

Turley-Manzanares Acequia Rehabilitation Project Phase 2

San Juan County, New Mexico

Draft Environmental Assessment



U. S. Army Corps of Engineers
Albuquerque District

DRAFT

**August
2020**



**US Army Corps
of Engineers**®
Albuquerque District

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DRAFT FINDING OF NO SIGNIFICANT IMPACT**TURLEY-MANZANARES ACEQUIA REHABILITATION PROJECT PHASE 2****SAN JUAN COUNTY, NEW MEXICO**

The U.S. Army Corps of Engineers, Albuquerque District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Draft Environmental Assessment (EA) dated August 2020, for the Turley-Manzanares Acequia Phase 2 Rehabilitation Project addresses water delivery opportunities and feasibility for the Turley-Manzanares Acequia Association in San Juan County, New Mexico.

The Draft EA, incorporated herein by reference, evaluated various alternatives that would improve water delivery in the study area. The recommended plan involves two sections as follows:

- Section 1 would consist of a 36-in diameter reinforced concrete pipe installed and buried approximately two-feet deep for approximately 2,750-linear feet. The pipe will be laid down within the existing channel to the greatest extent possible. All pipe would be placed within the Acequia Association easement. This section of work would include an arroyo crossing. At the arroyo, concrete revetment mats would be used to protect the pipe from scour. This mat would extend upstream 30-feet (ft) maximum and continue to the San Juan River. The revetment mat would be tied back below the calculated scour depth. Existing sluice gates would be replaced by a new manhole with sluice gate. Thirteen (13) new manholes would be installed along the pipe alignment for maintenance purposes.
- Section 2 would consist of approximately 1,225-lf of new concrete-lined channel. The new channel would be approximately 6-ft wide at the base with 1-ft V:1.5-ft H side slopes. This section currently fits within the existing channel, no excavation would be necessary for the concrete channel. Concrete would be 4-in thick. The side slope to the south of the channel also would be laid back to a 1-ft V:2-ft H slope. This slope would require erosion protection and would be covered with wire-wrapped riprap.

In addition to a “no action” plan, two alternatives were evaluated. The alternatives included the installation of pipe throughout the entire study area and the use of corrugated metal pipe.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1.

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydrology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Socio-economics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the Draft EA and listed below will be implemented, if appropriate, to minimize impacts and are listed below:

- Project construction would be scheduled during the non-irrigation season.
- Disturbed soil surrounding the project area would be reseeded with a native seed mix.
- All fuels, oils, hydraulic fluids and other similar substances would be appropriately stored out of the floodplain and must have a secondary containment system to prevent spills if the primary storage container leaks. Construction equipment would be inspected daily and monitored during operation to prevent leaking fuels or lubricants from entering any surface water.
- To control dust and wind erosion, soils within the construction zone would be kept wet. Stockpiles of debris, soil, or other materials that could produce dust would be watered or covered. Materials transported on or off-site by truck would be covered. The contractor would be required to comply with local sedimentation and erosion-control regulations.
- BMPs would be implemented regarding the treatment and disposal of waste material. Proper disposal of all waste material at commercial disposal areas or landfills would occur.
- Activities would be limited to the designated or otherwise approved areas and would be shown on the construction drawings for construction areas, staging access, and borrow use. USACE approval of any additional areas will be required regardless of their ownership or distance to the construction sites to ensure protection of vegetation, water quality, threatened and endangered species, cultural resources and other significant resources. The USACE's Contracting Officer will

coordinate with the USACE Environmental Resources Section to approve any changes in access routes, non-commercial borrow sites, staging areas, disposal sites, and other high-use areas.

- A Stormwater Pollution Prevention Plan is required. Aquatic and riparian habitat would be protected with silt fencing, geotextiles, or straw bales to prevent runoff of sediment from areas disturbed by construction.

A review of Corps records and an online records check of the New Mexico Office of Cultural Affairs' Historic Preservation Division New Mexico Cultural Resources Information System (NMCRIS) database was conducted on January 15, 2020. The only historic property located within or near the Area of Potential Effect (APE) for the proposed project is the Turley-Manzanares Acequia itself (HCPI No. 31706). The Turley-Manzanares Acequia has been previously determined eligible to the National Register of Historic Places (NRHP) under criteria (a) and (c). The Turley-Manzanares Acequia measures approximately 2.8 miles in length, was constructed and adjudicated in 1876, and holds the oldest priority date on the San Juan River.

The current state of the Acequia is an open earthen ditch along its entire length, with the exception of a short section, which has already been piped near the diversion structure at the east end. The original materials, design, and workmanship would be compromised by the use of concrete and piping to line the Acequia and the removal and/or replacement of existing turnout gates. The feeling of water running openly through an earthen Acequia system in the rural countryside also would be compromised by the partial piping of the Acequia. The concrete lining would look modern. For all of these reasons, it was determined by the Corps and the New Mexico State Historic Preservation Office (SHPO) via teleconference on January 23, 2020, that the proposed project would have an adverse effect on the Turley-Manzanares Acequia.

Since the Turley-Manzanares Acequia has already been surveyed for cultural resources and has a completed Historic Cultural Properties Inventory (HCPI) form, SHPO has agreed that photo documentation and oral history interviews will suffice to complete mitigation prior to implementation of the piping and lining project. A Memorandum of Agreement with these stipulations is currently being drafted for SHPO review.

One 5-acre staging area will be surveyed for the proposed project. No historic properties or archaeological sites are known to exist in the staging area. The Corps will make a determination of effect for the newly surveyed staging area and will complete consultation with the SHPO under Section 106 of the National Historic Preservation Act (NHPA). Survey will be conducted concurrently with review of the Draft Environmental Assessment.

Consistent with the Department of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 28, 1998, and based on the State of New Mexico Indian Affairs Department and Historic Preservation Division's 2019 Native American Consultations List, American Indian Tribes that have indicated they have concerns in this portion of San Juan County have been contacted regarding the proposed project. Tribal consultation letters were sent on April 21, 2020. Responses were received from the Navajo Nation and the Southern Ute Tribe, and both responses indicated that there were no cultural resource concerns with the project. Currently, there are no known cultural resources or traditional cultural properties concerns regarding the Acequia rehabilitation project.

Public review of the Draft EA and FONSI was completed on XX. All comments submitted during the public review period will be responded to in the FINAL EA and FONSI.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to the Clean Water Act, as amended (CWA), certain discharges associated with the construction and maintenance of irrigation ditches are exempt from Section 404 permit requirements (33 CFR 323.4(a), Exemption No.3). Therefore, a Department of the Army permit under Section 404 of the CWA is not required.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials have been completed.

Technical, environmental, and cost effectiveness criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

Patrick M. Stevens V.
Lieutenant Colonel, U.S. Army
District Commander

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1 - Introduction

1.1 Background and Location

The U.S. Army Corps of Engineers (Corps), Albuquerque District, in cooperation with the New Mexico Interstate Stream Commission (ISC), and the Turley-Manzanares Acequia Association, have proposed a Turley-Manzanares Acequia Rehabilitation Project Phase 2. The proposed rehabilitation work on the Turley-Manzanares Acequia (Acequia) would be conducted under Section 1113 of the Water Resources Development Act of 1986 (Public Law 99-662) (Act), which authorized the restoration and rehabilitation of Acequias, irrigation systems, in New Mexico. New Mexico's Acequias date back to the eighteenth century and played a significant role in the settlement and development of the western United States (U.S.). As such, Congress authorized the U.S. Army Corps of Engineers (Corps), Albuquerque District's Acequia Program to preserve the historic character and cultural value of each Acequia system while maintaining and/or rehabilitating the historic purpose of each Acequia's ability to deliver water to each Parciante (water right user) of the local Acequia association. Acequias are the bloodlines to many rural communities throughout New Mexico. These community-operated Acequias have developed and sustain the community's social, political and economic growth from the eighteenth century to the present day. As part of the Acequia Program's authorization, the Secretary of the Army has been directed to undertake, without regard to economic analysis, measures that are necessary to assist the State of New Mexico and Acequia Associations in preservation and rehabilitation New Mexico's Acequias. Projects executed under the Acequia Program are cost-shared between the Corps (75 percent of the total project cost) and the non-Federal entities (25 percent of the total project cost).

The proposed Turley-Manzanares Acequia Phase 2 Rehabilitation Project Area is located in (or near the Village of) Turley, San Juan County, New Mexico (Figure 1 and Figure 2). The towns of Aztec and Bloomfield, New Mexico, are approximately 20 miles northwest and 16 miles southwest of the proposed Project Area, respectively. The Village of Turley is located on the south side of the San Juan River. The Acequia's diversion is located 4.7 river miles downstream of the State Road (SR) 173 (Navajo Dam Rd) and upstream of the Village of Turley. The Acequia runs along the left bank (facing downstream) of the San Juan River and is approximately 3 miles in length, from diversion to the final return. The Acequia currently serves approximately 800 acres of irrigated land for various purposes.

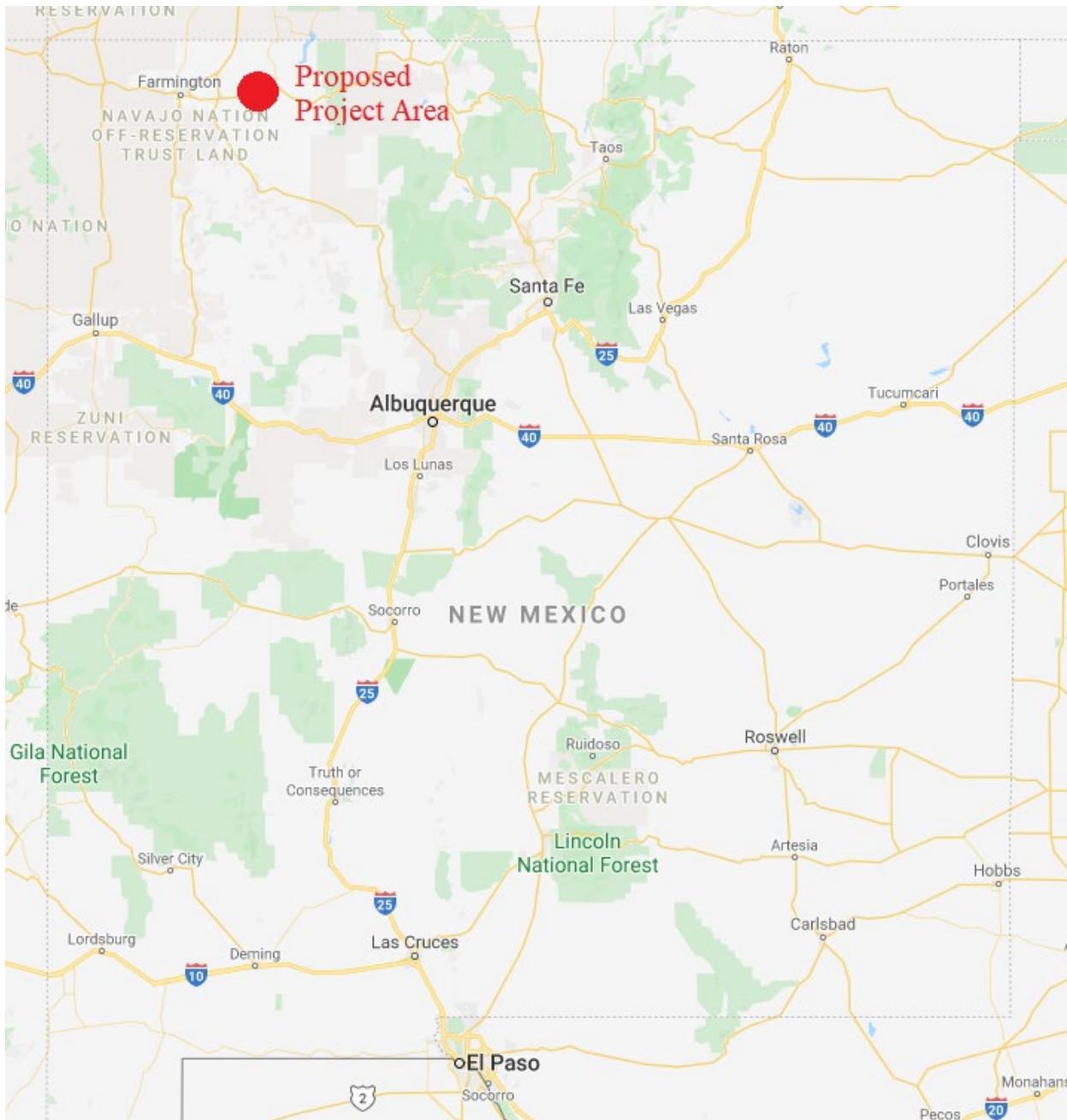


Figure 1. Turley-Manzanares Acequia Vicinity Map

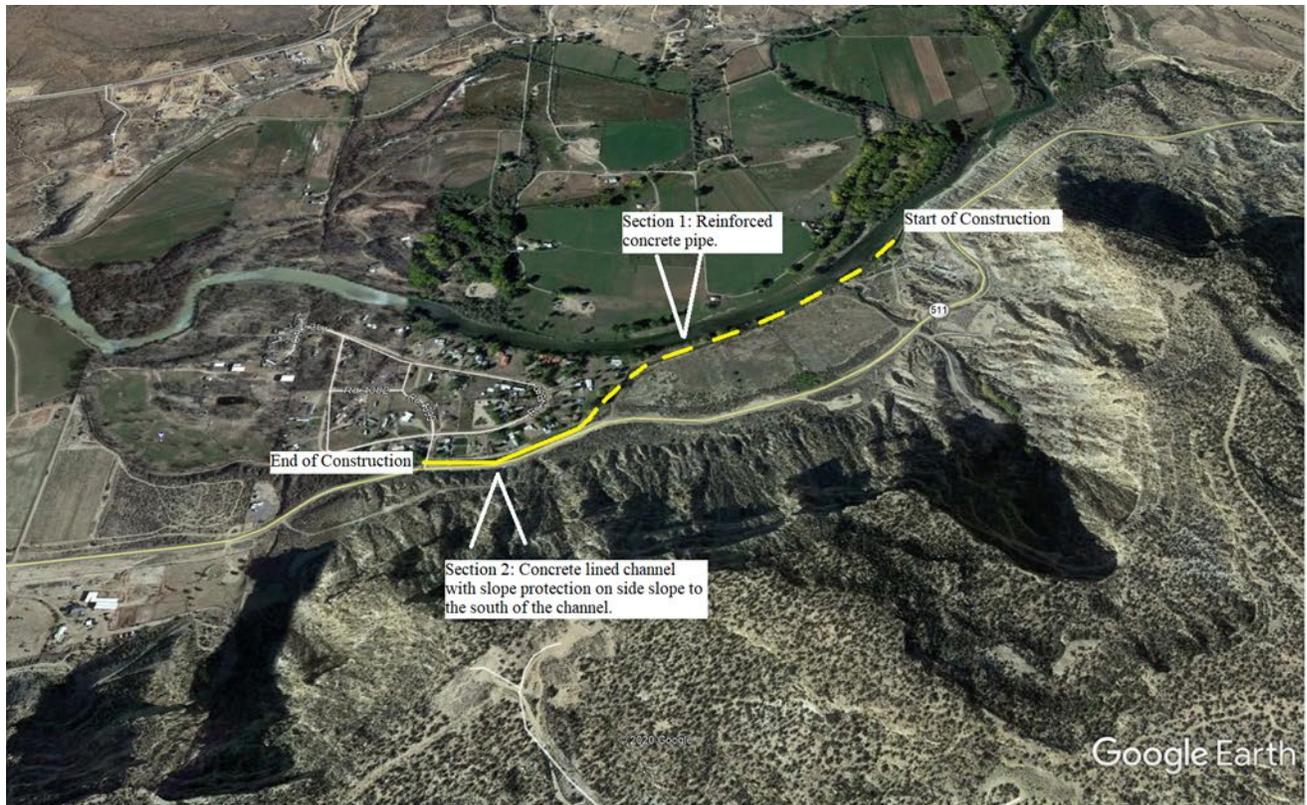


Figure 2. Turley-Manzanares Acequia Phase 2 Rehabilitation Project Map

1.2 Purpose and Need

The Corps, Albuquerque District, and the ISC have a Cooperative Agreement that allows each agency to work as partners in providing assistance to a New Mexico Acequia Association member who may formally submit a request for assistance in the preservation and/or rehabilitation of their Acequia. In the spring of 2019, the Turley-Manzanares Acequia Association, formally requested assistance to efficiently convey the water that the Turley-Manzanares Acequia is legally entitled to diverted from the San Juan River. The Turley-Manzanares Acequia is in need of rehabilitation because the existing system for delivering water is difficult and costly to operate and maintain. The purpose and need of this project are to improve the efficiency of water delivery to the Acequia members by minimizing evaporative and seepage losses from the earthen segments. In addition, runoff that comes from the adjacent hill slope to the south results in substantial amounts of sediment deposition in the Acequia. This reduces the capacity of the Acequia to convey water to downstream agricultural fields.

1.3 Regulatory Compliance

This Draft Environmental Assessment was prepared by the Corps in compliance with all applicable Federal statutes, regulations, and Executive Orders (EO), as amended, including, but not limited to, the following:

- National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321 *et seq.*);
- Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508);
- U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR 230; ER 200-2-2);

- Clean Air Act of 1970 (42 U.S.C. 7401-7671, as amended);
- Clean Water Act (CWA) of 1972 (33 U.S.C. 1251 *et seq.*);
- Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, as amended);
- Fish and Wildlife Coordination Act of 1934 (16 U.S.C. 661 *et seq.*, as amended);
- Farmland Protection Policy Act, 1981 (7 U.S.C. 4201 *et seq.*, as amended);
- National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.*);
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013);
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996);
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470mm);
- Protection of Historic and Cultural Properties (36 CFR 800 *et seq.*);
- EO 11514, Protection and Enhancement of Environment Quality, 1970;
- EO 11988, Floodplain Management, 1977;
- EO 11990, Protection of Wetlands, 1977;
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994;
- EO 13112: Invasive Species, 1999
- EO 13007, Indian Sacred Sites, 1996;
- EO 13084, Consultation and Coordination with Indian Tribal Governments, 1998; and
- EO 11593, Protection and Enhancement of the Cultural Environment, 1971.

2 - Description of Alternatives and Proposed Action

A total of four alternatives were formulated. These include the No-Action alternative, two alternatives that were eliminated from further analysis, and the Proposed Action. Selection criteria were identified during the alternative formulation, which include:

1. Convey water at a constant rate per New Mexico water allotment for the Turley-Manzanares Acequia.
2. Reduce water loss due to evaporation and seepage.
3. Maintain the ability for the Acequia to transport surface flows due to rain and snow melt.
4. Reduce the amount of manual labor required to clean and maintain the irrigation system prior to, during, and after the irrigation season.
5. Protect existing infrastructure such as houses and utility corridors.
6. Protect Waters of the U.S. by reducing erosion, discharge, and fill.
7. Allow each New Mexico water right user to access the water that they are legally allotted.
8. Convey water through a buried pipe and allow all water right users to access their allotted amount of water each irrigation season.

2.1 No-Action Alternative

If no action is taken, the Acequia's current quantity of water that is being delivered would continue to be less than the Acequia's legally entitled quantity of water that they can divert from the San Juan River. As the climate continues to change, the delivery of water through the Acequia would continue to be inefficient. The No-Action Alternative does not meet selection criteria 5-8.

2.2 Alternatives Eliminated from Analysis

Alternative 1: This alternative would consist of pipe installed and buried along approximately 4,000-linear feet (lf) of the Acequia. The pipe would be laid down within the existing channel to the greatest extent possible. All pipe would be placed within the Acequia Association easement. The pipe would include an arroyo crossing and two turnout removal and replacement locations. Maintenance manholes would be

placed between each turnout at a maximum of 200-ft apart. At the arroyo, concrete revetment mats would be used to protect the pipe from scour. The mat would extend upstream 30-ft maximum and continue to the confluence at the San Juan River. The revetment mat would be tied back below the calculated scour depth.

This alternative was not considered for further analysis for various reasons. Primarily, the existing channel acts as a catchment for overland flows entering the neighborhood on the west-end of the project reach from steep terrain to the north. Filling in the channel could create a flood hazard for the area. Second, the Parciantes, who have water rights to the Acequia, need access to the water. They currently have pumps and homemade irrigation lines in the Acequia to access the water and this access would be cut off if this area were to be piped. Building the infrastructure to provide at least four access points for the housing development water right users would reduce the rate of flow of the water that is conveyed downstream of these access points. The access points would not allow a consistent and constant flow rate to those water right users, either within the housing development or downstream.

The segment of the Acequia that runs between the existing road and housing development would require a large easement to provide the sufficient area to bury the new pipe with extension T-s and access sumps (access points for water right users within the housing development) and maintain the existing Acequia that matches the current capacity to transport surface flows that travel from a mesa down to the San Juan River.

The Turley Manzanares Acequia Association and Private Land Owners will need to negotiate either the purchase of required land or land easement required to relocate the existing utilities corridors, install and bury the pipe that convey water, build an adjacent Acequia to carry stormwater to reduce flood risk to the existing home development area, and access road for routine maintenance for the pipe delivery system. They would also need to maintain the current adjacent Acequia to carry stormwater to reduce flood risk to the existing home development area.

The required ground disturbance and materials to support the installation of the buried pipe in the segment of the Acequia will be extensive and blow the current construction budget.

Alternative 1 does not meet selection criteria 1, 5 and 7.

Alternative 2: In the Phase 1 reach, the existing pipe network from the diversion dam to the open Acequia channel consists of a 36" corrugated metal pipe. Alternative 2 would continue the corrugated metal pipe for approximately 4000-lf.

This alternative was not considered for further analysis because the corrugated metal pipe would reduce the rate of flow that the water is delivered due to the roughness coefficient of the corrugated metal pipe. A reduced flow rate results in less water for the users and for this reason, Alternative 2 was not carried forward for further analysis.

Alternative 2 does not meet selection criteria 1, 5 and 7.

2.3 Proposed Action Alternative

The Proposed Action rehabilitation consists of a combination of pipe and concrete lined channel along two sections of the Acequia. The breakdown for the two sections is as follows:

Section 1 would consist of a 36-in diameter reinforced concrete pipe installed and buried approximately two-feet deep for approximately 2,750-lf. The pipe would be laid down within the existing channel to the greatest extent possible. All pipe would be placed within the Acequia Association easement. This section

of work would include an arroyo crossing. At the arroyo, concrete revetment mats would be used to protect the pipe from scour. This mat would extend upstream 30-feet (ft) maximum and continue to the San Juan River. The revetment mat would be tied back below the calculated scour depth. Existing sluice gates would be replaced by a new manhole with sluice gate. Thirteen (13) new manholes would be installed along the pipe alignment for maintenance purposes.

Section 2 would consist of approximately 1,225-lf of new concrete-lined channel. The new channel would be approximately 6-ft wide at the base with 1-ft V:1.5-ft H side slopes. This section currently fits within the existing channel, no excavation would be necessary for the concrete channel. Concrete would be 4-in thick. The side slope to the south of the channel also would be laid back to a 1-ft V:2-ft H slope. This slope would require erosion protection and would be covered with wire-wrapped riprap. Additionally, the project would be reseeded with a native seed mixture to include a variety of grasses, forbs, and shrubs.

The Proposed Action Alternative meets all selection criteria, except for a portion of criteria 8.

Construction of the proposed action would take approximately four months and is expected to start in December 2020.

2.3.1 Climate Change and the Proposed Action

Climate change (see discussion in Section 3.1.1) is anticipated to result in a reduction in water availability in the project area by reducing snowpack water volumes (snow water equivalence (SWE)), decreasing soil moisture, and increasing plant evapotranspiration rates. By piping and lining a portion of the open Acequia, this project increases water resources resilience for farmers who obtain irrigation water from the Turley-Manzanares Acequia by reducing water losses during transit.

3 - Existing Environment and Foreseeable Effects of the Proposed Action

3.1 Physical Resources

3.1.1 Climate and Climate Change

The Project Area is located in the northwestern corner of NM within the Colorado Plateau physiographic province. Located almost a mile above sea level, it has a temperate desert climate characterized by cool summers (mean maximum temperatures below 90°F), mild winters (average temperature of the coldest month is 30.5°F) and mean annual precipitation of 8.6 inches (NCDC 1981-2010 Monthly Normals for the Farmington Agricultural Science Center Cooperative Observer site (<https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm3142>)). During the July-October wet season, monthly precipitation averages about one inch, typically falling during localized convective storms; winter precipitation is generally sparse.

Over recent decades, warming is evident in the project area: average temperatures have increased more than 1.8°F between 1910 and 2009, with most of this rise occurring after 1993 (Nydick et al. 2012). Warming has occurred in all seasons. There has been no trend in the quantity of precipitation received (Bennett et al. 2019). However, warmer winter and spring temperatures and dust on snow have contributed to reductions in snowpack snow water equivalence in the adjoining San Juan Mountains, and an advance in the timing of spring runoff by two weeks (Clow 2010, Painter et al. 2007, Nydick et al. 2012).

These trends are anticipated to continue into the foreseeable future. Temperatures are anticipated to increase by as much as 6°F over present values by the mid-21st Century but precipitation is likely to remain similar to today (Bennett et al. 2019). Warmer temperatures are likely to contribute to smaller spring snowpack volumes both directly by causing snowpack melt in the winter months and indirectly by causing a greater share of winter precipitation in mountain regions to fall as rain rather than snow, especially at lower elevations (Bennett et al. 2019). The net result may be significant reductions in water availability in the project area, especially in the summer months. Warmer temperatures are also likely to increase surface water evaporation rates and increase plant water demand, and therefore reduce available soil moisture. See Appendix A for more information on climate and climate change.

3.1.2 Physiography, Geology, and Soils

The Project Area is located in the canyon of the San Juan River about 14.3 river-miles downstream from Navajo Dam. The heading and Acequia are situated at the base of the steep slope of Melquiadis Point on the south side of the river. The opposite side of the river is bounded by a broad, level floodplain that yields on its north side to low, rolling hills.

The Project Area is located in the San Juan Basin of the Colorado Plateau physiographic province (Woodward et al., 1997). The San Juan Basin began to form in Tertiary time (ca. 65 million years ago) by subsidence and uplift of surrounding mountains. Sediments eroded from the uplifting mountain masses filled the basin. These sediment strata are visible in the walls of the canyon cut by the San Juan River (McLemore, 2003). The rock strata in the canyon walls have a fluvial origin and consists of conglomerates, sandstone, and shale. The Project Area is situated in the Holocene (i.e. within the last 12,000 years) alluvium deposited by the San Juan River. This alluvium ranges from coarse sand to gravel and also includes imported fills associated with construction and maintenance of the existing diversion.

Soils in the project area are Walrees Series and are generally described as moderately deep and poorly drained (Keetch, 1980). These soils are formed in alluvium derived from mixed sources. The surface layer is a grayish brown loam. Permeability is moderately slow to a depth of 30 inches and very rapid below this depth (Keetch, 1980). Soils adjacent to the project area are of the Stumble-Slickspots complex and Youngston clay loam (USDA, 2020). They both are gently sloping and very well drained.

Under the No-Action alternative, normal operation and maintenance activities would continue. Minor disturbance to soils could occur during the possible removal of annual vegetation. However, there would be no effect to soils from the proposed action as it would not take place.

The Proposed Action would have minor, temporary effect to soils during construction. A trench would be excavated in order to lay the pipe for the Acequia and would backfilled according to specifications. Where the Acequia would be concrete-lined, it would excavated to a standard trapezoidal cross-section. Standard Best Management Practices (BMPs) to prevent on- and off-site erosion would be incorporated in contract specifications, and would include silt fences, straw bales, geotextiles, or similar measures. Use of these BMPs would ensure that soils are only minimally affected by the proposed work.

3.1.3 Water Resources

3.1.3.1 *Water Quality*

The closest surface water resource near the Project Area is the San Juan River, which feeds the Acequia through a diversion. Designated uses of the San Juan River in the project area include high quality cold-water fisher, irrigation, livestock watering, wildlife habitat, municipal and industrial water supply, and secondary contact recreation (New Mexico Administrative Code §20.6.4.405). Water quality standards specified for the reach include:

- Conductivity shall not exceed 400 $\mu\text{mhos/cm}$ at 77°F;
- pH shall be within the range of 6.6 to 8.8;
- temperature shall not exceed 68°F; and
- turbidity shall not exceed 10 nephelometric turbidity units (NTU).

Section 402 of the Clean Water Act (CWA; 33 U.S.C. 1251 et seq.) as amended, regulates point-source discharges of pollutants into waters of the United States (WoTUS) and specifies that storm-water discharges associated with construction activities shall be conducted under the National Pollution Discharge Elimination System (NPDES) guidance. Construction activities associated with storm-water discharges are characterized by such things as clearing, grading, and excavation, subjecting the underlying soils to erosion by stormwater, which results in a disturbance to one or more acres of land. The NPDES general permit guidance would apply to this project because the project area is greater than one acre. Therefore, a Storm-Water Pollution Prevention Permit (SWPPP) is required and would be prepared by the contractor. Impacts from stormwater are expected to be negligible.

Section 404 of the CWA provides for the protection of WoTUS through regulation of the discharge of dredged or fill material. Section (f) of the Act states that certain discharges associated with irrigation are exempt from requiring a Department of the Army (DA) permit under Section 404 of the CWA, including the construction or maintenance of dams and diversion structures. Even under this exemption, a DA permit under Section 404 would be required if any discharge of dredged or fill material contains any toxic pollutant. A small portion of the proposed action would be to replace existing pipe at an arroyo crossing. Concrete revetment mats would be used to protect the pipe from scour. The mat would extend upstream 30 feet maximum and continue to the San Juan River. The revetment mat would be tied back below the calculated scour depth. The proposed replacement of pipe and new revetment mats would not have a significant discernable alteration to the flow or circulation. Therefore, the proposed work as well as work within the arroyo would qualify for an exemption under 40 CFR 232.3 (c)(3). Since the action is exempt from permitting under Section 404, it also is exempt from state certification under Section 401 of the CWA.

Without construction of the proposed project, there would be no significant impact to water quality in the Village of Turley, nor to any WoTUS. Additionally, benefits associated with the proposed rehabilitation to the Acequia, including providing a reliable, efficient, and low-maintenance system for continued conveyance and distribution of water for use by the member of the Acequia Association, would not be realized.

Under the proposed action, the replacement of the existing pipe at the arroyo crossing would have a short-term increase in turbidity and suspended sediments from placement of the fill, and operation and construction. BMPs would be utilized during project construction to prevent construction site erosion and storm water discharges. The impacts to water quality would be short-term and minor. These effects would last only during construction. No long-term adverse impacts are expected to water quality.

3.1.3.2 *Water Use*

The closest surface water resource near the project area is the San Juan River, which feeds the Turley-Manzanares Acequia through a diversion. The Acequia serves 20 landowners growing alfalfa and grass on approximately 270 acres. Within the proposed project area, the Acequia is approximately eight feet wide and is separated from the river channel by a narrow berm.

Effects under the No-Action alternative include continued inefficiencies in the delivery and distribution of irrigation water and ongoing Acequia maintenance would continue. These impacts could potentially adversely affect land and water uses associated with the Turley-Manzanares Acequia.

The Proposed Action would rehabilitate the Acequia and ensure the continued protection and productivity of the water usage and would not cause an alteration of flow or circulation or reduction of reach. Therefore, the Proposed Action would have a beneficial impact to water use.

3.1.4 Floodplains and Wetlands

All of the Project Area, with the exception of the staging area, is within the floodplain of the San Juan River. Although no wetlands exist within the Project Area, narrow marginal bands of wetlands are located on the other side of the San Juan River.

Under the No-Action alternative, operation and maintenance of the Acequia would continue. However, there would be no encroachment on the floodplain or impacts to wetlands from operation and maintenance practices. Therefore, the No-Action alternative would have no effect on floodplains or wetlands.

The Proposed Action would fill the open Acequia for a majority of the Project Area, effectively converting the Acequia into floodplain land surface. This would represent an increase in floodplain land surface in a portion of the project area. Although there would be an increase in new floodplain land surface, it would be insignificant. No project features would encroach on the existing floodplain. Rehabilitating the Acequia with its water allocation would not contribute to additional development, but would allow present agricultural land uses to continue. Therefore, there would be no significant effects to floodplains from the rehabilitation of the Acequia. There are no wetlands within the project area; therefore, there would be no effect to wetlands from the Proposed Action.

3.1.5 Hazardous, Toxic, and Radioactive Wastes

The objective of a Phase I Environmental Site Assessment (ESA) is to identify, to the extent feasible pursuant to the processes prescribed in American Society for Testing and Materials (ASTM) E 2247-16, recognized environmental conditions in connection with the rural property. The ESA consists records review, site reconnaissance, interviews, and reporting. The information below documents the records review, site reconnaissance, and interviews conducted by environmental professional possessing sufficient training and experience necessary to conduct an ESA. Due to the similarities in reporting requirements, a separate ESA report was not generated.

Environmental regulatory records, historic aerial photographs, site reconnaissance, and an interview were used to assess the historic and existing environmental conditions within the project area and buffer. The investigation has revealed no evidence of recognized environmental concerns within or near the proposed construction project. The investigation did not identify the presence or likely presence of any hazardous substance, or petroleum products on or near the property that indicate an existing release, a past release, or threat of a release into the ground, groundwater, or surface water of the property.

The no action alternative would have no effect on known hazardous, toxic, or radioactive wastes (HTRW), as no recognized environmental concerns within or near the proposed construction project.

The Proposed Action would have no effect on known HTRW as no recognized environmental concerns within or near the proposed construction project were identified. If areas of concern or contaminants are identified, construction shall be postponed and the Corps will coordinate with the Acequia Association to determine the appropriate course of action. No HTRW releases are expected from the Proposed Action, therefore, no significant effects are expected.

3.1.6 Air Quality, Noise, Aesthetics

The Village of Turley is in New Mexico's Air Quality Control Region No. 014 for air quality monitoring, and San Juan County is "in attainment" (does not exceed State and Federal Environmental Protection Agency air quality standards) for all criteria pollutants (NMED/AQB 2020). Air quality in the Project Area is generally good.

The closest Class I area is San Pedro Parks Wilderness, which is approximately 113 kilometers (70 miles) to the southeast of the Project Area. Class I areas are special areas of natural wonder and scenic beauty, such as national parks, national monuments, and wilderness areas, where air quality should be given special protection. Class I areas are subject to maximum limits on air quality degradation.

Background noise levels in the proposed Project Area are low. According to the Center for Hearing and Communication's website (<https://chchearing.org/noise/common-environmental-noise-levels/>), an undeveloped/agricultural area has a noise level of 40 decibels. A residential area near heavy traffic has a noise level of 85 decibels. Heavy machinery has a noise level of 120 decibels. Normal noise within or near the project area includes flowing water from the San Juan River and light vehicle traffic traveling on N.M. Highway 551.

Aesthetically, the Project Area is characterized by the Acequia, homes, ranch buildings, streets, and a highway. The area receives some recreational use with the intent of viewing scenery due to the open views and the San Juan River. The presence of construction equipment, workers' vehicles, and other staging area facilities in the project area would detract from the otherwise pastoral setting in the project area for the four-month construction period. Installation of 103 feet of wire-rapped rip rap would have a more long-term effect on the Project Area scenery. This negative impact would persist until vegetation growth is great enough to obscure the wire and rock, which would be approximately three years.

Neither the Proposed Action nor the No-Action alternatives would affect air quality, noise, or the aesthetics within the proposed Project Area.

3.2 Biological Resources

3.2.1 Vegetation

The Project Area is situated in Great Basin Desert Scrub vegetation (Dick-Peddie 1993). Within the Project Area there is terrestrial and riparian habitat. The associated terrestrial habitats were represented throughout the surrounding landscape, and similar terrestrial vegetation was common and widespread in the vicinity. Upland terrestrial habitat in the Project Area is characterized by a dominance of shrubs, including big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Ericameria nauseosa*), three-leaf sumac (*Rhus trilobata*), fourwing saltbush (*Atriplex canescens*), and soapweed yucca (*Yucca glauca*). Habitat located on the embankment that separates the Acequia from the San Juan River includes: coyote willow (*Salix exigua*), Russian olive (*Elaeagnus angustifolia*), and several cottonwood trees (*Populus deltoides*). Other less common vegetation includes: inland saltgrass (*Distichlis spicata*), wild rose (*Rosa woodsii*), cocklebur (*Xanthium strumarium*), and white sweet clover (*Melilotus alba*). The staging area is located immediately south of the Acequia. The staging area is mostly bare ground with some scattered weeds.

Under the No-Action alternative, there would be no effect to vegetation as rehabilitation of the Acequia would not take place. However, normal operation and maintenance of the Acequia, such as removal/mowing of annual vegetation growth, would continue and would affect vegetation.

The proposed rehabilitation of the Acequia would disturb a small amount of vegetation, including possibly removing one mature cottonwood tree. In addition, vegetation along the existing Acequia may

decline, as the proposed piping and concrete lining of the Acequia would make less water available. Therefore, the Proposed Action would result in impacts to vegetation. These impacts would not exceed any ecologically meaningful thresholds for population persistence or viability due to the relatively small area of impact and the existing, disturbed condition of the habitat. Additionally, impacts would be reduced by reseeding the project area with a seed mixture to include a variety of native grasses, forbs, and shrubs. All proposed work would be conducted outside the irrigation season (late fall/winter) when water is not present in the Acequia. Although construction activities would impact a small amount of vegetation, significant adverse effects are not expected. BMPs would be incorporated to ensure exotic weeds are not spread during construction.

3.2.2 Wildlife

Mammal species known to occur in the riparian habitat include mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), beaver (*Castor Canadensis*), and muskrat (*Ondatra zibethicus*). Rodent and bat species are also likely to occur in the Project Area. Bird species that are known to be in the Project Area include the following: Great Blue Heron (*Ardea herodias*), Mourning Dove (*Zenaida macroura*), Black Phoebe (*Sayornis nigricans*), Western Kingbird (*Tyrannus verticalis*), Cliff Swallow (*Petrochelidon pyrrhonata*), Bewick's Wren (*Thryomanes bewickii*), Yellow Warbler (*Dendroica petechial*), Spotted Towhee (*Pipilo maculatus*), Red-winged Blackbird (*Agelaius phoeniceus*), Western Tanager (*Piranga ludoviciana*), and House Finch (*Carpodacus mexicanus*). Fish species known to occur in the San Juan River include the following: rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), red shiner (*Cyprinella lutrensis*), common carp (*Cyprinus carpio*), fathead minnow (*Pimephales promelas*), speckled dace (*Rhinichthys osculus*), white sucker (*Catostomus commersoni*), flannelmouth sucker (*Catostomus discobolus*), plains killfish (*Fundulus zebrinus*), western mosquitofish (*Gambusia affinis*), and mottled sculpin (*Cottus bairdi*).

There are no foreseeable effects from the No-Action alternative other than those effects resulting from the existing human presence and the existing operation and maintenance activities along the Acequia.

The foreseeable effects of the Proposed Action on wildlife would be minor, of short duration, and temporary in nature, and would result in negligible disturbance. Wildlife species in or near the proposed Project Area generally have adapted to the existing human presence. Under the Proposed Action, some wildlife species would be temporarily displaced during construction, but are expected to return after construction is complete. Because the work would take place during the late fall, there would be no effect to migratory birds or to nesting or breeding behavior. Herptiles and many small mammals would not be active during this time. Nevertheless, entrapment of small vertebrates would be minimized by following U.S. Fish and Wildlife Service (USFWS) recommendations for trenching operations. The least amount of trench possible would be left open overnight and trench sides would be sloped or escape ramps would be provided to avoid trapping wildlife. No direct negative impacts are expected occur to wildlife as a result of the Proposed Action.

3.2.3 Special Status Species

While all Federal, State, and Tribal agencies have responsibility for the protection and conservation of plant and animal species in the proposed Project Area, three agencies have this task as their primary responsibility. The USFWS, under authority of the Endangered Species Act of 1973 (16 U.S.C. 1531), as amended, has the responsibility for federal-listed species. The New Mexico Department of Game and Fish (NMDGF) has the responsibility for state-listed wildlife species. The New Mexico State Forestry Division (Energy, Minerals, and Natural Resources Department) is responsible for state-listed plant species. Each agency maintains a continually updated list of species that are classified, or are candidates for classification, as protected based on their present status and potential threat to future survival and recruitment into viable breeding populations. These types of status rankings represent an expression of

threat level to a given species survival as a whole and/or within local or discrete populations. Special status species listed for San Juan County and have the potential to occur in the vicinity of the proposed project area are listed in Table 1.

Table 1. Special Status Species Listed for San Juan County, New Mexico, that have the Potential to Occur in the Vicinity of the Proposed Project Area.

Common Name	Scientific Name	Federal Status (USFWS) ^a	State of New Mexico Status (NMDGF) ^b
Canada Lynx	<i>Lynx canadensis</i>	T	---
New Mexico Meadow Jumping Mouse	<i>Zapus hudsonius luteus</i>	E	---
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	E
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	T	---
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	E	E
Razorback Sucker	<i>Xyrauchen texanus</i>	E	---
Zuni Bluehead Sucker	<i>Catostomus discobolus yarrowi</i>	E	---
Knowlton's Cactus	<i>Pediocactus knowltonii</i>	E	---
Mancos Milk-vetch	<i>Astragalus humillimus</i>	E	---
Mesa Verde Cactus	<i>Sclerocactus mesae-verdae</i>	T	---

^a**Endangered Species Act (ESA)** (as prepared by U.S. Fish and Wildlife Services) **status:** Only Endangered and Threatened species are protected by the ESA.

E=Endangered: any species that is in danger of extinction throughout all or a significant portion of its range.

T=Threatened: any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

^b**State of New Mexico status:**

E=Endangered animal species whose prospects of survival or recruitment within the state are in jeopardy.

T=Threatened animal species whose prospects of survival or recruitment within the state are likely to become jeopardized in the foreseeable future.

Within the proposed project area, preferred habitat is not present for the Canada lynx, New Mexico meadow jumping mouse, Southwestern Willow Flycatcher, or Yellow-billed Cuckoo. In addition, critical habitat has been designated for these species; however, no critical habitat is present within the proposed project area.

The Colorado pikeminnow and razorback sucker do not occur in the project area. These fish species do occur downstream. Water temperatures in the reach of the San Juan River that includes the project area are likely too cold for either of these fish species (Holden, 2000:3-40). Although critical habitat has been designated for both species, it does not exist within the project area. In recent surveys, the distribution of Zuni bluehead sucker in New Mexico has been limited mainly to the Rio Nutria drainage upstream of the mouth of the Nutria Box Canyon (Propst et al. 2001). Therefore, the Zuni bluehead sucker does not occur in the project area. Critical habitat, which has been designated for this species, also does not occur in the project area.

During past and more recent site visits, the Knowlton's cactus, Mancos milk-vetch, and Mesa Verde cactus have not been detected. These species have not been collected in the vicinity of the project area (New Mexico Rare Plant Technical Council, 1999) and their habitat is not found within the project area.

Due to lack of preferred habitat and no known presence of these special status animal and plant species, there would be no effect from the No-Action alternative nor the Proposed Action.

3.2.4 Noxious Weeds

Executive Order 13112 directs Federal agencies to prevent the introduction of invasive (exotic) species; minimizes the economic, ecological, and human health impacts that they cause; and provides for their control. In addition, the State of New Mexico, under administration of the U.S. Department of Agriculture, designates and lists certain weed species as noxious. "Noxious" in this context means any species of plant that is, or is liable to be, detrimental or destructive and difficult to control or eradicate. New Mexico state-listed noxious weeds are weeds that are defined Class A, Class B, and Class C species. Class A species are currently not present in New Mexico, or have limited distribution. Preventing new infestations of these species and eradicating existing infestations is the highest priority. Class B species are limited to portions of the State. In areas with severe infestations, management should be designed to contain the infestation and stop any further spread. Class C species are wide-spread in the State. Management decisions for these species should be determined at the local level, based on feasibility of control and level of infestation. Currently, there are 20 Class A species, 11 Class B species, and 12 Class C species in the State of New Mexico (NMDA, 2016-website). Within the project area, there is presence of Russian knapweed (*Acroptilon repens*), a Class B noxious weed, that occurs along the Acequia access in the area adjacent to the subdivision.

Under the No-Action alternative, there would be no effect to noxious weeds as rehabilitation of the Acequia would not take place. However, normal operation and maintenance of the Acequia, such as removal/mowing of annual vegetation growth, would continue. Noxious weeds, such as the Russian knapweed, would continue to spread and possibly cause native vegetation loss and habitat damage.

The foreseeable effects of the Proposed Action on noxious weeds would be very minor, of short duration, and temporary in nature, and would result in negligible disturbance. Being a Class B noxious weed, BMPs would be applied during construction to not allow any further spread of Russian knapweed. The area of infestation would be identified and flagged prior to construction so that construction equipment can avoid disturbance to this area as much as possible. Equipment would need to be cleaned prior to leaving the project area to prevent further spread of this noxious weed.

3.3 Cultural Resources

The entire length of the Turley-Manzanares Acequia has been previously surveyed for cultural resources by Pierantoni and Gray (2006). Pierantoni and Gray surveyed the Acequia length, two potential staging areas near the east end of the Acequia near the headgate, and access routes to the Acequia and staging areas. The 2006 documentation included a completed HCPI and Historic Water Delivery Form as required by the New Mexico State Historic Preservation Office (SHPO). Staging for the current project would be in a different location from Phase I of the project, as shown in Figure 1. This staging area would be surveyed for cultural resources in 2020, and results of the survey and determination of effect would be sent to SHPO.

The Area of Potential Effect (APE) for the proposed Acequia rehabilitation alternative includes the Turley-Manzanares Acequia along its entire length, including the Acequia Association's right-of-way easement which measures 30 feet either side of center line (the center of the Acequia), and a five-acre staging area as shown in Figure 2.

A review of Corps records and an online records check of the New Mexico Office of Cultural Affairs' Historic Preservation Division NMCRIS database was conducted on January 15, 2020. The only historic property located within or near the APE for the proposed project is the Turley-Manzanares Acequia itself (HCPI No. 31706). The Acequia measures approximately 2.8 miles in length, was constructed and adjudicated in 1876, and holds the oldest priority date on the San Juan River. The Turley-Manzanares Acequia has been previously determined eligible to the NRHP under criteria (a) and (c).

Under the No-Action alternative, the only known cultural resource within the proposed project's APE, the Turley Manzanares Acequia itself, would be expected to remain in approximately its current condition. If no action is taken, the Acequia would not be subjected to the adverse effects to certain aspects of site integrity anticipated from construction of the Acequia rehabilitation alternative.

The current state of the Acequia is an open earthen Acequia along its entire length, with the exception of a short section which was already piped near the diversion structure at the east end during Phase I. The Proposed Action would involve the removal and replacement of several of the Turley-Manzanares Acequia's associated features, and the conversion of the Acequia from an earthen Acequia to a concrete-lined and partially piped Acequia. The Proposed Action would not affect the Acequia's location or setting, or association of the Acequia with its community. In many ways, the Proposed Action is beneficial in that it would allow the Turley and surrounding communities to continue their way of life while lowering Acequia maintenance costs. That being said, the original materials, design, and workmanship would be compromised by the use of concrete and piping to line the Acequia and to build concrete turnout gates. The feeling of water running openly through an earthen Acequia system in the rural countryside would also be compromised by the partial piping of the Acequia. The concrete lining would look modern. For all of these reasons, it was determined by the Corps and SHPO, via e-mail dated April 20, 2020, that the proposed project would have an adverse effect on the Turley-Manzanares Acequia. The Advisory Council on Historic Preservation (ACHP) was notified of the adverse effect and invited to participate in the Section 106 consultation process for the proposed project; the ACHP declined to participate in a letter dated June 15, 2020 (see Appendix B).

Typically, mitigations for this kind of Acequia work include survey and documentation of the Acequia length, including preparation of HCPI and Acequia Detail forms, archival photo documentation, and oral history interviews with Acequia association members. Since the Turley-Manzanares Acequia has already been surveyed for cultural resources and has completed HCPI and Acequia Detail forms, SHPO has agreed that photo documentation and oral history interviews will suffice to complete mitigation prior to implementation of the piping and lining project. A Memorandum of Agreement (MOA) with this stipulation was signed by SHPO on June 29, 2020. A copy of the MOA is attached as Appendix B.

3.3.1 Tribal Consultation

Consistent with the Department of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 28, 1998, and based on the State of New Mexico Indian Affairs Department and Historic Preservation Division's 2019 Native American Consultation List, American Indian Tribes that have indicated they have concerns in this portion of San Juan County, New Mexico, were sent tribal consultation letters on April 21, 2020. These tribes include the Navajo Nation, Ohkay Owingeh, the Pueblo of Laguna, the Southern Ute Tribe, the Ute Mountain Ute Tribe, the Hopi Tribe, and the Kiowa Tribe. A response was received from the Navajo Nation and it indicated that there were no cultural resource concerns with the project (see Appendix B). Currently, there are no known cultural resources or traditional cultural properties concerns in the project APE.

3.4 Land Use and Socioeconomic Considerations

3.4.1 Land Use

The closest full-service community is Farmington, New Mexico, about 30 miles west of the project area. Farmington has emergency services (i.e. fire, medical, police), a hospital, a small airport, a public library, public schools, a four-year college, and public recreation and cultural facilities. The Village of Turley is located on the south side of the San Juan River (see Figures 1 and 2). The proposed project would take place within the existing channel to the greatest extent possible. Adjacent property/features include streets, N.M. HWY 511, farmland, ranchland, and residential houses. Recreation use of the lands along this reach of the river is limited to uses by private landowners and their guests. Public recreation use of the river includes fishing and boating.

The No-Action alternative would have no effect on current land uses or visual resources in the project area. Land uses would continue as currently being undertaken. Operation and maintenance of the Acequia would continue to pose problems for the Acequia Association, as the issues with breaching the Acequia berm and clogging the Acequia with trash would not be addressed.

The Proposed Action would temporarily disrupt recreation activities in the project area while construction is undertaken. The presence of equipment and people, disturbance to the river habitat, and elevated noise levels would diminish the quality of the recreation experience for fishers in boats and along the river banks as well as recreationists pursuing other activities (e.g. camping and picnicking on private lands along the banks, wildlife viewing.). These effects would primarily be short-term, lasting only for the duration of construction. However, removal of vegetation along the Acequia berm and placing the currently open-flowing Acequia into a pipe may negatively change the recreation experience for the landowner on the south side of the river. Impacts would be reduced by reseeded the project area with a seed mixture to include a variety of native grasses, forbs, and shrubs. All proposed work would be conducted outside the irrigation season (late fall/winter) when water is not present in the Acequia.

The Proposed Action would not change current agricultural land uses in the Project Area. Implementation of the Proposed Action would be expected to benefit the agricultural land users (See Socioeconomics below). The impacts to land would be short-term and minor. These effects would last only during construction. No long-term adverse impacts are expected to land use.

3.4.2 Socioeconomic Considerations

San Juan County, New Mexico, had a population of 127,455 in 2018 (U.S. Census Bureau, 2018). In 2018, Aztec and Bloomfield city populations were about 26,537 and 17,663 persons each, respectively (U.S. Census Bureau, 2018). The City of Farmington had an estimated population of 53,131 (U.S. Census Bureau, 2018).

Aztec is the seat of San Juan County, New Mexico, and, thus, is the center for various county services. The oil and gas industry is a major employer in the County. Bloomfield, in fact, bills itself as the "Gas Capitol of the United States" (<http://www.sanjuaneds.com>). Leading employers in the county are Central Consolidated Schools, Farmington Public Schools, and San Juan Regional Medical Center, each employing more than 1,000 persons (<http://www.sanjuaneds.com>). Other major employers are Arizona Public Service, BHP-Utah, City of Farmington, Basin Home Health, Public Service Company of New Mexico, and San Juan College.

The Project Area, near the community of Turley, is within San Juan County census tract 7.02. Census tract 7.02 is bounded on the north by the San Juan River and the county line on the east. Highway 550 serves as the eastern boundary and several county roads south of Highway 64 provide the southern tract boundary.

Social and cultural conditions in New Mexico, Bloomfield, and San Juan County census tract 7.02 are relatively homogenous. Between 71 percent and 88 percent of the population of each of these three geographic areas is white (Table 2). However, in San Juan County as a whole, only about 52.1 percent of the population is white. This is contrasted by a much higher American Indian population in the county (39.6 percent), owing to a portion of the Navajo Reservation being located in the northwestern part of the county. This compares to an American Indian population ranging from 2.9 percent to 21.9 percent in census tract 7.02, Bloomfield, or the state of New Mexico. The populations of Bloomfield and San Juan County census tract 7.02 are 32.5 percent and 40.6 percent Hispanic, respectively, as compared to only 20.1 percent of San Juan County and more than 49.1 percent of the State of New Mexico (Table 2).

Table 2 Selected social demographic data for the state of New Mexico, San Juan County census tract that includes the Project Area, and the City of Bloomfield (U.S. Census Bureau, 2018).

Social Demographic Factor	New Mexico	San Juan County	Bloomfield	San Juan County Census Tract 7.02
Total population	2,095,428	127,455	17,663	1,370
Race (percent of total population)				
white	76.4%	52.1%	71.2%	87.6%
black	2.2%	0.6%	1.1%	5.3%
American Indian	9.6%	39.6%	21.9%	2.9%
Asian	1.1%	0.8%	0.8%	1.2%
Hawaiian or Pacific Islander	0.1%	0.1%	0.0%	0.0%
some other race	6.9%	4.2%	8.1%	3.0%
two or more races	3.2%	2.6%	1.4%	0.0%
Hispanic origin (percent of total population)				
Hispanic or Latino (of any race)	49.1%	20.1%	40.6%	32.5%
not of Hispanic origin	50.9%	79.9%	59.4%	67.5%
Age				
median age (years)	38.1	35.0	31.4	47.2
65 years and over(% of total pop.)	17.6%	13.7%	10.4%	12.1%
Income				
Median household income (dollars)	\$47,169	\$50,582	\$50,282	\$63,693
persons below poverty level	19.5%	21.3%	22.8%	11.3%

Income data indicate that the percentage of persons living below the poverty level in San Juan County census tract 7.02 (11.3 percent) is lowest of the four geographic areas compared in Table 2. This is about one half of the San Juan County rate of 21.3 percent of persons living below poverty level.

As no changes would occur in the project area with the No Action alternative, there would be no effects related on socioeconomics of the area and no effects related to environmental justice issues. The Acequia Association would continue to maintain the open Acequia, an increasingly costly operation.

Implementation of the Proposed Action is expected to economically benefit the Acequia Association by reducing long-term maintenance costs. Reduced costs would result from decreasing hours of labor and other expenses currently required to maintain the open Acequia system, thereby making farming operations more profitable. In addition, construction of the project would provide some short-term economic benefits for local businesses, most likely in Bloomfield, Aztec, and Farmington. Depending on whether the construction contractor is local or not, economic benefits may result in the form of purchasing supplies, renting equipment, workers' wages, and hotel and meal purchases. State gross receipts taxes on goods and services purchased locally further benefit the area economy. These modest economic benefits would contribute to cumulative effects on the local economy.

In order to establish that the proposed project would create disproportionate adverse effects on minority or low-income populations, two criteria would need to be met. First, the project would have to create adverse effects on local populations. Since there are no anticipated adverse effects on local populations, the proposed project does not meet this criteria.

Second, the affected population would have to be disproportionately composed of racial minorities or low-income persons as compared to a larger population. In this case, the project area (San Juan County census tract 7.02) was compared to both the entire county and state overall.

The percentage of white persons living in census tract 7.02 is greater than the state of New Mexico and San Juan County (Table 2). The percentage of persons of Hispanic origin is greater in the project area than in county but less than in the state. Census tract 7.02 has a lower percentage of persons living below poverty level than New Mexico or San Juan County.

The No-Action alternative would result in continued existing high maintenance expenses incurred with the earthen Acequia. The Proposed Action would ensure the continued socio-economic benefits currently accruing to the community from the crop production associated with the Turley-Manzanares Acequia. The members of the Acequia Association would realize reduced long-term maintenance cost resulting from the rehabilitation work.

3.5 Environmental Justice

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Low-Income Populations; February 11, 1994) was designed to focus the attention of federal agencies on the human health and environmental conditions of minority and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations and proposed actions. In an accompanying memorandum, President Clinton emphasized that existing laws, such as the National Environmental Policy Act (NEPA), should provide an opportunity for federal agencies to assess the environment hazards and socioeconomic impacts associated with any given agency action upon minority and low-income communities. In April of 1995, the EPA released a guidance document entitled Environmental Justice Strategy: Executive Order 12898. In short, this document defines the approaches by which the EPA will ensure that disproportionately high environmental and/or socioeconomic effects on minority and low-income communities are identified and addressed. Further, it establishes agency wide goals for all Native Americans with regard to Environmental Justice issues and concerns.

The WRDA of 1986 Section 1113 Acequia Program, under which the Proposed Action is authorized, is largely intended to provide needed technical and financial assistance to Acequia and community Acequia associations in which water resources are degrading and in need of improvement. Acequia associations find maintenance of these systems increasingly challenging. The Proposed Action would benefit all Acequia Association members, and the community as a whole, by allowing the culturally and historically significant Turley-Manzanares Acequia to continue to function. All proposed work would be in a rural, agricultural area. The construction would not disrupt or displace any residential or commercial structures. Under the No-Action alternative, the Acequia Association members would likely face increasing difficulty in maintaining the Acequia system. As San Juan County, New Mexico, residents have relatively lower incomes than the average for the State, the No-Action alternative likely would adversely affect this low-income community. There would be no disproportional effect on the health or environment of minority and low-income communities as a result of the Proposed Action.

3.6 Cumulative Impacts

NEPA defines cumulative effects as "...the impact on the environment which results from the incremental impact of the action when added to other, past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

Cumulative effects are analyzed individually for each resource area in Sections 3.1 through 3.5. These analyses address the cumulative impact of the direct and indirect effects of the proposed action when added to the aggregate effects of past, present, and reasonably foreseeable future actions. For all resources, the aggregate effect of past and present actions was considered to be represented by the current, existing conditions of the resource (Council on Environmental Quality 2005). Therefore, the specific effects of individual past and present actions typically were not cataloged in the analysis. In order for direct or indirect effects to incrementally add to the effects of past, present, or reasonably foreseeable future actions, they must overlap with those effects in time or space (Council on Environmental Quality 1997).

The time frame for analysis of cumulative effects varied, depending on the duration of direct and indirect effects. For example, direct effects resulting from construction were expected to persist for relatively short periods of time (about four months). Conversely, indirect effects resulting from operation of the rehabilitated Acequia system would persist for the life of the facility. Similarly, the geographic bounds for cumulative effects analysis varied with the resource under consideration, depending on zone of influence of the direct or indirect impact being analyzed.

The proposed action lies within a rural area in San Juan County (Figure 1). The proposed improvements to the Acequia would not significantly impact the current conditions of the local environment and would help retain the farming practices of the community. For these reasons, the proposed project when combined with past, present, or future activities in the Turley-Manzanares Acequia area would not significantly add to or raise local cumulative adverse environmental impacts to a level of significance.

4 - Conclusion and Summary

This Draft Environmental Assessment addresses the potential effects of the rehabilitation of the Turley-Manzanares Acequia. The proposed location is in the San Juan River valley of New Mexico, just south of the San Juan River. Impacts to the environment would be non-significant and short-term. Long-term benefits to the Acequia Association members and to the Turley-Manzanares community would result from the proposed project. The proposed project would not result in any moderate or significant, long-term, or cumulative adverse effects. Therefore, construction of the proposed project would not significantly affect the quality of the human environment and is recommended for implementation.

5 - Preparation, Consultation, and Coordination

5.1 Preparation

This Draft Environmental Assessment was prepared by the U.S. Army Corps of Engineers, Albuquerque District. Personnel primarily responsible for preparation include:

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5.2 Quality Control

This Draft Environmental Assessment has been reviewed for quality control purposes. Reviewers include:

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5.3 General Consultation and Coordination

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Ohkay Owingeh

Pueblo of Laguna
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Ute Mountain Ute Tribe

Hopi Tribe

Kiowa Tribe

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