be placed along the riverbank at the former entry to the diversion channel. Precautions to be employed to protect water quality and existing vegetation are described in the following chapter.

## **3. EXISTING CONDITIONS AND FORESEEABLE EFFECTS OF THE REVISED DIVERSION PLAN**

### **3.1 Resources Not Affected by the Revised Diversion Plan**

This chapter evaluates the potential affect of the revised diversion plan as compared to the plan evaluated in the 2014 EA. The condition of the resources listed below are fully described in the 2014 EA and the implementation of the revised plan for dam repair would not alter the effects determinations in that document.

- Geology
- Physiology
- Climate
- Waters of the U.S.

- Wetlands
- Floodplains
- Hazardous, toxic, and radioactive waste
- Air quality
- Noise
- Fish and wildlife
- Special status species
- Cultural resources
- Socio-economic environment
- Aesthetics

### **3.2 Soils**

The soils within the immediate channel area at the Villanueva Dam are classified as Ustifluvents, by the Natural Resources Conservation Service (NRCS 2014). These frequently flooded but moderately well drained soils are forming in alluvium derived from igneous and sedimentary rock.

The 2014 plan of work entailed only minimal disturbance of project site soils, and would not adversely affect soil resources in the project area.

The proposed revised diversion plan would temporarily disturb approximately 2,000 ft<sup>2</sup> (0.05 ac.) of ground surface. Excavated material would later be used to refill the diversion channel, and precautions would be taken to avoid river flows from recapturing the channel alignment. The minor and temporary disturbance would have no significant affect on soil resources.

### **3.3 Hydrology**

The Pecos River at Villanueva experiences sustained higher flows following snowmelt runoff from the upstream Sangre de Cristo Mountains and the surrounding river basin, usually from March through early July. Discharge also increases for brief periods (usually 0.5 to 2 days) following individual rain storm events from mid-July through mid-September. During November through February (including the period of proposed construction), the median daily discharge is 20 to 25 cfs at Anton Chico, about 15 miles downstream from Villanueva (USGS 2014). The river at Villanueva is generally perennial, although there have been brief periods of no flow due to drought, diversions or winter freeze-up.

The revised diversion plan would temporarily reroute Pecos River flow through the temporary diversion channel and redirect it back to the channel downstream from the dam. The volume of the river's flow would not be affected by the proposed diversion.

### **3.4 Water Quality**

The New Mexico Water Quality Control Commission ("NMWQCC") has designated the following uses for the mainstem of the Pecos River from Cañon de Manzanita downstream to Tecolote Creek: irrigation, livestock watering, wildlife habitat, marginal coldwater aquatic life and primary contact (NMWQCC 2013). In addition to the use-specific water quality standards defined in 20.6.900 NMAC, the NMWQCC has established the following reach-specific

standards for the Pecos River in the proposed project area: 1) temperature 30°C (86°F) or less; and 2) at all flows above 10 cfs, TDS 250 mg/L or less, sulfate 25 mg/L or less and chloride 5 mg/L or less.

The 2014 diversion plan would have no effect of water quality in the Pecos River.

With the revised diversion plan, a temporary and slight increase in turbidity would likely occur during the initial wetting of the diversion channel. No permanent effects to water quality for the Pecos River at or below the dam are foreseen.

As was the case in the 2014 EA, the following best management practices would be included in construction contract specifications and would be employed during construction to prevent bank erosion and the discharge of soil material into the river.

- Stream flow shall be maintained at all times during construction.
- Work shall be performed only during low-flow conditions. Flowing water may be temporarily diverted around the work area, but must remain within the existing channel to minimize erosion and turbidity and to provide for aquatic life movement. In coordination with the acequia association, flow may be diverted through the irrigation inlets only if it is returned to the channel as near as possible to the downstream end of the work area. Diversion structures shall be non-erodible, such as sand bags, water bladders, or concrete barriers. Dirt cofferdams are not acceptable diversion structures.
- Heavy equipment shall not enter surface water. If needed, a temporary crossing from the foot of the access ramp to the work area immediately downstream from the dam shall be utilized to minimize disturbance to the channel. The crossing shall be as short as possible to accommodate such access. Only uncontaminated earth or crushed rock shall be used for the temporary crossing. Heavy equipment shall not be parked within the stream channel or parked unattended on the crossing.
- Silt curtains, cofferdams, dikes, wattles, straw bales and other suitable erosion control measures shall be employed to prevent sediment-laden runoff or contaminants from entering the watercourse.
- All concrete and other construction materials shall be properly handled and contained to prevent releases to surface water. Poured concrete shall be fully contained in mortar-tight forms and/or placed behind non-erodible cofferdams to prevent discharge contact with surface or groundwater. Wastewater from concrete batching, vehicle washdown, and aggregate processing shall be contained, and treated or removed for off-site disposal. Dumping of any waste material in or near watercourses is prohibited.
- Fuel shall be brought to the project as needed. Refueling shall only be performed in the designated staging area. Oil, lubricants, hydraulic fluids and other petrochemicals shall be stored only within the designated staging area. Appropriate spill clean-up materials such as booms and absorbent pads shall be available on-site at all times during construction.
- In order to reduce the potential to transfer non-native vegetation or weed seed, all heavy equipment shall be cleaned with a high pressure water hose before entering the site, and again immediately before leaving the site.

- All heavy equipment will be inspected daily for leaks. A written log of inspections and maintenance must be completed and maintained throughout the project period. Leaking equipment must not be used in or near surface water. Any petroleum or chemical spills would be contained and removed, including any contaminated soil.

### 3.5. Biological Resources

The current conditions of vegetation and wildlife in the vicinity of Villanueva Dam were described in the 2014 EA, and have not changed.

Under the original, 2014 diversion plan, no vegetation would be removed during the conduct of the repairs.

For the revised diversion plan, the proposed diversion channel would follow the path of a similar diversion channel built in 1992 during dam construction, and that alignment is now partially vegetated by coyote willow. An area approximately 2,000 ft<sup>2</sup> (0.05 ac.) would be disturbed to accommodate the proposed diversion channel. Prior to excavation, all woody vegetation would be cut at the ground surface. Spoil from excavation would be placed alongside the channel atop geotextile fabric placed over the existing willow root system. After the proposed repair, the excavated spoil would be used to refill the channel, and the protected root systems of the willows would facilitate resprouting in spring. As was the case following construction in 1992, willows adjacent to the filled diversion channel would resprout and gradually extend their coverage to further stabilize the filled channel. No significant effect on vegetative resources is foreseen.

As described in the 2014 EA, the Pecos River in this reach is likely to support fishes including common carp (*Cyprinus carpio*), longnose dace (*Rhinichthys cataractae*), red shiner (*Cyprinella lutrensis*), flathead chub (*Platygobio gracillis*), Rio Grande chub (*Gila pandora*), fathead minnow (*Pimephales promelas*), white sucker (*Catostomus commersoni*), black bullhead (*Ictalurus melas*), brown trout (*Salmo trutta*) and green sunfish (*Lepomis cyanellus*) (Sublette *et al.* 1990).

Currently, fish cannot pass upstream beyond the existing diversion dam. The proposed diversion channel would have estimated discharge of approximately 70 cfs, and fish species such as chubs, trout, and white sucker might be able to pass upstream through the temporary channel with the relatively low flows expected during the winter construction period. The objective of the proposed repairs is to stabilize the existing diversion dam for continued use by the community and does not include a permanent fish passage feature. Following construction, the Pecos River channel would be similar to the current conditions.

### 3.6. Recreation

Access to the work area would be along County Road B29C, and a 0.25-acre staging area would be utilized at the terminus of the road and adjacent to the dam. The staging area itself is within the bounds of Villanueva State Park, and the Corps has coordinated with the Park for temporary access and use during construction.

Local residents frequently visit the southern bank of the dam to view the river. For the public's safety, access to the immediate area of the dam would be restricted during construction. Therefore, recreation opportunities would be temporarily precluded during the construction

period; however, the current recreational opportunities would continue unimpaired following construction.

#### 4. CONCLUSIONS

Repair of the diversion dam for the Villanueva South and Northside Ditch Association would ensure future reliable irrigation of agricultural lands served by the acequia users. The proposed revised diversion plan would facilitate the plan recommended in the 2014 Environmental Assessment while providing a dry work area and ensuring the safety of construction personnel. Effects on biological resources, air and water quality, streamflow characteristics, and recreation would be minor, and no cultural resources or special-status species would be affected.

#### 5. PREPARATION AND COORDINATION

This Draft Supplemental Environmental Assessment was prepared by the U.S. Army Corps of Engineers, Albuquerque District. The multidisciplinary Product Development Team included:

Patricia Phillips – Project Manager	Lance Ferber – Structural Technician
Ben Alanis – Civil Engineer	Stephen Scissons – Hydraulic Engineer
Richard Banker – Specifications	Benjamin Miranda – Real Estate Specialist
William DeRagon – Biologist	Steven Wagner – Environmental Engineer
Gregory Everhart – Archaeologist	Timothy Tetrick – Cost Engineering

In addition to the general public, this Draft Supplemental EA Agencies has been provided to the following entities review and comment:

- U.S. Fish and Wildlife Service
- New Mexico Interstate Stream Commission
- New Mexico Department of Game and Fish
- New Mexico Environment Department
- Villanueva State Park
- County Manager, San Miguel County
- Villanueva South and Northside Ditch Association

#### 6. LITERATURE CITED

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