Finding of No Significant Impact

and

Final Environmental Assessment

for the

Acequia de la Posecion Rehabilitation Project
Rio Arriba County, New Mexico

May 2009

Prepared for:

U.S. Army Corps of Engineers,
Albuquerque District

US Army Corps of Engineers®

Prepared by:

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TETRA TECH

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
Acequia de la Posecion Rehabilitation Project

May 2009

The U.S. Army Corps of Engineers (Corps), Albuquerque District, at the request of the New Mexico State Engineer's Office, and the Acequia de la Posecion Association, are planning a project to rehabilitate a segment of the Acequia de la Posecion, located approximately three miles east of the Village of Truchas, in Rio Arriba County, New Mexico.

The proposed rehabilitation work on Acequia de la Posecion will be conducted under Section 1113 of the Water Resources Development Act of 1986 (Public Law 99-662; 33 U.S.C. 2201 et. seq.), as amended. The Act authorizes the Acequia Rehabilitation Program for the restoration and rehabilitation of irrigation ditch systems (acequias) in New Mexico.

The Corps proposes to rehabilitate Acequia de la Posecion by installing 24-inch polyvinylchloride (PVC) pipe. The newly piped alignment would then be buried. The total linear distance to be rehabilitated is 9,321 feet with an estimated 8.6-acre area of impact (AOI). Project construction is scheduled during the non-irrigation season (October-February) with an expected duration of approximately five (5) months. The Acequia de la Posecion Association would be responsible for assuring operation and maintenance upon project completion.

The Proposed Action would not change or affect water rights or the amount of water diverted. The Proposed Action would result in minor and/or temporary effects on soils, water resources, air quality, noise levels, aesthetics, land use and recreational resources, fish and wildlife, and socioeconomics. Long-term effects include the loss of non-jurisdictional wetlands and associated wetland vegetation and the removal of an estimated maximum of 1,468 coniferous and deciduous trees ranging in size from 3 inches to greater than 3 feet in diameter; however, the actual number of trees removed may be substantively less. These trees, and the AOI, lie within the association's legally defined easement. The Proposed Action was analyzed for, but will have no effect on, physiography, geology, Indian Trust Assets, hazardous, toxic, or radioactive waste, or environmental justice. There is no known irreversible and irretrievable commitment of resources or cumulative effects. As required by the Endangered Species Act of 1973, the Corps has determined that the project would have no effect on any Threatened or Endangered species, or designated/proposed critical habitat receiving protection under the Endangered Species Act.

Rehabilitation of the acequia system may cause short-term increases in turbidity and suspended sediments in the Rio de Truchas from operation of various construction equipment and work at the diversion structure. However, pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Federal Regulations (33 CFR 323.4(a)(3)), certain

discharges for construction or maintenance of irrigation ditches have been exempted from Section 404 permitting.

The proposed project would have an adverse effect to cultural resources. The Corps considers conversion of 9,321 feet of the Acequia de la Posecion from an earthen ditch to underground PVC pipeline an adverse effect to this historic property, as this represents a change in form to slightly more than half of the acequia (56 percent). The project would not introduce a new alignment; it would follow the current alignment for most of its extent but would also include the reuse of an approximately 825-foot segment discontinued shortly after its construction in the 1970s. The function of the acequia, to convey water to fields for farming, would remain the same. To mitigate adverse effects to the acequia, the Corps recommends conducting additional research on the acequia, including photographically documenting the acequia on archival paper; conducting oral history interviews with acequia association members; scanning and translating the Association's log book, which dates from 1900; and copying and transcribing 17 hours of interviews conducted in 1971 by the Association. The Corps recommends that these efforts could serve to mitigate the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking. The Corps consulted with the New Mexico State Historic Preservation Officer. Due to the project's adverse effect to historic properties, the Advisory Council on Historic Preservation was offered the opportunity to review the project and participate in the Section 106 process; the Advisory Council reviewed the cultural resources documentation and proposed mitigation, and declined to participate. The State Historic Preservation Officer concurs on the assessment of effect to the acequia and on the Corps' recommendations for mitigation measures to resolve the adverse effects from the proposed project. The Corps, in consultation with the NMSHPO, has prepared a Memorandum of Agreement that discusses the mitigation efforts and process for resolving the adverse effect. No other historic properties would be affected by the proposed project. American Indian Tribes that have cultural concerns in the area have been contacted and no tribal concerns have been brought to the attention of the Corps.

Best management practices include the use of silt fences, and the periodic application of water to spoil piles and disturbed areas to control erosion and construction related dust. A Storm Water Pollution Prevention Plan would be prepared by the contractor and implemented during construction. All borrow and waste would come from or be delivered to pre-approved commercial quarries/disposal sites. Contractor vehicles and construction equipment would be required to have operable emission control devices. All equipment would be cleaned with a high-pressure water jet prior to entering a work area, leaving a work area, and before entering a new work area. All disturbed areas would be reseeded with native grasses and forbes to begin the recovery of the site and further minimize erosion.

The planned action is being coordinated with Federal, State, and local agencies with jurisdiction over the biological and cultural resources of the project area. Based upon these factors and others discussed in the following Environmental Assessment, the Proposed Action is recommended and would not have significant effects on the human

environment. Therefore, an Environmental Impact Statement (EIS) will not be prepared for the proposed rehabilitation work on the Acequia de la Posecion.

5/5/09
Date

Kimberly M. Colloton
Lieutenant Colonel, U.S. Army
District Commander

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1.0 INTRODUCTION

1.1 Project Background and Location

The U.S. Army Corps of Engineers (Corps), Albuquerque District, at the request of the New Mexico State Engineer's Office, and the Acequia de la Posecion Association, are planning a project to rehabilitate a segment of the Acequia de la Posecion.

The Water Resources Development Act (WRDA) of 1986 (Public Law 99-662) authorized the restoration and rehabilitation of irrigation ditch systems (acequias) in New Mexico. Under Section 1113 of WRDA, Congress has found that New Mexico's acequias, due to their significance in the settlement and development of the western United States, should be restored and preserved for their cultural and historic values to the region. The Secretary of the Army, acting through the Chief of Engineers (U.S. Army Corps of Engineers), and, when he determines it to be in the public interest, may enter into agreements providing for reimbursement to states, or political subdivisions thereof, for work to be performed by such non-Federal public entities at water resources development projects authorized for construction under the Secretary of the Army and through the supervision of the Corps. The Secretary of the Army, therefore, has been authorized and directed to undertake, without regard or consideration to economic analyses, such measures as are necessary to protect and restore New Mexico's acequias.

The Acequia de la Posecion Rehabilitation Project is located approximately three miles east of the Village of Truchas, in Rio Arriba County, New Mexico. The project area is located within the historically significant Nuestra Señora del Rosario, San Fernando, y Santiago Community Land Grant (1754); USGS 7.5' Quadrangle = Truchas, NM (36105a7 1953, photo revised 1977). The diversion structure is located at 432391E, 3988169N (UTM NAD83, Zone 13N; units = meters). The terrain slope is 35.6% with a southwest aspect (206.9°) at an elevation of 8,463 feet. The location at which Posecion's acequia madre (mother ditch) terminates and branches into the laterals is 429966E, 3988024N (UTM NAD83, Zone 13N; units = meters) with a terrain slope of 2.5% and a southeast aspect (124.9°) at an elevation of 8,395 feet.

Figure 1-1 shows the location and alignment of the Preferred Alternative (green) and a portion of the existing acequia that would be abandoned (red) with the completion and implementation of the Preferred Alternative. In addition, there are two (2) 1-acre staging areas located along existing local roadways that would provide access routes to the acequia construction area.

The Preferred Alternative traverses the area for approximately 9,321 linear feet and the abandoned portion of Acequia de la Posecion is approximately 2,185 linear feet. The area of disturbance around the Preferred Alternative is approximately 8.6 acres and is defined as an area extending 15 feet upslope and 25 feet down slope of the centerline of the acequia. The Acequia de la Posecion Association holds a legal easement per the 1971 New Mexico District Court ruling (Fernandez vs. Sandoval et al., No. 11554) for an area extending approximately 30 feet or

more, as necessary for the operations and maintenance activities, on either side of the ditch centerline. The area of disturbance falls completely within the legally defined easement of the acequia; however, temporary access routes and staging areas would be required for construction activities.

Having a rich cultural history, the acequia has been in operation since 1754, providing irrigation water to Acequia de la Posecion association members. The proposed rehabilitation would begin at the upstream end of the ditch at the main diversion structure (Figure 1-2) and proceed downstream to a point where the laterals depart from Posecion's acequia madre (Figure 1-3) and includes two equipment staging areas of approximately 1.0 acre each (Figure 1-1). The Proposed Action consists of replacing a portion of the existing acequia with a buried, 24-inch diameter polyvinylchloride (PVC) pipeline.

1.2 Purpose and Need

The Proposed Action would reduce difficult and continual maintenance activities performed by the acequia association. Regular maintenance includes cleaning sediment and debris deposited by stormwater and snowmelt runoff. In addition, the proposed rehabilitation would improve irrigation water deliveries to the local farmers. Currently, members of the association must walk the length of the acequia (˜ 2 miles) to remove debris. At times, debris removal can be hazardous due to the remote and rugged conditions (Figure 1-4) and the possibility of personal injury places association members at risk. Frequent breaches of the acequia can also compromise water delivery.

1.3 Related Activities

There are no known related activities associated with the Acequia de la Posecion Rehabilitation Project.

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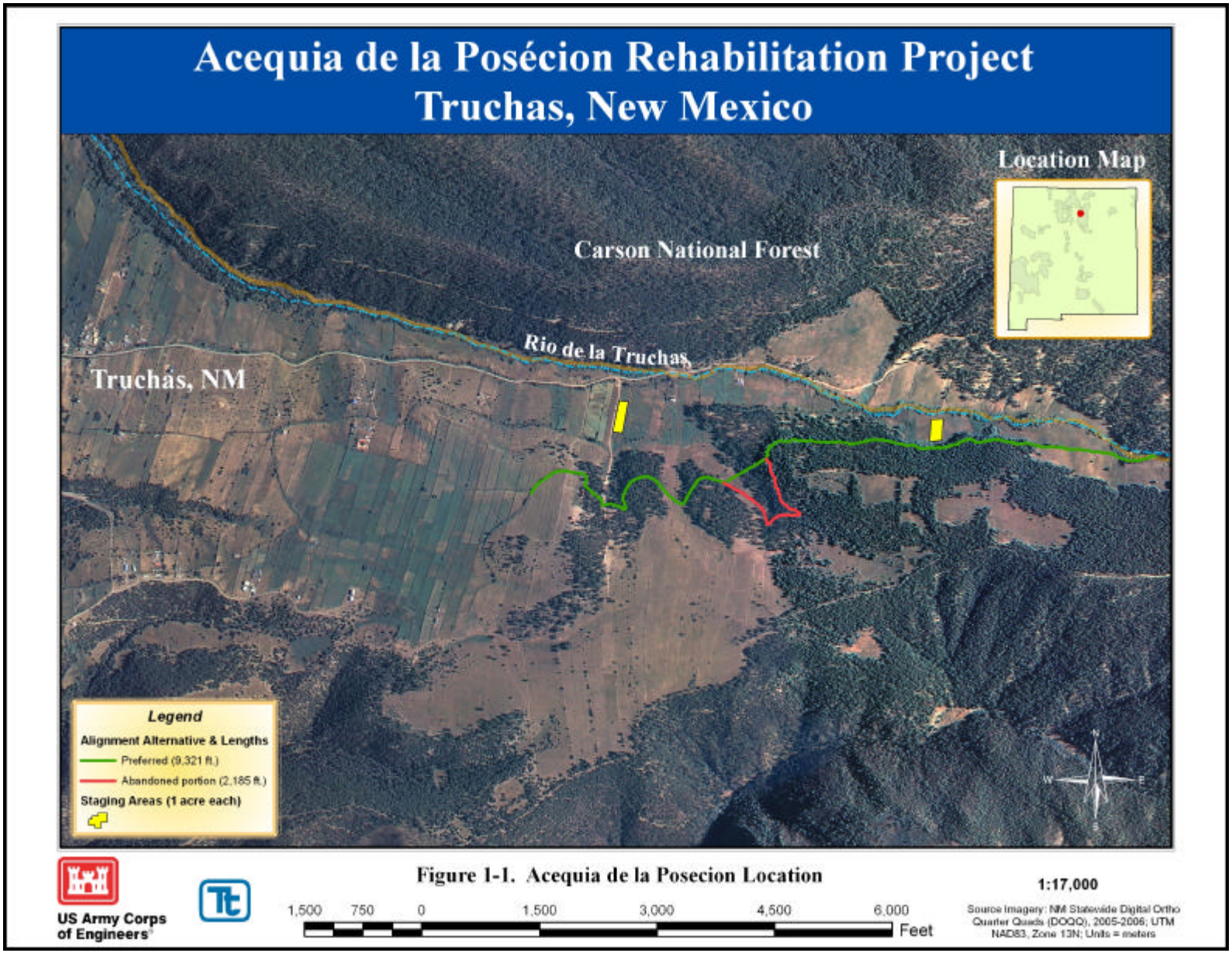

Figure 1-1. Acequia de la Posecion Location

Figure 1-2. Acequia de la Posecion diversion structure – Acequia water diverted toward lower left of photo.

Figure 1-3. Branching to primary lateral – lateral flows toward upper left of photo.

Figure 1-4. Typical wooded area of acequia showing rugged conditions

1.4 Regulatory Compliance

This Environmental Assessment (EA) was prepared by the U.S. Army Corps of Engineers, Albuquerque District, in compliance with all applicable Federal Statutes, Regulations, and Executive Orders, including the following:

- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470)
- Clean Water Act of 1972 and Amendments of 1977 (CWA)
- Clean Air Act of 1972, as amended (42U.S.C. 7401 *et seq.*)
- Endangered Species Act of 1973, (ESA) as amended (16 U.S.C. 1531 *et seq.*)
- Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661 et seq., as amended)
- Migratory Bird Treaty Act (16 U.S.C. 703–711)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, 1994
- Executive Order 13112, Invasive Species, sec. 2(a)(2)(IV), 1999
- Farmland Protection Policy Act of 1981, as amended (7 U.S.C. 4201 *et seq.*)
- Federal Noxious Weed Act of 1974 (Public law 93-269; 7 U.S.C. 2801)
- Floodplain Management (Executive Order 11988)
- National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*)
- U.S. Army Corps of Engineers Procedures for Implementing NEPA (33 CFR 230, ER 200-2-2)
- Regulations of Implementing the Procedural Provisions of NEPA (40 CFR 1500 *et seq.*)
- 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 *et seq.*)
- Protection and Enhancement of the Cultural Environment (Executive Order 11593)
- Protection of Wetlands (Executive Order 11990)
- Procedures of Implementing NEPA (33 CFR 230; ER 200-2-2)
- Safe Drinking Water Act (SDWA)

This Environmental Assessment also reflects compliance with all applicable State of New Mexico and local regulations, statutes, policies, and standards for conserving the environment such as water and air quality, endangered plants and animals, and cultural resources.

Regulations for implementing NEPA require analysis of social effects when they are interrelated with effects on the physical or natural environment (40 CFR §1508.14). Federal agencies are required to "*identify and address disproportionately high and adverse human health or environmental effects*" of their programs and actions on minority populations and low-income populations, as directed by Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).

2.0 ALTERNATIVES AND PROPOSED ACTION

Federal agencies that assist in projects that utilize public funding are mandated by the National Environmental Policy Act to evaluate alternative courses of action so that decisions are made in the best interests of the public. Although Public Law 99-662 directs the Corps to restore New Mexico's acequias without regard to economic analysis, the Proposed Action was reviewed to provide the most viable and economical structural design. This included reasonable structural alternatives and considered a balanced approach to safe and efficient project implementation; social, economic, and environmental impacts of the proposed construction; and Federal, State, and local environmental resource protection goals.

2.1 Proposed Action

The Corps, Albuquerque District, in cooperation with the Acequia de la Posecion proposes to: (1) replace 9,321 linear feet of existing earthen ditch with a buried 24" diameter polyvinylchloride (PVC) conduit, which includes 825 linear feet for a buried inverted siphon – there is currently steel piping along this span that was previously installed by the acequia association (see Figure 1-5), (2) installation of 23 reinforced concrete manholes, and (3) a sluice structure. Two one-acre staging areas have been identified along the acequia's alignment and would utilize existing roads as access to the project area. All pipeline work would occur within the acequia's existing right-of-way (legally defined easement). The Proposed Action would not change or affect water rights or the amount of water diverted. The Proposed Action would abandon 2,185 linear feet of the existing earthen ditch in favor of using the inverted siphon's alignment (see Figures 1-1 and 1-5).

Figure 1-5. Previously installed inverted siphon

2.2 Future Without Project (No-Action)

The No Action alternative would consist of no modification of the existing open ditch conveyance system. The earthen ditch and existing sluice would continue to function and be maintained as they have in the recent past. The ditch would still suffer from the following maintenance issues: root growth, rodents and beavers, loss of water due to piping, and slope drainage issues. Typical maintenance of the acequia system in the project's area of influence would continue including cleaning of sediment and vegetation from the existing earthen ditch and piling dirt along the ditch to maintain adequate carrying capacity and minimize overflows.

2.3 Alternatives Considered but Eliminated from Further Study

Three alternatives that were considered and eliminated from further study include:

1) Replacing approximately 10,800 linear feet of earthen ditch with 24-inch polyvinylchloride (PVC) conduit;

2) Replacing approximately 10,800 linear feet of earthen ditch with concrete lining and;

3) Replacing approximately 10,800 linear feet of earthen ditch with half round pipe.

These alternatives were removed from further consideration. First, the siphon alignment is a more efficient way of conveying water through that stretch and reduces the need of 2,185 linear feet of pipe and pipe placement. Concrete lining and half-round pipe would not solve infilling of sediment from the embankment. These alternatives were not carried forward for further review in this EA due to factors such as cost, logistics, maintenance requirements, and/or functionality.

3.0 EXISTING ENVIRONMENT AND FORESEEABLE EFFECTS

3.1 Physiography, Geology, and Soils

3.1.1 Existing Conditions

The project area is located in the Sangre de Cristo Mountains within the Southern Rocky Mountain Physiographic Province. The Southern Rocky Mountain Province extends from south-central Colorado into north-central New Mexico as a two-pronged system of high mountain ranges separated by the deep structural basins of the northern Rio Grande rift. The Southern Rocky Mountain Province also includes the San Luis Valley, a Rio Grande rift basin that is transitional southward to the Española Valley in the Basin and Range Province. Toward the southern end of this rift basin, the Rio Grande has cut a deep canyon (the Rio Grande Gorge) in the thick accumulations of Pliocene basalt that forms the central Taos Plateau. The eastern portion of this plateau includes a plain built predominantly by alluvial fans at the base of the Sangre de Cristo Mountains. The Sangre de Cristo Mountains have a core of crystalline Precambrian rock overlain by thick layers of Paleozoic, Mesozoic, and lower Cenozoic sedimentary rock. Cenozoic volcanic and sedimentary layers cap the range in many areas.

Three soil mapping units occur in the survey area: Sedillo–Silva association, strongly sloping (SED), Manzano clay loam, 3-5% slopes (MnC), and Fernando clay loam, 3-5% slopes (FeC) (NRCS 2008). The Sedillo–Silva association occurs in about 90% of the acequia corridor; the other two are found near the east and west ends, respectively, and together make up the proportional balance of the project area in roughly equal amounts.

The soil erodibility factors, K_w and K_f, predict the long-term average soil loss that results from sheet and rill erosion. K_w considers the whole soil while K_f considers only the fine-earth (rock-free) fraction (<2 mm); values for both can range from 0.02-0.69 tons/acre. The wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion in tons/acre/year. The value applies only to the surface layer, and values can range from 0 to 310 tons/acre/year. The T factor (T) is the soil loss tolerance, defined as the maximum amount of erosion in tons/acre/year at which the quality of a soil as a medium for plant growth can be maintained. T values can range from 1-5 tons/acre/year.

Erosion hazard ratings (off-road, off-trail) indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope and soil erosion factor K (as discussed above). Soil loss is caused by sheet or rill erosion in off–road or off-trail areas when 50 to 75% of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The ratings are both qualitative and quantitative. The hazard is described as slight, moderate, severe, or very severe. A rating of slight indicates that erosion is unlikely under ordinary climatic conditions; moderate indicates that some erosion is likely and that erosion-control measures may be needed; severe indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and very severe indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion control measures are costly and generally impractical.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00). Table 3-1 summarizes these soil characteristics for the project area.

Table 3-1. Summary of soil properties in project area

Soil	Landform and Parent Material	Erosion Hazard	Kw	Kf	Wind Erodibility Index	T
Sedillo–Silva association, strongly sloping (SED)	Ridges. Alluvium derived from igneous and metamorphic rock and/or eolian deposits derived from sandstone and shale.	Moderate 0.50	0.24	0.37	38	5
Manzano clay loam, 3–5% slopes (MnC)	Alluvial fans. Alluvium derived from igneous and metamorphic rock.	Slight --	0.32	0.32	48	5
Fernando clay loam, 3–5% slopes (FeC)	Arroyos. Alluvium derived from igneous and metamorphic rock.	Slight --	0.32	0.32	86	5

3.1.2 Foreseeable Effects on Physiography, Geology, and Soils

No Action – The No Action Alternative would have no effect on physiography, geology, or soils. There would be no construction and existing conditions would continue.

Proposed Action – The Proposed Action would have no effects on the nature or characteristics of the area's physiography or geology, as these resources are essentially invariant and incapable of experiencing impacts resulting from the Proposed Action. Effects to soils would be short-term, temporary, and minor – although the hydric character of the soils near the existing acequia's alignment would likely cease to exist. Disturbed areas (*i.e.* excavated and spoil material) would be subject to erosion by wind and water as detailed above.

3.1.3 Environmental Commitments

Best management practices would minimize erosion to soils and include the use of silt fences, and other mechanical means of erosion control, and the periodic application of water to spoil piles and disturbed areas. Construction contractor would be required to comply with all other applicable erosion and sedimentation regulations. All borrow and waste would come from or be delivered to pre-approved commercial quarries/disposal sites. Upon the completion of construction activities, all disturbed areas would be reseeded with native grasses and forbes to begin the recovery of the site and further minimize erosion.

3.2 Climate

3.2.1 Existing Conditions

Nestled high in the Sangre de Cristo Mountains of northern New Mexico, the project area lies at an elevation of approximately 8,400 feet above mean sea level. According to the New Mexico Climate Center Cooperative Observer Network, the total average annual precipitation in Truchas is 14.5 inches; however, reporting of these of data should always be given in context. For example, the Western Regional Climate Center shows substantively lower totals for a roughly commensurate, overlapping period of record (Figure 3-1). That is, 9.64 inches from 1961-1990 and, more similarly, 14.62 inches for the period of record from 1909-1962. Figure 3-1 also shows the monthly distribution of average minimum and maximum temperatures and precipitation totals for the period of record 1961-1990 (Western Regional Climate Center). Frost-free days are from 120-150 (Williams 1996) and the coldest winter temperatures typically occur in December with a 4.2°F average minimum. The warmest months are typically June and July with an average maximum temperature of 77.6°F and 77.8°F respectively. Winter snow packs in the area average 55 inches but can readily exceed 70 inches in wet years such as in 2005-2006. Late winter or early spring snows often contribute substantively to a given year's total snowpack.

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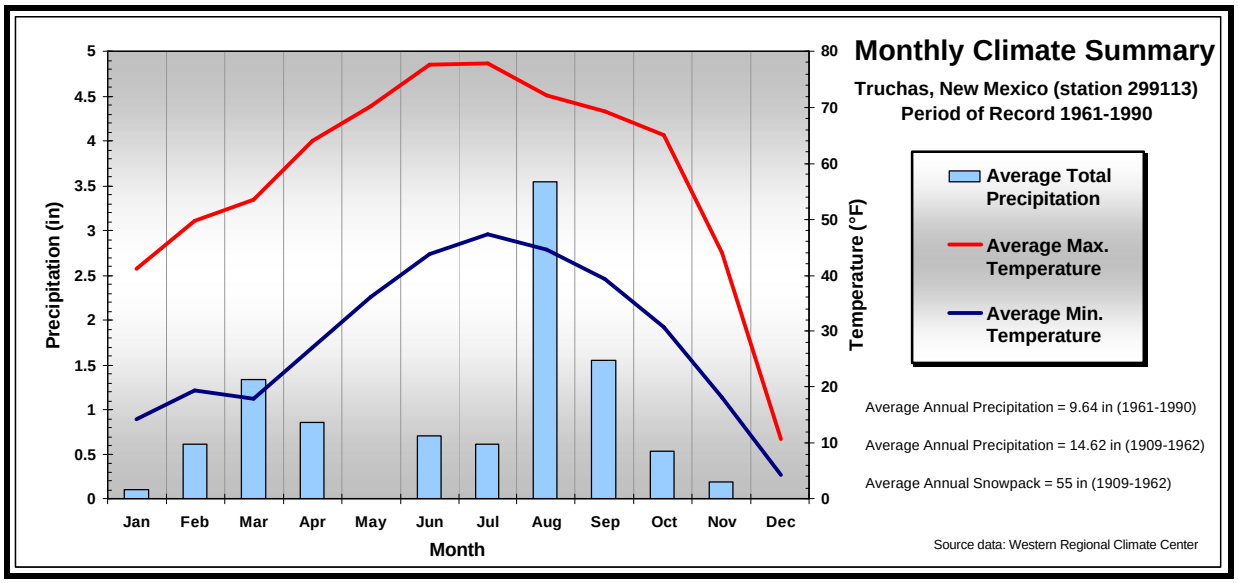

Figure 3-1. Climate summary for Truchas, New Mexico

Orographic (high or rising elevation) effects to the mid-latitude climatic patterns of the arid southwest often lead to significant increases in precipitation when compared to areas of lower elevations. New Mexico typically receives from 40-50% of its precipitation in a seasonal monsoon pattern (July-August/September) in which a subtropical high-pressure ridge moves northward from central Mexico to west Texas. This pattern can also be seen in Figure 3-1 where the monthly average precipitation for August (3.55 inches) far exceeds any other month of the year. The northward shift in the high-pressure ridge increases humidity, and thus thunderstorm activity over the southwest, by tapping the warm surface waters of the Gulf of Mexico and the Gulf of California and transporting that energy (latent heat of vaporization) in the prevailing winds aloft – a classic monsoonal flow that is a direct analog to monsoon patterns of more tropical regions. New Mexico and Arizona, however, lie at the northern most reaches of this climate pattern and tend to only marginally benefit from its effects. This pattern can be easily modulated by annual climate or sea-surface temperature variability, resulting in a disruption or amplification of the monsoonal flow. Leading to drought conditions, failure of the monsoons rapidly affect the regions water supply and tend to exacerbate and/or extend the forest fire season in mid to late summer.

Climate Change – Average air and sea-surface temperatures worldwide are predicted to increase beyond the current range of natural variability as human activities have, in the period since the onset of the Industrial Revolution, caused an accumulation of greenhouse gases (*e.g.* carbon dioxide) in the global atmosphere (U.S. Environmental Protection Agency, 1998). The potential effects resulting from climate change are varied and imprecise; however, there is a virtual certainty that human-induced climate change represents a clear and ever-increasing threat to the natural and human environments.

As a result of climate change, summer air temperatures in the southwestern United States are predicted to rise considerably from 2010 through 2039, average annual precipitation is expected to decrease, and mountain snow-packs are predicted to decrease significantly (Field et al. 2007). New Mexico Governor Bill Richardson signed Executive Order 05-33 in 2005, which included development of recommendations for reducing greenhouse gas emissions in New Mexico to year 2000 levels by 2012, 10% below 2000 levels by 2020, and 75% below 2000 levels by 2050. The year 2000 reference level is 83 million metric tons of carbon dioxide equivalent gasses (New Mexico Climate Change Advisory Group 2006). Residential and commercial fuel use accounted for about five percent of total emissions in the State in 2000, or about 7.3 million metric tons of carbon dioxide equivalent gasses (New Mexico Climate Change Advisory Group 2006).

Measuring or quantifying inputs to climate change variables or overall patterns in a given area is difficult at best as the atmosphere is a well-mixed, essentially open system. Nonetheless, limits on greenhouse gasses are a growing and necessary reality of our time.

3.2.2 Foreseeable Effects on Climate

No Action – The No Action alternative would pose no effects to the areas climate or trends in climate change. There would be no construction and existing conditions would continue.

Proposed Action – The Proposed Action would not pose any measurable effects to the area's climate or trends in climate change. Operation of construction equipment during the construction period would produce greenhouse gas emissions. Combustion of one gallon of diesel fuel generates about 22.4 pounds of carbon dioxide equivalent gasses and an average piece of construction equipment may burn five to eight gallons per hour of diesel fuel. Likely constructions equipment includes backhoes, dump trucks, chainsaws, and ordinary pick-up trucks.

3.2.3 Environmental Commitments

Best management and efficient construction practices would minimize the emissions from construction equipment and contractor vehicles and construction equipment would be required to have operable emission control devices.

3.3 Hydrology and Hydraulics

3.3.1 Existing Conditions

The area surrounding the existing acequia currently retains the runoff produced by any precipitation in the immediate upstream area. Any runoff in the acequia can be used as irrigation water and have the chance to infiltrate into the fields, thus returning to the watershed at a lower elevation. Surface runoff or sheet flows often damage the acequia and can transport debris into the existing open ditch.

3.3.2 Foreseeable Effects on Hydrology and Hydraulics

No Action – The No Action alternative would pose no effects to the hydrology and hydraulics of the acequia or any of the surrounding areas. There would be no construction and existing conditions would continue.

Proposed Action – The hydraulics of the Proposed Action would remain similar to the existing acequia. Water collected from the stream bypass sluice-gate would run downhill in the existing direction with slight modifications to the existing horizontal and vertical alignment. The proposed pipeline could convey a larger flow rate of water due to the lower friction of PVC versus a soil ditch and a steadier slope along the length of the pipeline. A benchmark or guideline should be established when installing the new control structure/valve for the new pipeline as to prevent the flooding (overwatering) of irrigated fields.

3.4 Net Water Depletions

3.4.1 Existing Conditions

Water flowing downhill as storm water runoff is retained by the existing acequia and is used as irrigation. This irrigation water can also infiltrate into the soil with some evaporation if left standing. Groundwater flow gradients are generally toward the Rio de Truchas in the valley floor. The acequia's water losses can currently be attributed to either evapotranspiration of the surrounding vegetation or groundwater seepage. Although not quantified, these losses serve to reduce the acequia association's irrigation water availability. Warmer temperatures will increase evapotranspiration losses.

3.4.2 Foreseeable Effects on Net Water Depletions

No Action – The No Action alternative would pose no effects on net depletions of the acequia or any of the surrounding water bodies. Current water-loss rates would remain and would continue to affect the acequia association. There would be no construction and existing conditions would continue.

Proposed Action – Overall, there would be negligible water depletions in the immediate watershed and a net water addition should occur after the proposed construction of the enclosed pipeline. Any water flowing in the acequia, which would normally be exposed to atmospheric conditions, would be enclosed within a PVC pipe and would not have the ability to evaporate.

3.5 Water Quality

3.5.1 Existing Conditions

Water quality in the area is generally good (NMED 2000). Although no sampling or testing occurred, observations during the surveys revealed un-impacted water that was clear in appearance; however, some areas were more turbid where vegetation was sparse and bank erosion more prevalent. Benthos appeared healthy although of low primary productivity. No

known data has been collected for the acequia, but water quality in the Rio de Truchas and the Rio Quemado watershed are considered good; although some impacts have been noted that indicate probable source(s) of pollutants/threats as agricultural and land disposal while specific pollutants or threats are siltation, temperature, and stream bottom deposits (NMED 2000). Similar water quality conditions are likely to exist in the acequia.

3.5.2 Foreseeable Effects on Water Quality

No Action – The No Action alternative would pose no effects to the water quality of the acequia or any of the surrounding water bodies. There would be no construction and existing conditions would continue.

Proposed Action – The water quality of the immediate area could be slightly affected during the proposed construction due to exposed soil and erosion; however, construction is scheduled during October-February when the acequia is not in operation. Little or no water will be passing through the ditch and therefore represents no substantive or foreseeable impact to water quality during the construction period. Section 402(p) of the CWA specifies that stormwater discharge associated with construction activities disturbing one (1) or more total acres of land must be authorized by a National Pollutant Discharge Elimination System (NPDES) Permit. NPDES permit authorization is required for the Proposed Action.

Once the proposed construction is complete, the area would be restored to its original land-shape and form. The area immediately adjacent to proposed pipeline would allow precipitation to infiltrate or run downhill to the next basin versus joining the water in the existing acequia. Returning this water to its natural drainage could improve the flow-rate and quality of the downhill stream basin (Rio de Truchas). Additional water quality benefits may occur with the proposed construction by the prevention of fecal material from livestock from entering the irrigation water and thus potentially inhibit the contamination of agricultural lands with pathogenic organisms such as *Escherichia coli (E. coli)*.

3.5.3 Environmental Commitments

Best management practices would be used as necessary to minimize erosion and sedimentation wherever project construction activities occur. Reseeding with native grasses and forbes would ameliorate the majority of post-construction water quality issues.

3.6 Air Quality and Noise

3.6.1 Existing Conditions

The Clean Air Act of 1970 and amendments provide a comprehensive national program with the goal of reducing the levels of pollutants in the ambient air. The United States Environmental Protection Agency (USEPA) classifies air quality within designated Air Quality Control Regions (AQCR) according to whether the concentrations of criteria air pollutants in the atmosphere exceed primary or secondary criteria identified as National Ambient Air Quality Standards

(NAAQS). Criteria air pollutants include ozone, airborne particulates, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Areas within each AQCR are assigned a designation of attainment or nonattainment for each criteria air pollutant. An attainment designation indicates that air quality within an area is as good as or better than the NAAQS. Class 1 Federal lands include areas such as national parks, national wilderness areas, and national monuments, which are granted special air quality protections under Section 162(a) of the Clean Air Act. In such areas, limits are placed on the maximum allowable increases of sulfur dioxide, particulate matter, and nitrogen oxides above established baseline concentrations.

The project area is located in the Upper Rio Grande Valley Intrastate Air Quality Control Region, which consists of Santa Fe, Taos, Los Alamos Counties, and portions of eastern Rio Arriba County. The nearest Class 1 areas are the Pecos Wilderness to the southeast and the Bandelier Wilderness within the Bandelier National Monument to the southwest. Air quality at the project area is good. Intermittent dust is raised from vehicle use of dirt roads and from agricultural activities. There is occasional smoke from wood stoves, fireplaces, and debris burning. Rio Arriba County is in attainment status for State and Federal ambient air quality standards for all criteria pollutants. No exceedances of NAAQS have been recorded (NMED 2003a, 2003b, 2007a, 2007b).

Noise is generally defined as unwanted or harmful sound. It can be any sound that is undesirable because it interferes with communications or other human activities, is intense enough to damage hearing, or is otherwise annoying. Noise may be intermittent or continuous, steady or impulsive. Vibration is an element of impulsive noise that can cause annoyance and in fact structural damage if it is of sufficient magnitude. Human response to noise is extremely diverse and varies according to the type of noise source, the sensitivity and expectations of the receptor, the time of day, and the distance between the source and the receptor. Noise also can adversely affect and disturb wildlife. Noise analyses focus on the effects on sensitive receptors.

There are no noise studies relevant to the project area, but noise levels are low and typical of rural areas. The project area is approximately three miles east of the village of Truchas, which is along N.M. Highway 76 and County Road 75. Local unpaved access roads and County Roads 639 and 637 pass near the project area. Existing noise sources includes intermittent noise from wind, vehicles, farm equipment, and aircraft. There are no sensitive receptors present other than the occupants of a small number of residences. Wildlife and birds that may be sensitive to noise are likely present in the project area. Because human hearing is not equally sensitive to all sound frequencies, various frequency weighting schemes have been developed to approximate the way people hear sound. The A-weighted decibel scale (dBA) is normally used to approximate human hearing response to sound.

3.6.2 Foreseeable Effects to Air Quality and Noise

No Action – The No Action Alternative would have no effect on air quality or noise. There would be no construction and existing conditions would continue.

Proposed Action – Implementing the Proposed Action would result in short-term increases in fine particulate matter (PM10) and other air pollutants due to construction-related fugitive dust, vehicle use, soil disturbance, and diesel and chainsaw exhaust emissions. Visibility impacts due to dust would be temporary and would decrease after construction and as soils stabilize. Clearing the 30-foot pipeline alignment and removal of wood and woody debris may lead to additional vehicle use in the alignment and access areas and slow recovery of ground cover, prolonging dust impacts. The project would not violate any air quality standard or contribute substantially to air quality degradation.

Implementing the Proposed Action would also result in loud noise and ground-borne vibrations from construction vehicles, chainsaws, and other equipment. These effects would be short-term and variable, but may exceed 80 dBA in the immediate vicinity of the activity. Noise during the construction period (October-February) would disrupt the quiet setting during the daytime hours for nearby residents and temporarily displace birds and wildlife. Increased levels of noise during construction would be noticeable up to a mile away. After completion of the construction, these noise impacts would cease. The operation of the siphon would not produce any major noise, but there would be loss of the natural sound of flowing water that may be currently enjoyed by some residents.

3.6.3 Environmental Commitments

The Corps would incorporate measures to reduce emissions and particulate matter from human-caused sources into the project construction plans. The contractor would be required to have emission control devices on all equipment. Best management practices would be required to control erosion and reduce construction related dust, including the wetting soils in the construction zones and compliance with local soil sedimentation and erosion-control regulations. Disturbed areas would be reseeded with native grasses and forbes. With these measures, only minor effects would be expected.

Noise suppression measures would be taken to minimize disturbance of residents and protect workers during construction. Work would be confined to the daylight hours. Construction contracts would require that construction equipment and activities comply with applicable State and local noise control ordinances. All construction activities would be conducted outside of bird breeding season (see also Section 3.10.3).

3.7 Aesthetics

3.7.1 Existing Conditions

Aesthetics or visual resources refer to both the natural and artificial landscape features that contribute to perceived visual images and the aesthetic value of a view. This value is determined by contrasts, forms, and textures exhibited by geology, vegetation, and human-made features. Individuals respond differently to changes in the physical environment, depending on prior experiences and expectations and proximity and duration of views. Therefore, visual effects analyses tend to be highly subjective.

The visual setting and landscapes of the project area have not been formally assessed, but are typical of the rural agricultural communities in the mountains of northern New Mexico. Much of the project area is steeply sloped and wooded. The acequia is not generally visible from public viewpoints; however, the acequia does pass through some non-forested areas and terminates in agricultural fields. Primary potential viewpoints near the project area would include local roads and nearby residences. Distance views may be observed from homes along some ridgelines in the village of Truchas. In most parts of Truchas along County Road 75 and N.M. Highway 76, the project area is not visible due to topography. There are few man-made structures interrupting the views near the project area other than roads, the acequia, and a few homes and outbuildings. Background views include the forests and dramatic mountain peaks. The sensitivity of the visual resources specific to project area and the extent to which they are observed and valued locally is not known; however, the area is largely a mature coniferous forest (Figure 1-4, page 4).

3.7.2 Foreseeable Effects to Aesthetics

No Action – The No Action Alternative would have no effect on aesthetics. There would be no construction and current conditions would continue.

Proposed Action – Implementing the Proposed Action would result in long-term changes on aesthetics in those areas where trees would be removed to construct the pipeline. The cleared areas along the pipeline alignment through these areas would be visible from local viewpoints and may be visible from a distance as well. Changes to the visual setting and landscape on cleared lands and in staging areas would be less apparent. The change from a natural open ditch to a buried pipeline would likely be less aesthetically pleasing to residents and visitors near the corridor. The presence of heavy equipment, worker's vehicles, and staging areas would temporarily detract from the project area's setting during the construction period.

3.7.3 Environmental Commitments

The Corps would incorporate measures to reduce visual effects into the project design and construction plans. Disturbed areas would be reseeded with native grasses and forbes in order to reduce the visual scar on the landscape. However, the large trees that would be removed (see Section 3.9.3) would not be replaced.

3.8 Floodplains and Wetlands

3.8.1 Existing Conditions

Wetlands are areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR Part 328.3.b.). Wetlands generally include swamps, marshes, bogs, and similar areas. To be classified as a Corps of Engineers jurisdictional wetland, a site must simultaneously contain three types of physical evidence each with clearly specified and defined parameters. It must exhibit wetland hydrology, contain hydric (wetted) soils, and support sufficient numbers of hydrophytic (water or wetted-soil adapted)

plants (Environmental Laboratory 1987; U.S. Army Corps of Engineers 2008a). Wetland indicator metrics include one or more of the following:

- Surface water – wetland hydrology indicator A1
- High water table – wetland hydrology indicator A2
- Saturation – wetland hydrology indicator A3
- Biotic crust – wetland hydrology indicator B10
- Salt deposits – wetland hydrology indicator C5
- Facultative (FAC)-neutral vegetation test – wetland hydrology indicator D7

By definition, Corps of Engineers jurisdictional wetlands are Waters of the United States and are protected under the Clean Water Act of 1972 and Amendments of 1977.

A narrow fringe of hydrophytic plants and wetland-type habitats exist along both sides of most of the survey area, hydric soils probably exist in the acequia as a result of seasonal inundation and wetland hydrology occurs during the growing season when the ditch contains water (Figure 3-2).

Figure 3-2. Hydrophytic plants along alignment

It was also noted that several areas of acequia seepage support some hydrophytic plants; however, Corps regulatory staff have evaluated the entire project area and issued a site determination of non-jurisdictional wetlands due to the acequia being a man-made structure. Since Acequia de la Posecion is, therefore, not Waters of the United States, Corps jurisdictional wetlands are not present along the ditch or in the seepage (ditch leakage) areas; the presence of the wetlands is a result of ditch leakage.

Active floodplains located along the Posecion acequia madre's alignment are limited to the area around diversion structure. Through the remaining portions of the acequia, the ditch is greatly incised and flows regulated at the existing diversion structure are not sufficient to produce an active or dynamic floodplain. The acequia rapidly diverges from the Rio de Truchas and thus remains separated from its natural floodplain processes. In effect, the natural floodplain processes of the Rio de Truchas are not influenced from the presence or operation of the Acequia de la Posecion.

3.8.2 Foreseeable Effects on Floodplains and Wetlands

No Action – The No Action Alternative would have no effect on floodplains or wetlands. There would be no construction and existing conditions would continue.

Proposed Action – The installation of pipe with the Proposed Action would likely eliminate the hydric conditions that support the limited wetlands adjacent to the existing, un-piped alignment; however, the high elevation may be sufficient to support the established wetlands. If this is not the case, hydrophytic (obligate) wetland plants would cease to exist, and the area would revert to being dominated by facultative (able to exist in either hydric or more xeric soil conditions) and/or upland plant species. Wetland-related services (*i.e.* nutrient dynamics) would also cease; water diverted from the Rio de Truchas would remain essentially unchanged through the length of piped section. These effects are permanent and long-term, but not irretrievable. The elimination of the wetlands would reduce the biodiversity of both the project and surrounding areas. Food-web resources for terrestrial wildlife (and potentially fishes) would be accordantly reduced and assume the characteristics of an upland coniferous forest with no water source. The Proposed Action would have no effect on the Rio de Truchas floodplain as no change in ditch operation or water volume delivered would occur.

3.8.3 Environmental Commitments

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Federal Regulations (33 CFR 323.4(a)(3)), certain discharges for the construction or maintenance of farm or stock ponds or irrigation ditches have been exempted from requiring a Section 404 permit. Included in the exemption is the construction or maintenance of farm or stock ponds or irrigation ditches; therefore, the Proposed Action will not require Section 404 permitting.

3.9 Vegetation Communities

3.9.1 Existing Conditions

The project area primarily passes through upper montane coniferous forest (Dick–Peddie et al. 1993). The acequia traverses approximately 500 feet of montane riparian vegetation near its divergence from the Rio de Truchas and, near the east and west ends, about 2,800 feet of agricultural fields and pastures. Since the target acequia segment is 9,321 feet long, the length passing through upper montane coniferous forest is approximately 5,900 feet. Hydrophytic vegetation grows in narrow strips along both sides of the majority of the acequia's alignment. The staging areas are located in grass and forb moist meadows, which appear to be used, at least intermittently, as pastures.

In the survey area, the dominant trees in the upper montane coniferous forest are Rocky Mountain fir (*Abies bifolia*) and Douglas fir (*Pseudotsuga menziesii*); other trees, principally Aspen (*Populus tremuloides*) and Ponderosa Pine (*Pinus ponderosa*), are fairly common in certain areas. In some places, the tree canopy is sufficiently dense that understory plant diversity is markedly reduced; elsewhere the canopy is open enough that understory shrubs, forbs, and grasses are abundant. Plant diversity is greatest in the more open places and in proximity to the acequia. Thinleaf Alder (*Alnus incana* ssp. *tenuifolia*) is common in the montane riparian

vegetation at the east end of the corridor near the Rio de Truchas, and other plants typically found in this type of riparian habitat are present. The existing agricultural fields and pastures likely occur where grassland or woodland once grew. Many forbs and grass species occur throughout much of the survey area, especially in open meadows.

3.9.2 Survey Results

A list of the plants observed and cataloged during surveys conducted on September 17, 2008 is shown in Appendix A. Seasonal surveys, conducted over a longer periods, may reveal additional plant species not identified here (Flora of North America 1993; Martin and Hutchins 1980).

3.9.3 Tree Density and Removal Estimates

Estimates of tree densities along the ditch were obtained in order to approximate a *maximum* number of trees that would need to be removed for acequia rehabilitation efforts. All living trees of any size, ranging from 1 inch to 3 feet in diameter, were counted by species in six (6) randomly sampled plots adjacent to the ditch in wooded areas. Each plot was a right triangle with two sides of 25 feet long and a hypotenuse of 35 feet (approximately 312.5 sq ft). The number of trees per acre was calculated by multiplying the average number of each species across all six plots by 139.4 (*i.e.* 43,560 sq ft per acre / 312.5 sq ft per plot) – again, providing an estimate of the number of trees per acre across all species. The result was then multiplied by the total disturbance zone (5.4 acres) to provide *maximum* estimate of trees removed.

Table 3-2 shows the results for tree density estimation on six (6) plots within forested areas along the acequia's surveyed alignment. There is, therefore, an average of 272 trees per acre (of any given species or size indicated in Table 3-2) within the forested areas of the alignment; however, the distribution of trees is somewhat patchy and species composition within patches varies. No single plot contains all of the species encountered across all of the plots and the calculated density per acre for each species applies only to locations that support those species. For example, aspen will generally not be found in places that have dense stands of Rocky Mountain fir and Douglas fir and vice versa.

Again, the total forested area within the disturbance zone (extending 15 feet upslope and 25 feet down slope from the ditch banks) along the alignment is approximately 5.4 acres. Consequently, the estimation of the *maximum* number of trees to be removed is 1,468. The actual number of trees removed is likely to be significantly less as construction activities and impacts would alternate from the upslope to down slope sides of the ditch, and certainly not call for the complete clearing of all trees in the acequia's legal easement (which extends 30 feet on either side of the ditch's centerline). Nonetheless, there would be a need for substantial tree removal for equipment access; the extent of which would be determined, but minimized, on-site.

Table 3-2. Tree density in forested areas of Acequia de la Posecion's Disturbance Zone; forested areas = 5.4 acres, total disturbance zone = 8.6 acres

	Count of living trees of any size (plots = 312.5 sq. ft.)							Trees per acre
	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Average	
Rocky Mtn. fir				7	4		1.8	**251**
Douglas fir			13	6	6		4.2	**585**
Ponderosa pine				1	1	2	0.7	**98**
Common juniper						1	0.2	**28**
Rocky Mt. juniper			1				0.2	**28**
Alder	3						0.5	**70**
Aspen	7	34				6	7.8	**1,087**
Willow tree	1						0.2	**28**
Total	**11**	**34**	**14**	**14**	**11**	**9**		

3.9.4 Foreseeable Effects on Vegetation Communities

No Action – The No Action Alternative would have no effect on vegetation communities. There would be no construction and existing conditions would continue.

Proposed Action – The Proposed Action would result in the disturbance of approximately 5.4 acres of coniferous forest. A *maximum* of 1,468 trees (species noted above) would require removal for equipment access and pipe installation; however, the actual number of trees removed should be substantively less. Regardless of the number of trees removed, effects would be long-term but not irreversible; canopy openings would allow for colonization, re-growth, and forest regeneration. Further, an increase of edge habitats and herbaceous growth would provide additional forage for deer, elk, and other herbivores. Disturbance to understory vegetation would result in temporary, short-term effects. Felled trees will be hauled to the staging areas for use as firewood for local residents. The firewood distribution would modestly contribute to air quality and noise pollution from intermittent vehicle traffic, emissions, and use of chainsaws.

3.9.5 Environmental Commitments

The Corps commits to minimizing the number of trees removed to those necessary for the proper installation of the pipe, which, in large part, would be determined on site. No tree transplantation is planned at this time. Areas of disturbance would be reseeded with native grasses and forbes to foster site recovery and minimize wind and water erosion to base soils and colonization by surrounding woody vegetation will occur over time.

3.10 Fish and Wildlife

3.10.1 Existing Conditions

Supporting bear, bobcat, cougar, and variety of herbivores, the area is typical of an upper-elevation montane coniferous forest. Terrestrial wildlife diversity is considerable but patchy (migratory at various spatial and temporal scales) as primary productivity that serves as forage is generally limited to breaks in the canopy where energy inputs (sunlight) produce suitable plant growth. The general area (Carson and Santa Fe National Forests) is home to one the largest elk herds in New Mexico and carnivore distribution and abundance is typically a function of prey species. The Nuestra Señora del Rosario, San Fernando, y Santiago Community Land Grant and the project area are nestled in an area between the Carson and Santa Fe National Forests; however, there are many fence-lines in the area, which tend to discourage wildlife use and transit.

On September 17, 2008, surveys for extant fish and wildlife were conducted along a portion of the Acequia de la Posecion, east of the village of Truchas, New Mexico. In addition, two one-acre staging areas north of the acequia's alignment in the valley floor were surveyed (Figure 1-1).

Two (2) biologists completed a pedestrian assessment of the survey area; defined previously as 9,321 linear feet of the acequia's alignment and further defined as an 8.6-acre zone of disturbance extending 15 feet upslope and 25 feet down slope from the ditch banks. The staging areas are approximately one (1) acre each and the known access routes are along existing local and frequently traveled dirt roads. Observations were recorded and are presented in the following sections.

3.10.2 Survey Results

Thirteen bird and four mammal species were observed or evidence of their presence was noted in the survey area (Table 3-3). Under the Migratory Bird Treaty Act (16 U.S.C. 703–711), it is unlawful to take, capture, possess or kill any bird species, nest, or egg listed in CFR 10.13. All of the bird species observed during the survey are classified as migratory and are therefore covered under the Migratory Bird Treaty Act. No bird nests were noted in the survey corridor; however, given the date of survey, the sighting of active nests, or observing nesting/pair-nesting behavior is highly unlikely.

Surveys conducted during all seasons and times of day in more than a single year would reveal other wildlife species, which live in or utilize the survey area. These would include reptiles, birds, and mammals (Findley et al. 1975; BISON–M, New Mexico Department of Game and Fish).

No fish of any kind were observed in the surveyed acequia's alignment or near the western diversion structure in the Rio de Truchas. Consultation responses from the New Mexico

Department of Game and Fish (NMDGF) indicate the there is a core conservation population of Rio Grande cutthroat trout in the upper Rio de Truchas (genetically distinct having >99% native alleles). In addition, the NMDGF also indicated that historic diversions in the area (including those for the Acequia de la Posecion) have contributed to the preservation of this population from encroachment from non-native trout. Lastly, the NMDGF requested the Corps to consider the effects to hydrologic connectivity of the lower Rio Quemado watershed in lieu of the increased efficiency of the piped section.

Table 3-3. Wildlife observed in the survey area

COMMON NAME	SCIENTIFIC NAME	EVIDENCE
BIRDS		
Mourning dove	*Zenaida macroura*	Observed
Northern flicker	*Colaptes auratus*	Observed
Olive–sided flycatcher	*Contopus cooperi*	Observed
Steller's jay	*Cyanocitta stelleri*	Observed
Clark's nutcracker	*Nucifraga columbiana*	Observed
Black–billed magpie	*Pica pica*	Observed
Common raven	*Corvus corax*	Observed
Mountain chickadee	*Poecile gambeli*	Observed
White–breasted nuthatch	*Sitta carolinensis*	Observed
Western bluebird	*Sialia mexicana*	Observed
Yellow–rumped warbler	*Dendroica coronata*	Observed
Chipping sparrow	*Spizella passerina*	Observed
Dark–eyed junco	*Junco hyemalis*	Observed
MAMMALS		
Chipmunk	*Eutamias* sp.	Observed
Red squirrel	*Tamiasciurus hudsonicus*	Heard; observed
Pocket gopher	*Thomomys* sp.	Mounds
Coyote	*Canis latrans*	Observed

3.10.3 Foreseeable Effects on Fish and Wildlife

No Action – The No Action Alternative would have no effect on fish or wildlife. There would be no construction and existing conditions would continue.

Proposed Action – The Proposed Action may pose a variety of effects to fish and wildlife in the area. Construction activities represent a short-term disturbance (October-February) that would clearly affect the use and transit of the area by terrestrial and avian species. Other short-term effects include the disturbance to the acequia's alignment through excavation and backfilling, and the displaced food resources that disturbance area represents. Long-term effects include the removal of trees; however, again, this can also serve as an increase of edge habitats as newly established herbaceous growth would provide additional forage for deer, elk, and other herbivores. Although no nests were observed, the tree removal/disturbance area would remove

nesting and foraging avian habitat. Of the observed birds, the olive-sided flycatcher would likely be most affected through the elimination of the open-water/riparian/wetland habitats. These effects should be considered long-term. Another long-term effect would be the removal of a free-water source. Although deer and other ungulates can obtain water from forage, animals such as bear and wild turkey need free water. The acequia has been established since 1754 and has unquestionably provided an additional water source for the area's wildlife; however, the Rio de Truchas is nearby and provides an additional, consistent water source. Therefore, although long-term, this effect is not irretrievable in lieu of the proximity of the Rio de Truchas.

Although no fish were observed in the acequia's alignment, the Proposed Action would eliminate any potential aquatic habitat in the acequia's rehabilitated alignment. As indicated through consultation, the NMDGF does not foresee any deleterious impacts resulting from the Proposed Action.

3.10.4 Environmental Commitments

The Corps would make every effort to minimize effects to fish and wildlife that may result from the implementation of the Proposed Action. The construction of the proposed pipeline would comply with the Migratory Bird Treaty Act (16 U.S.C. 703–711). The project would not directly affect migratory birds because no active nests, birds, or nestlings would knowingly be destroyed. In places planned for vegetation removal and where active nests have been found, construction would take place only after the nests have been vacated (typically after August and before March). Construction is planned for the period of October-February. In areas where there are no active nests, vegetation removal can potentially take place year-round. An active nest is one that is currently being constructed or rehabilitated or that has eggs or young birds incapable of independent life. When young birds can fly and feed themselves, the nest is vacated. All areas of disturbance would be reseeded with native grasses and forbes.

3.11 Threatened, Endangered, and Special Status Species

3.11.1 Existing Conditions

The Endangered Species Act (16 U.S.C. 1531 *et seq.*) of 1973 as amended (ESA) provides for the protection from harm, harassment, or destruction of habitat for listed species. The New Mexico Wildlife Conservation Act and New Mexico Endangered Plant Species Act protect State-listed species by prohibiting take (death or removal of a species) without a permit from the New Mexico Department of Game and Fish or the New Mexico Forestry and Resources Conservation Division.

Species with special conservation status include U.S. Fish and Wildlife Service (USFWS) and State of New Mexico Species of Concern (informal designations), Bureau of Land Management Special Status Species, U.S. Forest Service Sensitive Species, and plants considered Rare by the New Mexico Rare Plant Technical Council (NMRPTC).

Standard database searches for special status species, as defined above, were conducted for Rio Arriba County, New Mexico. Queried databases included: the Biota Information System of New Mexico (BISON-M), USFWS Southwest Region 2 New Mexico Ecological Services Field

Office - Listed and Sensitive Species, and the NMRPTC. Review of the database queries resulted in a list of 43 listed species for Rio Arriba County (Appendix B).

A list of *targeted* special status species (13) was compiled through a detailed literature review and evaluation of the available information regarding the abundance, distribution, and habitat characteristics of those species either known or likely to occur in the project area. The target species are highlighted yellow in the table in Appendix C. The Corps is expressly concerned regarding the disposition and effects of project implementation on the Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*) and the Mexican spotted owl (*Strix occidentalis lucida*). Further information on these species is provided below. Site investigations will, therefore, focus on these and the other target species; however, vigilance for all special status species was maintained throughout the surveys.

Rio Grande cutthroat trout – A spotted trout, the Rio Grande cutthroat differs from the greenback and Colorado River cutthroat trout by having fewer scales (typically 150-180 in the lateral series and 35-45 above the lateral line) and by the irregular shape of the spots on the caudal peduncle – the narrow part of the fish's body to which the caudal or tail fin is attached (Behnke 1992; Figure 3-3). It spawns from March through July, depending on water temperature (Sublette et al. 1990) and mainly May-June in New Mexico (USFWS 2002). In colder waters, growth is typically slow, and age at maturity may be four (4) years (Rinne 1995). The Rio Grande cutthroat feeds opportunistically on terrestrial insects and aquatic macroinvertebrates. Young-of-year and juvenile fishes such as Rio Grande chub, longnose dace, Rio Grande sucker, white sucker, creek dace, and southern redbelly dace may also serve as prey for adult fish (Rinne 1995). Riverine (creek) habitat is typically high-gradient pools and structured riffles with suitable benthic habitat areas (wintering habitat).

Figure 3-3. Rio Grande cutthroat trout

The historical range is not clearly known but is likely to have been all trout waters in the Rio Grande drainage, including the Chama, Jemez, and Rio San Jose drainages along with those of the Pecos and Canadian drainages (Sublette et al. 1990, Behnke 1992). It is uncertain whether this subspecies was naturally present historically in the Canadian River basin (USFWS 2002). Present range includes New Mexico and Colorado and the southernmost occurrence is in Indian Creek in the Lincoln National Forest and Animas Creek in the Gila National Forest (Rinne 1995). The species ranges north to the headwater tributaries in the Rio Grande and San Juan National Forests in southwestern Colorado. There are few lake and introduced populations and possibly may have occurred historically in Texas and Mexico (Behnke 1992). Currently most populations are restricted to small headwater streams (Behnke 1992) where allochthonous materials are the primary energy input (Sublette et al. 1990). Spawning occurs in clean gravel

and nursery habitat is often along stream margins in slower water. Winter habitat includes deep pools, which may be limiting in headwaters (USFWS 2002). Stream lengths of about 5 miles (8 km) or more provide the most favorable habitat (USFWS 2002). Management techniques typically involve the removal of non-native salmonids and installing barriers to prevent upstream movement of non-native trout are vital to maintaining and increasing range and abundance (Rinne 1995). See USFWS (2002) for further information on conservation measures.

Mexican spotted owl – Three (3) owl species within the genus *Strix* occur north of Mexico: spotted (*S. occidentalis*), barred (*S. varia*), and great gray (*S. nebulosa*). Mexican spotted, barred, and fulvous owls (*S. fulvescens*) occur in Mexico. The Mexican spotted owl (*S. o. lucida*) is one of three subspecies of spotted owl recognized by the American Ornithologist's Union (AOU; Figure 3-4). The other two subspecies are the northern (*S. o. caurina*) and the California spotted owl *(S. o. occidenta*).

The Mexican subspecies is geographically isolated from both the California and northern subspecies. Through allozyme variation, Barrowclough and Gutierrez (1990) showed major allelic differences between the Mexican spotted owl and the two coastal subspecies suggesting that the Mexican spotted owl has been genetically isolated from the other subspecies for a considerable time. As such, the Mexican spotted owl has followed a divergent evolutionary history and can therefore be considered a separate species.

The Mexican spotted owl currently occupies a broad geographic area, but does not occur uniformly throughout the range. Rather, it discontinuously occurs in isolated localities that correspond to secluded mountain systems and canyons. In the United States, 91% of the owls known to exist between 1990 and 1993 occur on lands administered by the USDA Forest Service (USFWS 1995).

Figure 3-4. Mexican spotted owl

The Mexican spotted owl is mottled in appearance with irregular white and brown spots on the abdomen, back, and head with a distinctly darker facial ring. The spots of the Mexican spotted owl are larger and more numerous than the other two subspecies, giving it an overall lighter appearance; clear morphological evidence of its separate evolutionary history and speciation. *Strix occidentalis* translates as "owl of the west" and *lucida* means "light" or "bright". Unlike most owls, spotted owls have dark eyes, but are characteristically large and owl-like. This provides the owl with extraordinary eyesight. Several thin, uniformly spaced white bands mark an otherwise brown tail, as shown in Figure 3-4 above.

Adult male and female spotted owls are generally indistinguishable by plumage color and characteristics, but the sexes can be readily distinguished by voice. Juveniles, sub-adults, and adults can, however, be distinguished by plumage characteristics (Forsman 1981, Moen et al. 1991). Juvenile sported owls (hatchling to approximately five months) have a progressively decreasing downy appearance as they mature. Sub-adults (5 to 26 months) closely resemble adults, but have pointed retrices with a pure white terminal band (Forsman 1981, Moen et al. 1991). The retrices of adults (>27 months) have rounded tips, and the terminal band is mottled brown and white as seen in the photo above. Like most owls, spotted owls exhibit reversed sexual dimorphism (*i.e.* females are larger than males) to accommodate reproductive metabolic demands.

Mexican spotted owls nest, roost, and forage, in a diverse collection of vegetative assemblages and communities that can vary widely throughout its range. Mature, mixed-conifer forests (Douglas fir, white fir, limber pine, ponderosa pine, etc.) are commonly used throughout most of the range. The understory often consists of the above conifer species but can also include Gamble oak, maple, box elder, and New Mexico locust. In the northern portions of New Mexico and southern Colorado, however, Mexican spotted owls occur mostly in steep-walled, rocky canyons (USFWS 1995). Along the Mogollon Rim in Arizona and New Mexico, habitat use can be less constrained and include mixed ponderosa pine-Gamble oak forests and their associated deciduous riparian forests (USFWS 1995).

Mexican spotted owls consume a variety of prey throughout their range but commonly eat small- and medium-sized rodents such as woodrats, mice, and voles. Spotted owls also consume bats, birds, reptiles, and arthropods. The diet varies by geographic location (*i.e.* more voles than birds or mice, etc.) that likely reflects the distribution of both prey and owl itself.

3.11.2 Survey Results

On September 17, 2008, two (2) biologists completed a pedestrian assessment of the survey area for plants and wildlife listed as Endangered or Threatened by the USFWS or the State of New Mexico, USFWS Candidate or Proposed plants and wildlife, and special conservation status plants and wildlife. In addition, the two (2) one-acre staging areas north of the acequia's alignment (Figure 1-1) in the valley floor were also surveyed. Observations were recorded and are presented in the following sections.

Plants – No Threatened, Endangered, or special status plants of any conservation concern were observed in the survey area at the time of survey.

Wildlife – No Threatened, Endangered, or special status wildlife of any conservation concern were observed in the survey area at the time of survey.

3.11.3 Foreseeable Effects on Threatened, Endangered, and Special Status Species

No Action – The No Action Alternative would not result in any changes to the status of Threatened, Endangered, or special status species in the project area or Rio Arriba County, New Mexico. Existing levels of disturbance associated with grazing and operation and maintenance of the existing diversion structure and acequia would continue.

Proposed Action – There were no Threatened, Endangered, or special status species observed in the project area. No wildlife species in Rio Arriba County, New Mexico, which are Listed as Endangered or Threatened by the USFWS under the Endangered Species Act, are likely to occur in the survey area due principally to the lack of suitable habitat.

No Critical Habitat designated by the USFWS exists for any wildlife species in the survey area; however, two (2) Critical Habitat Units (SRM-NM-5a and SRM-NM-5b) for the Mexican spotted owl exist approximately 19 miles to south and southwest of the project area within the Santa Fe National Forest. Because Mexican spotted owls tend to favor steep-walled, rocky canyons in northern New Mexico, the Proposed Action would likely pose no threat to any known population.

The Rio de Truchas upstream of the Acequia de la Posecion is considered a conservation area for Rio Grande cutthroat trout. The headgate for the Acequia de la Posecion on the Rio de Truchas is approximately 1.2 miles downstream of the Rio de la Cebolla confluence. The New Mexico Department of Game and Fish conducted electrofishing surveys for Rio Grande cutthroat trout in the Rio de Truchas upstream and downstream of the Rio de la Cebolla confluence in September 2007 (NMDGF 2007). The extensive irrigation diversions (including Acequia de la Posecion) between Truchas and the Rio de la Cebolla confluence provide a barrier to upstream movement of non-native trout species. No fish have been observed in the Acequia de la Posecion at the completion of the irrigation season (Mr. Curtiss Frank, pers. comm.). The proposed action would not change the hydrology of the acequia system, and would not provide a route for colonization of the Rio de Truchas by non-native trout upstream of the acequia.

No wildlife species Listed as Endangered or Threatened by the State of New Mexico (19 NMAC 21.2) are likely to occur in the survey area. No plants Listed by the USFWS as Threatened or Endangered under the Endangered Species Act are known to grow in Rio Arriba County, New Mexico. Additionally, none are proposed or are candidates for Listing by the USFWS. No Critical Habitat designated by the USFWS exists in Rio Arriba County, New Mexico for any plant. No plant species Listed as Endangered or Threatened by the State of New Mexico (19 NMAC 21.2) are known to occur in Rio Arriba County, New Mexico. The Proposed Action would not result in any changes to the status of Threatened, Endangered, or special status species in the project area or Rio Arriba County, New Mexico. The Proposed Action should not harm, harass, or destroy habitat for any Federally or State of New Mexico listed species.

3.11.4 Determination of Effects to Federally Listed or Proposed Species and Critical Habitat

The Corps determines that the Proposed Action would have *No Effect* on Federally Listed species known to occur in Rio Arriba County, New Mexico. The proposed project area is not within or nearly adjacent to any existing or proposed Critical Habitat.

3.12 Cultural Resources

3.12.1 Existing Conditions

A cultural resource inventory of the proposed project area was conducted in early October 2008 (Messerli and Eakin 2008). A copy of the inventory report is attached in Appendix D. The pedestrian archaeological survey included the Acequia de la Posecion project area and two 1-acre staging areas, totaling approximately 19.2 acres. Prior to the pedestrian survey, an archival literature search, and searches of the New Mexico Archaeological Records Management Section database, the State Register of Cultural Properties, and the National Register of Historic Places (NRHP) were completed. Six previous cultural resource investigations have been conducted within one mile of the project area. One archaeological site (LA 130785), consisting of remnants of a historic-period structure, was recorded as a result of these investigations. This structure will be completely avoided by the proposed construction. The records review determined that there are no State or Federal registered historic properties within one mile of the project area.

The pedestrian survey identified two historic properties: the Acequia de la Posecion and a dilapidated historic cabin (LA 161069). Known as the Atkinson Cabin, this is considered by the current landowner to be a late 19th century log cabin with some early 20th century improvements. During the mid-20th century, it was used by shepherds who were summer-pasturing their sheep on the land grant. The cabin is located outside of the project area approximately 39 feet south of the acequia, and will not be affected by this project. SWCA, Inc. recommends that LA 161069 is eligible for listing on the NRHP under Criterion D, for its ability to contribute to the understanding of the rural lifestyle of the Truchas area during the late 19th and early 20th centuries. The Corps concurs with this eligibility determination.

The Acequia de la Posecion is a 19,107 foot-long open earthen ditch system that diverts water from the Rio de Truchas, travels 10,681 feet west before splitting into one 3,953 foot-long northern alignment and one 4,473-foot-long southern alignment that parallel each other and drain into (desagua) the Acequia Medio. The Acequia de la Posecion serves a portion of the community of Truchas, and dates to 1754. In 1900, by-laws were established to define the roles and cooperation of the acequia members, and dictate the division of labor associated with the acequia.

The proposed project is to pipe the acequia madre from the diversion structure to the split at 10,681 feet. As part of this process, a more direct route (following approximately 825 feet of an earlier alignment) will be re-established. This shorter alignment, a siphon, was briefly in use in the early 1970s but was abandoned soon thereafter. The acequia is relatively unmodified from its original form, function, and alignment, although approximately 2,350 feet of the existing acequia were piped with concrete as part of the early 1970s alternate alignment rehabilitation and

the alternate 825-feet alignment, used a steel pipe siphon. Much of this piping and concrete has since been removed, returning the ditch to an open, earthen form.

SWCA Inc. recommends that the Acequia de la Posecion is eligible for nomination to the NRHP under Criteria A, C, and D, for its association with the development of irrigation and agriculture in the Truchas Valley, as well as the associated settlement of Truchas; for its engineering design characteristics; and for its potential to yield additional information on acequia construction and function. The Corps concurs with SWCA's recommendations for Criteria A and C, but does not agree that significant information could be derived from further study of the active physical ditch. There are no unique features or technological challenges associated with this ditch within the Area of Potential Effect that would warrant a Criterion D eligibility determination.

American Indian tribes that have indicated that they have potential cultural resource concerns in the Rio Truchas valley were given the opportunity to comment on the Proposed Action. No traditional cultural properties are currently known to exist in the vicinity of the project area. The Navajo Nation responded that the project would not impact any Navajo Traditional Cultural Properties or historic properties; however, they wish to be contacted in the event of any unanticipated discoveries. The Hopi Tribe responded that since they consider themselves to be culturally affiliated with prehistoric archaeological sites in the project region, they wish to be consulted regarding any prehistoric cultural resources identified during survey or inadvertently discovered during project activities.

3.12.2 Foreseeable Effects on Cultural Resources

No Action – The no-action alternative will not have a direct affect on cultural resources in the project area as no ground disturbance from this Federal action would be undertaken. However, the acequia association would likely continue their operations and maintenance activities, which may include ground disturbance, and this work could be completed without Section 106 compliance if no Federal assistance is used. This would have an unknown, but potentially adverse effect to the cultural resources of the region.

Proposed Action – The Corps considers conversion of 9,321 feet of the Acequia de la Posecion from an earthen ditch to underground PVC pipeline an adverse effect to this historic property, as this represents a change in form to a little more than half of the acequia (56 percent). The project would not introduce a new alignment; it would follow the current alignment for most of its extent but would also include the reuse of the 825-foot segment, use of which was discontinued shortly after its construction in the 1970s. The function of the acequia, to convey water to fields for farming, would remain the same.

The Corps considered construction options that would reduce or minimize the effects to form, function, and alignment to the acequia. The steep terrain, roots, beavers, rodent burrows, water loss, arroyos, and heavily forested nature of the proposed project area does not leave many viable alternatives. Half-piping while staying in the original alignment would have the least impact to the historic character of the acequia, but would not resolve the problem of significant sedimentation and accumulation of debris in the ditch. In addition, access for cleaning and

maintenance over the last decades has become extremely problematic to the 17 remaining acequia association members. There are approximately 30 private non-acequia landowners whose boundary fences cross the acequia and make access to the acequia right-of-way difficult. Due to the steep forested terrain, it is not possible to drive up the acequia to maintain it. In the end, the proposed piping through the portion with recent land-ownership issues and ongoing debris problems will allow the declining number of acequia association members to continue operating the acequia.

To mitigate adverse effects to the acequia, the Corps recommends conducting additional research on the acequia, including photographically documenting the acequia on archival paper; conducting oral history interviews with acequia association members; scanning and translating the Association's log book, which dates from 1900; and copying and transcribing 17 hours of interviews conducted in 1971 by the Association. The Corps recommends that these efforts could serve to mitigate the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking.

The Corps consulted with the New Mexico State Historic Preservation Office (NMSHPO) on the identification of properties, assessment of effects, and proposed mitigation of adverse effects (see Appendix D). Due to the project's adverse effect to historic properties, the Advisory Council on Historic Preservation was offered the opportunity to review the project and participate in the Section 106 process; the Advisory Council reviewed the cultural resources documentation and proposed mitigation, and declined to participate (see Appendix D). The NMSHPO has concurred on the identification of properties and assessment of effects, and agrees that the Corps' recommendations for mitigation of adverse effect as described above are adequate. The Corps, in consultation with the NMSHPO, has prepared a Memorandum of Agreement that discusses the mitigation efforts and the process for resolving the adverse effect (see Appendix D).

Based on the information available to date, no other historic properties or artifacts would be affected by this Proposed Action, and no tribal concerns have been brought to the attention of the Corps. The Corps is of the opinion that the proposed Acequia de la Posecion rehabilitation project would have an adverse effect to historic properties. However, the adverse effect would be mitigated by the collection and recordation of information, as described above.

3.12.3 Environmental Commitments

There is the potential for unanticipated discoveries of cultural resources that were not identified during the cultural resource inventory. Should previously unknown artifacts or other historic properties be encountered during construction, work would cease in the immediate vicinity of the resource. A determination of significance would be made and further consultation would be conducted with the NMSHPO, other consulting parties, and with American Indian Tribes that have cultural concerns in the area, on measures to avoid, minimize, and/or mitigate potential adverse effects.

3.13 Socioeconomic Considerations

3.13.1 Existing conditions

Socioeconomic considerations include an analysis of any changes in employment, income, business volume, population or housing and secondary effects on community services. National Environmental Policy Act (NEPA) regulations require analysis of effects on the human environment including social and economic effects.

The project area is in an unincorporated section of Rio Arriba County. The population, demographic, and economic characteristics of Rio Arriba County are detailed in Table 3-4, along with comparable data from the State of New Mexico and the US. The estimated population of the county in 2006 was 40,949 a decrease of 0.6% from 2000. During the same period, New Mexico's population increased by 7.5% (U.S. Census Bureau 2008a, 2008b). From these data, the University of New Mexico's Bureau of Business and Economic Research projected a declining rate of growth for Rio Arriba County from 2010 through 2030. Growth in the county is hampered by several issues, such as the availability of land and water, and the relative lack of high paying jobs. However, based on its own research, the county projects a small increase (0.87%) in population over the same period (Rio Arriba County 2008b). Española, which is partially in Santa Fe County, is the largest city in Rio Arriba County with a population of 9,549 in 2007. Major employment sectors include education, health care, social services, government, arts and entertainment, recreation, accommodations and food service, and construction. Agriculture employs about four percent of the county's workers. Total non-farm employment in the county increased by 18.9% from 2000 to 2005, compared with an 8.4% increase in New Mexico and a 2.0% increase in the US (NMDWS 2008a, 2008b, 2008c; U.S. Census Bureau 2008c, 2008d).

Truchas has a population of approximately 950 residents. In addition to small-scale agriculture and businesses typical of a small town, there are also art galleries and some small lodging facilities. Community services include a volunteer fire department/EMS, senior center, library, post office, medical clinic and domestic water and sewage system. Public safety is provided by the county sheriff. Truchas shares an elementary school located south of town with other mountain communities. There are no secondary schools in Truchas. Other community services and most major commercial enterprises are available in Española approximately 20 miles away.

3.13.2 Foreseeable Effects to Socioeconomic Considerations

No Action – Implementing the No Action Alternative would not result in changes to socioeconomic conditions. The local economy would not benefit from construction expenditures or improvements to the irrigation delivery system.

Proposed Action – Implementing the Proposed Action would result in minor temporary increases in spending for construction support materials, fuels, equipment rental, labor, lodging, and meals. Businesses in Truchas and other parts of Rio Arriba County would likely be the main beneficiaries depending on the location of the construction contractor and his labor and supply

sources. There would be no effect on local services or housing. Enclosing the acequia in a pipe would improve irrigation efficiency, reduce losses of irrigation water, and reduce expenditures and labor required to maintain the system. These changes may have a positive effect on the economic viability of continuing subsistence agricultural traditions and productivity. There would be minor long-term contributions to the tax base from construction expenditures, agricultural productivity, and land values.

Table 3-4. Population, demographics, economic characteristics, and poverty status

	Rio Arriba County	New Mexico	United States
Total Population (2006 Estimate)	40,949	1,954,599	299,398,485
Percent White (2006)	82.9	84.6	73.9
Percent Black (2006)	0.6	2.5	12.4
Percent American Indian and Alaska Native (2006)	15.2	9.8	0.8
Percent Asian (2006)	0.3	1.3	4.4
Percent Native Hawaiian or Other Pacific Islander (2006)	0.2	0.1	0.1
Percent reporting two or more races (2006)	0.8	1.6	2.2
Percent reporting Hispanic/Latino Origin (2006; may be of any race)	72.2	44.0	14.8
Percent unemployment rate (2008)	5.6	4.7	6.1
Personal income per capita (2006)	$23,976	$25,670	$31,472
Median household income (2006)	$34,364	$37,603	$48,451
Percent Individuals Below Poverty Level (2004)	20.1	16.7	13.3

Note: Original data were gathered from a variety of sources using different methods. Race and ethnic categories are based on self-reporting and statistical estimates. Sources NMDWS 2008a, 2008b, 2008c; U.S. Census Bureau 2004, 2008a, 2008b, 2008c; 2008d.

3.13.3 Environmental Commitments

The Proposed Action would not result in any negative effects on socioeconomic conditions, so no further measures to reduce effects or environmental commitments are required.

3.14 Land Use and Recreational Resources

3.14.1 Existing conditions

Land use refers to the current activities or designated use of land for economic production; for residential, recreational, or other purposes; and for natural or cultural resource protection. Related to land use is the issue of property ownership and management. Land use is frequently

regulated in some manner by different levels of government through plans, policies, or ordinances that stipulate the permissible uses within an area in order to protect designated areas or ensure compatible uses. Recreational resources refer to public or private land uses or facilities that provide opportunities for public recreation.

The project area is on private land approximately three miles east of the unincorporated village of Truchas. Development planning and permitting is provided by Rio Arriba County and is guided by the Rio Arriba County Comprehensive Plan and a variety of planning and zoning ordinances addressing specific project types (Rio Arriba County 2008a, 2008b). This land was part of the historic Nuestra Señora del Rosario, San Fernando y Santiago Community Land Grant established in 1754. This land grant, now commonly referred to as the Truchas Land Grant, still manages some common lands, and consults with Federal agencies on land use issues. Under U.S. law, most of the land designated for communal grazing and common forestlands under the land grants were set aside as forest reserves, which later became the national forests. To the land grant heirs the federalization of former land grants remains a difficult and controversial issue that is being addressed through the judicial and legislative processes (Rio Arriba County 2008a, 2008b).

The recognized local government unit for the diversion, distribution, and use of the surface water is the Acequia de la Posecion. The ditch association has a 60-foot wide right-of-way centered on the acequia for maintenance. Much of the land near the right-of-way is undeveloped woodlands, agricultural fields, grazing lands and a few residences. National Forest lands are accessed immediately north of the project area. Currently, the Acequia de Posecion has 17 irrigators and 167 irrigated acres (pers. com. P. Phillips Corps Project Manager; October 10, 2008). In 1987, the Acequia de la Posecion had 24 irrigators and 186 irrigated acres (NMAC 1987). Farms in the Truchas area are typically small with homes on the site or nearby. Most of the surrounding nonagricultural land uses such as small businesses, residences, and government and community services are concentrated in a strip along State Highway 76 and County Road 75, west of the project area. The nearest city is Española, 20 miles to the southeast. The valley is surrounded by Forest Service and Bureau of Land Management (BLM) lands.

There are no public recreational activities associated with the project area. The adjacent public lands provide opportunities for fishing, hunting, camping, hiking, snowshoeing, and off-road vehicle use. State Highway 76, the High Road to Taos, is an alternate route to Taos for sightseeing and enjoyment of historic landscapes and buildings. Truchas, and its galleries and adobe church is a popular tourist stop along the route.

3.14.2 Foreseeable Effects on Land Use and Recreational Resources

No Action – The No Action Alternative would have no effect on land use or recreation. There would be no construction and existing conditions would continue.

Proposed Action – Implementing the Proposed Action would not change current land uses in the project area. There are no zoning or land use designations that would be affected by the

Proposed Action. Agricultural efficiency would be enhanced by the proposed improvements to water delivery, helping to preserve the economic viability of current subsistence agricultural land uses and the historical nature of Truchas' farming heritage.

3.14.3 Environmental Commitments

The Proposed Action would not negatively affect land use or recreation, so no measures to reduce effects or environmental commitments are required.

3.15 Indian Trust Assets

3.15.1 Existing Conditions

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's 2008 Native American Consultations List, American Indian Tribes that have indicated they have concerns in Rio Arriba County include the Jicarilla Apache Nation, Comanche Indian Tribe, Navajo Nation, Ohkay Owingeh, Hopi Tribal Council, Kiowa Tribe of Oklahoma, Pueblo of San Ildefonso, Pueblo of Pojoaque, Pueblo of Santa Clara, and the Pueblo of Taos. Informal consultation (scoping) letters were mailed to these tribes on September 17, 2008. Responses were received from the Navajo Nation and Hopi. To date, the Corps has received no indication of tribal concerns that would affect this project. No Traditional Cultural Properties (TCPs) are known to occur in the area. A copy of the scoping letter and Tribal response letters are located in Appendix A.

3.15.2 Foreseeable Effects on Indian Trust Assets

No Action – The No Action Alternative would have no effect on Indian Trust Assets. There would be no construction from this Federal action and existing conditions would continue.

Proposed Action – No Indian Trust Assets are known to occur within or adjacent to the project area, therefore there would be no effects to these resources.

3.16 Hazardous, Toxic, and Radioactive Waste (HTRW)

3.16.1 Existing Conditions

An evaluation of public records obtained from a private data vendor, findings from interviews that were conducted of individuals familiar with the study area, and observations made during a site reconnaissance visit led to the conclusions that there are no hazardous, toxic, or radiological waste (HTRW) sites within the study area. This work was performed under a Phase I Environmental Site Assessment (ESA), which was conducted in accordance with the protocol established in American Society for Testing and Materials (ASTM) Standard E 2247-02, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property (U.S. Army Corps of Engineers 2008b).

The Acequia de la Posecion is located to the east of Truchas, New Mexico, and follows the lower slope of a north-facing mountain. The acequia was dug by hand around the middle of the 18th century for irrigation purposes. The narrow acequia land is managed and maintained by the Acequia de la Posecion Association, which regularly cleans out sediment and brush from the approximately 10,800-foot-long irrigation ditch that trends in a roughly east to west direction. The acequia closely follows the contour of the land surface and descends roughly 50 feet in elevation along its length from about 8,440 feet above mean sea level at its diversion gate to about 8,390 feet above mean sea level at its terminus.

The physical setting of the acequia is remote, rural acreage passing through privately owned land that is characterized by widely spaced residential properties, light agricultural land, grazing of limited number of livestock, including cows, goats, and yaks, mature, virgin coniferous forest land, wetlands, and open mountain meadows. The adjoining properties and their uses are not interpreted to present an environmental threat to the study area. Spoils comprised of sediment dug from the ditch during routine maintenance were observed to be spread in low piles along stretches of the ditch embankment. The spoils piles have largely overgrown grasses and are not interpreted to present an environmental threat to the study area. The water in the ditch was observed to be clear and visibly free of suspended material.

Shallow ground water flow beneath the study area is interpreted to be west-northwest, parallel to sub-parallel with the slope of the surface topography and is also expected to be influenced by shallow bedrock, which is exposed in places in the study area.

Interviews with an official of the local Truchas Volunteer Fire Department and with the Chairman of the Acequia de la Posecion Association did not reveal any evidence or knowledge of dumping of contaminating substances along the study area or in the acequia. Due to the remoteness of the study area, the rugged terrain, and very limited access to the ditch by narrow, unimproved, dirt, two-track paths and private, often gated, driveways, historical illicit dumping is not known to exist or be documented in the study area and is not expected to occur.

3.16.2 Foreseeable Effects on HTRW

No Action – The No Action Alternative would have no effect on HTRW. There would be no construction and existing conditions would continue.

Proposed Action – The Proposed Action would not result in the addition of Hazardous, Toxic and Radioactive Waste to the project area. All construction activities will be monitored and the use of best management practices will be implemented.

3.16.3 Environmental Commitments

Should any HTRW issues be encountered during construction (discovery, spills, etc.) appropriate precautions and measures would be taken through notification of the Corps' expert staff. All fuels and lubricants would be stored outside of the 100-year floodplain of the stream and

construction equipment would be inspected daily and monitored during operation to prevent leaking fuels or lubricants from entering surface waters.

3.17 Environmental Justice

3.17.1 Existing conditions

On February 11, 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. This Executive Order requires Federal agencies to identify and address disproportionately high or adverse human health and environmental effects of Federal programs, policies, and activities on minority and low-income populations. An accompanying memorandum and guidance from the White House Council on Environmental Quality emphasized that Federal agencies would analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities as part of the NEPA analysis and provide opportunities for community input.

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 would 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.

Consideration of environmental justice concerns includes compilation of race and ethnicity data and the poverty status of populations. The 2006 estimated median household income in Rio Arriba County was $34,364 (Table 3-1) and 20.1% of the residents were classified as living in poverty, a higher percentage than in New Mexico (16. 7%) or in the US (13.3%). Minority populations, as defined by the U.S. Census Bureau, are also present in the county. Rio Arriba County has a much higher percentage of Hispanics (72.2%) and American Indians (15.2%) when compared to New Mexico and the United States.

3.17.2 Foreseeable Effects to Environmental Justice

No Action – There would be no disproportionate effects on minority and low-income populations. Under the No Action Alternative there would be no change in existing conditions.

Proposed Action – There would be no disproportionate effects on minority and low-income populations under the Proposed Action. Although that there are high percentages of minority and low-income persons, all project impacts are expected to be minor or negligible. Beneficial economic effects are anticipated to result from the project, especially to traditional irrigators through improved water delivery, reduced losses, and reduced system maintenance. Therefore, the Proposed Action complies with Executive Order 12898.

3.17.3 Environmental Commitments

Because there would be no disproportionate effects on minority and low-income populations under the Proposed Action, no measures to reduce impacts or environmental commitments are needed.

3.18 Noxious Weeds

3.18.1 Existing Conditions

The Federal Noxious Weed Act of 1974 (Public law 93-269; 7 U.S.C. 2801) provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce. Executive Order 13112 directs Federal agencies to prevent the introduction of invasive (exotic) species and to control and minimize the economic, ecological, and human health effects that invasive species cause. In addition, the State of New Mexico, under administration of the U.S. Department of Agriculture, designates and lists certain weed species as being noxious (Nellessen 2000). "Noxious" in this context means plants not native to New Mexico that may have a negative effect on the economy or environment and are targeted for management or control. Class C- listed weeds are common, widespread species that are fairly well established within the State. Management and suppression of Class C weeds is at the discretion of the lead agency. Class B weeds are considered common within certain regions of the State but are not widespread. Control objectives for Class B weeds are to prevent new infestations, and in areas where they are already abundant, to contain the infestation and prevent their further spread. Class A weeds have limited distributions within the State. Preventing new infestations and eliminating existing infestations is the priority for Class A weeds.

3.18.2 Foreseeable Effects to Noxious Weeds

No Action – The No Action Alternative would have no effect on noxious weeds. There would be no construction and existing conditions would continue. Colonization or noxious weed infestation would not result from any disturbance or acequia rehabilitation activities.

Proposed Action – Seed dispersal occurs through various means and of noxious weeds often gains a foothold in an area through disturbance (natural or man-made). In addition, when construction activities are involved, equipment used at a previous site may harbor and transport seed thus setting the stage for establishment and infestation. The Proposed Action involves the disturbance of approximately 8.6 acres along the acequia's alignment and up to two (2) additional acres of staging area.

3.18.3 Environmental Commitments

To guard against the potential of noxious weed infestation, all equipment would be thoroughly washed-down prior to use at the site. Although not an absolute guarantee, these best management practices would limit potential for site contamination with unwanted or noxious weed seed material. In addition, all equipment would be cleaned with a high-pressure water jet prior to entering a work area, leaving a work area, and before entering a new work area. There

would be no post-construction control for noxious weed control; however all areas of disturbance would be reseeded with native grasses and forbes.

3.19 Irreversible or Irretrievable Commitment of Resources

The National Environmental Policy Act requires consideration be given to the extent to which the project would commit nonrenewable resources during the initial and ongoing life of the project. Although the project would require numerous resources (raw materials, labor, energy, fuel) to construct, it would not constitute a substantial irreversible commitment of resources. The consumption of these resources during construction would be justified by the overall benefits of the project.

3.20 Cumulative Effects

Cumulative effects were considered for each resource area in sections 3.1 through 3.18 and 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 condition of the resource (Council on Environmental Quality, 2005). Therefore, the specific effects of individual past and present actions *typically* were not cataloged. 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 period for consideration 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 (period of construction of October-February). 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 the zone of influence of the direct or indirect effect being analyzed. Based on information provided by the association and through the scoping process, there are no other projects planned in the project vicinity in the foreseeable future; therefore, the are no cumulative effects that can be reasonably anticipated in this regard.

4.0 CONCLUSIONS

4.1 Summary of Effects

The Proposed Action would result in short-term effects associated with equipment mobilization and construction activities, including noise, aesthetics, air quality, and wildlife disturbances. Subsequent to construction, other short-term effects would center on the disturbance area and its gradual recovery. Reseeding areas of disturbance with native grasses and forbes will foster site recovery and improve the post-construction habitat value and aesthetics of the area. Felled trees

will be hauled to the staging areas for use as firewood for local residents. The firewood distribution would modestly contribute to air quality and noise pollution from intermittent vehicle traffic, emissions, and use of chainsaws.

Long-term effects include the removal of the water source of established wetlands by eliminating the seepage from the existing ditch by placing the flows in a pipe. The wetlands fate cannot be determined; the area may be high enough in elevation to support an established wetland. No mitigation is required for the wetland removal, as these wetlands were deemed non-jurisdictional by the Corps. No tree transplantation is planned.

4.2 Project Benefits

The principal benefits of the Proposed Action are:

1) **Improved water delivery –** The Proposed Action is likely to improve the conveyance of irrigation water from the diversion structure to the primary lateral, which provides irrigation water for 17 acequia association members with 167 acres of farmland. While no formal, quantitative depletion studies were conducted, water losses are likely to be considerable through infiltration and ditch leakage/breaks. In addition, the majority of the acequia's alignment is situated along an upper-valley contour that produces a strong hydraulic gradient toward the valley floor and the Rio de Truchas' flow path (Figure 1-1). This gradient causes inherent losses to the water in the acequia. The Proposed Action would eliminate infiltration and leakage losses and conserve the water resources in the area; improving the efficiency and utilization the association's existing water rights.

2) **Reduced maintenance –** During the 4-5 month of the growing season (May-September), the Mayor Domo of the ditch, or other association members, must walk the entire length of the alignment to clear debris (large tree branches, leaf litter, etc.) at least once per week. As noted, previously, the area is quite remote and can be very treacherous. This type of maintenance is dramatically increased during the summer monsoons or other thunderstorm events as sheet flow from upslope areas bring even more debris into the ditch. Further, frequent "blow-outs" of the ditch banks require repair many times per year (pers. com. J. Sandoval, Mayor Domo, Acequia de la Posecion). The Proposed Action would eliminate the need for such maintenance and reduce the risk of personal injury to association members.

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5.0 PREPARATION, CONSULTATION, AND COORDINATION

5.1 List of Preparers

This Environmental Assessment (EA) was prepared by the U.S. Army Corps of Engineers, Albuquerque District Project Delivery Team, including Tetra Tech, Inc., Surface Water Group and SWCA Environmental Consultants. All members are listed below:

U.S. Army Corps of Engineers, Albuquerque District

Patricia Phillips	Civil Works Project Management Branch
Michael Porter	Fisheries Biologist, Environmental Resources Section
Gregory Everhart	Archaeologist, Environmental Resources Section

Tetra Tech, Inc., Albuquerque, NM

Mike Marcus	Project Manager
Mark Horner	Biologist
David Bleakly	Biologist
Robin Cunningham	Hydraulic Engineer
Kevin Doyle	NEPA Specialist
Kathy Roxlau	Cultural Resource Specialist

Tetra Tech, Inc., Tucson, AZ

David Broadfoot	NEPA, QA/QC

SWCA Environmental Consultants

Joanne Eakin	Archaeologist
Tom Messerli	Archaeologist

5.2 Consultation, Coordination, and Notices of Availability

Mr. Curtis Frank, President, Acequia de la Posecion Association

Rob Lawrence, U.S. Environmental Protection Agency, Region 6

Wally Murphy, Field Supervisor, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office

Mr. John Poland, Area Manager, U.S. Bureau of Reclamation

Ms. Amy Unthank, Fish Biologist, U.S. Forest Service

Mr. Thomas Gonzales, Española Service Center

U.S. Forest Service, Santa Fe National Forest, Española Ranger District

U.S. Forest Service, Carson National Forest, El Rito Ranger District

Mr. Ray Acosta, NM Interstate Stream Commission

Ms. Janell A. Ward, Conservation Services Division, New Mexico Department of Game and Fish

Mr. Matt Wunder, Division Chief, Conservation Services Division, New Mexico Department of Game and Fish

Mr. Robert Sivinski, New Mexico Forestry and Resources Conservation Division, Energy, Minerals and Natural Resources Department

Mr. Mike Sloan, Fisheries Management Division, New Mexico Department of Game and Fish

Mr. R. J. Kirkpatrick, Division Chief, Wildlife Management Division, New Mexico Department of Game and Fish

Ms. Marcy Leavitt, Surface Water Quality Bureau

Honorable Wallace Coffey, Chairman, Comanche Indian Tribe

Honorable Benjamin Nuvamsa, Chairman, Hopi Tribal Council

Mr. Leigh Kuwanwisiwma, Director, Arizona Cultural Preservation Office

Honorable Levi Pesata, President, Jicarilla Apache Nation

Ms. Lorene Willis, Director, Office of Cultural Affairs, Jicarilla Apache Nation

Honorable Billy Evans Horse, Chairman, Kiowa Tribe of Oklahoma
Mr. Dewey Tsonetokoy, NAGPRA Representative, Kiowa Tribe of Oklahoma

Honorable Joe Shirley, Jr., President, Navajo Nation

Alan S. Downer, Ph.D., Director, Navajo Nation Historic Preservation Department

Honorable Earl Salazar, Governor, Ohkay Owingeh

Mr. Herman Agoyo, NAGPRA Representative, Ohkay Owingeh

Honorable George Rivera, Governor, Pueblo of Pojoaque

Honorable Leon T. Roybal, Governor, Pueblo of San Ildefonso

Mr. Myron Gonzales, Cultural Resources Technician, Pueblo of San Ildefonso

Honorable J. Michael Chavarria, Governor, Pueblo of Santa Clara

Jackie Gutierrez, Environmental Culturalist, Pueblo of Santa Clara

Honorable Paul T. Martinez, Governor, Pueblo of Taos

Mr. Donovan Gomez, Tribal Administrator, Pueblo of Taos

Members of the Acequia de la Posecion Association

Two hard copies of the Draft EA/FONSI were also furnished to the following:

Truchas Community Library
60 County Road 75
Truchas, NM 87578

Notice of Availability

Draft Environmental Assessment
for the
Acequia de la Posecion Rehabilitation Project

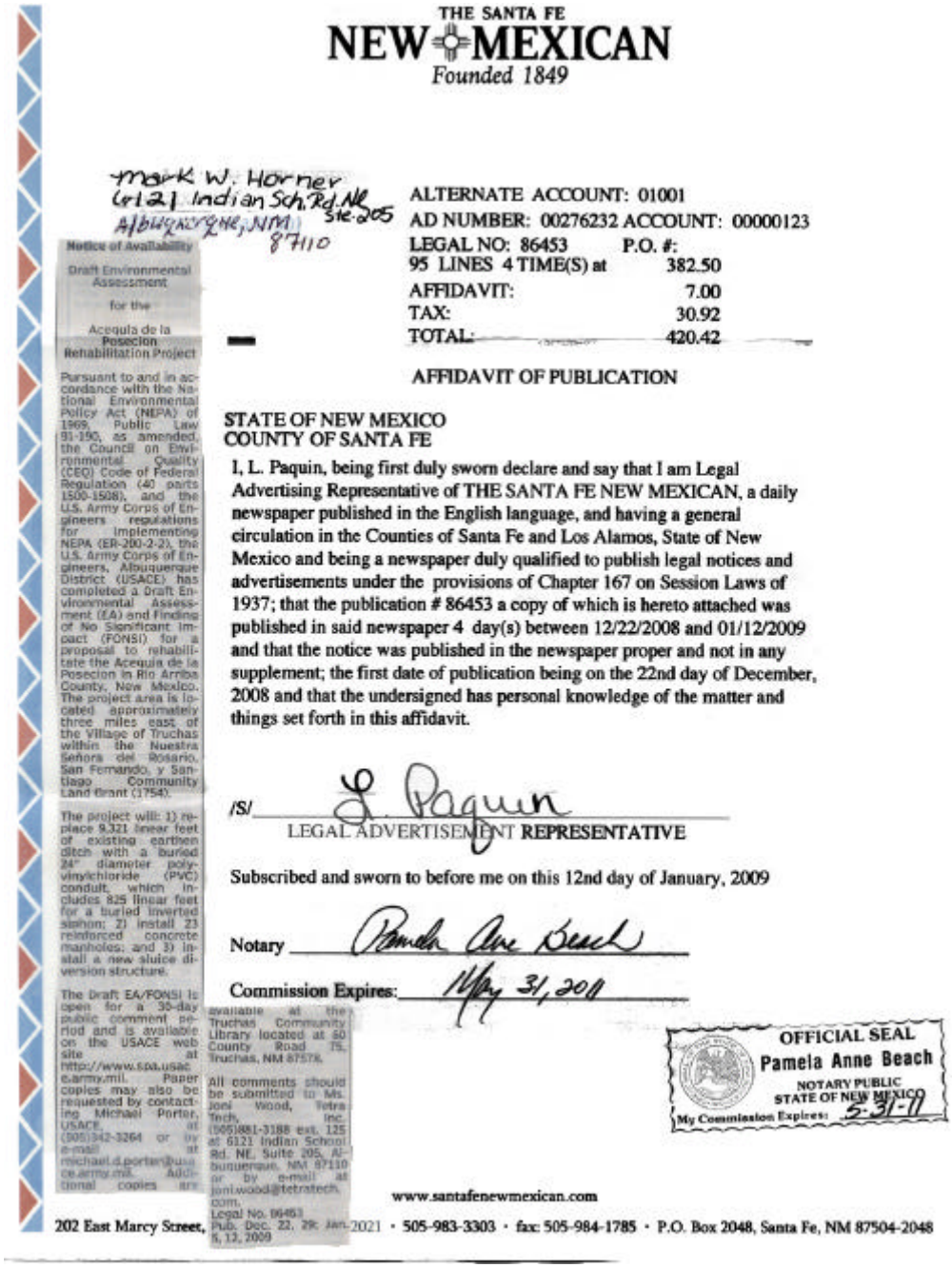
Pursuant to and in accordance with the National Environmental Policy Act (NEPA) of 1969, Public Law 91-190, as amended, the Council on Environmental Quality (CEQ) Code of Federal Regulation (40 parts 1500-1508), and the U.S. Army Corps of Engineers regulations for implementing NEPA (ER-200-2-2), the U.S. Army Corps of Engineers, Albuquerque District (USACE) has completed a Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a proposal to rehabilitate the Acequia de la Posecion in Rio Arriba County, New Mexico. The project area is located approximately three miles east of the Village of Truchas within the Nuestra Señora del Rosario, San Fernando, y Santiago Community Land Grant (1754).

The project will: 1) replace 9,321 linear feet of existing earthen ditch with a buried 24" diameter polyvinylchloride (PVC) conduit, which includes 825 linear feet for a buried inverted siphon; 2) install 23 reinforced concrete manholes; and 3) install a new sluice diversion structure.

The Draft EA/FONSI is open for a 30-day public comment period and is available on the USACE web site at http://www.spa.usace.army.mil. Paper copies may also be requested by contacting Michael Porter, USACE, at (505)342-3264 or by e-mail at

michael.d.porter@usace.army.mil. Additional copies are available at the Truchas Community Library located at 60 County Road 75, Truchas, NM 87578.

All comments should be submitted to Ms. Joni Wood, Tetra Tech, Inc. (505)881-3188 ext. 125 at 6121 Indian School Rd. NE, Suite 205, Albuquerque, NM 87110 or by e-mail at joni.wood@tetratech.com.



THE SANTA FE
NEW MEXICAN
Founded 1849

mark W. Horner
6121 Indian Sch. Rd. NE Ste 205
Albuquerque, NM 87110

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AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
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I, L. Paquin, being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication # 86453 a copy of which is hereto attached was published in said newspaper 4 day(s) between 12/22/2008 and 01/12/2009 and that the notice was published in the newspaper proper and not in any supplement; the first date of publication being on the 22nd day of December, 2008 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/S/ L. Paquin
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 12nd day of January, 2009

Notary Pamela Anne Beach

Commission Expires: May 31, 2011

OFFICIAL SEAL
Pamela Anne Beach
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 5-31-11

Notice of Availability

Draft Environmental Assessment

for the

Acequia de la Posecion Rehabilitation Project

Pursuant to and in accordance with the National Environmental Policy Act (NEPA) of 1969, Public Law 91-190, as amended, the Council on Environmental Quality (CEQ) Code of Federal Regulation (40 parts 1500-1508), and the U.S. Army Corps of Engineers regulations for implementing NEPA (ER-200-2-2), the U.S. Army Corps of Engineers, Albuquerque District (USACE) has completed a Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a proposal to rehabilitate the Acequia de la Posecion in Rio Arriba County, New Mexico. The project area is located approximately three miles east of the Village of Truchas within the Nuestra Señora del Rosario, San Fernando, y Santiago Community Land Grant (1754).

The project will: 1) replace 9,321 linear feet of existing earthen ditch with a buried 24" diameter polyvinylchloride (PVC) conduit, which includes 825 linear feet for a buried inverted siphon; 2) install 23 reinforced concrete manholes; and 3) install a new sluice diversion structure.

The Draft EA/FONSI is open for a 35-day public comment period and is available on the USACE web site at http://www.spa.usace.army.mil. Paper copies may also be requested by contacting Michael Porter, USACE at (505)342-3264 or by e-mail at michael.d.porter@usace.army.mil. Additional copies are available at the Truchas Community Library located at 60 County Road 75, Truchas, NM 87578.

All comments should be submitted to Ms. Joni Wood, Tetra Tech, Inc. (505)881-3188 ext. 125 at 6121 Indian School Rd. NE, Suite 205, Albuquerque, NM 87110 or by e-mail at joni.wood@tetratech.com.

Legal No. 86453
Pub. Dec. 22, 29; Jan. 5, 12, 2009

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6.0 REFERENCES

Barrowclough, G. F., and R. J. Gutierrez. 1990. Generic variation and differentiation in the sported owl *(Strix occidentalis).* Auk 107:737-744

Behnke, R. J. 1992. Native trout of western North America. American Fisheries Society Monograph 6.

[BISON–M] Biota Information System of New Mexico. BISON–M home page. http://www.bison-m.org. Accessed 2008 August 28.

Council on Environmental Quality**.** 1997. *Considering Cumulative Effects Under the National Environmental Policy Act.* Executive Office of the President, Council on Environmental Quality, Washington, D.C.

Council on Environmental Quality**.** 2005. *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis.* Memorandum from James L. Connaughton, Chairman, to Heads of Federal Agencies, 24 June 2005, Executive Office of the President, Council on Environmental Quality, Washington, D.C.

Degenhardt, W.G., C.W. Painter, and A.H. Price. 1996. Amphibians and reptiles of New Mexico. University of New Mexico Press, Albuquerque.

Department of Defense. November 13, 1986. Final rule for regulatory programs of the Corps of Engineers. Fed Reg. 51(219):41217, Part 328–Definition of Waters of the United States, 33 CFR Part 328 Section 3d(a) [irrigation ditches excavated on dry land are generally not considered Waters of the United States].

Dick–Peddie, W.A., W.H. Moir, and R. Spellenberg. 1993. New Mexico vegetation: past, present and future. University of New Mexico Press, Albuquerque.

DuBois, F.A. 1999. New Mexico noxious weed list. Memorandum concerning the New Mexico Noxious Weed Management Act of 1998. New Mexico Department of Agriculture.

Environmental Laboratory. 1987. “Corps of Engineers Wetland Delineation Manual,” Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi (including subsequent suggestions and clarifications found on the internet).

Findley, J.S., A.H. Harris, D.E. Wilson, and C. Jones. 1975. Mammals of New Mexico. University of New Mexico Press, Albuquerque.

Findley, J.S. 1987. The natural history of New Mexican mammals. New Mexico Natural History Series. University of New Mexico Press, Albuquerque.

Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. New York and Oxford.

Forsman, E.D. 1981. Molt of the spotted owl. Auk 98:73S-742.

Kaufman, K. 1996. Lives of North American birds. Houghton Mifflin Co., Boston, MA.

Lee, R.D. 1999. New Mexico's invasive weeds. Cooperative Extension Service, New Mexico State University, Las Cruces.

Martin, W.C. and C.R. Hutchins. 1980. A flora of New Mexico. J. Cramer, Germany.

Messerli, Thomas F., and Joanne E. Eakin. 2008. A Cultural Resources Survey of 19.2 Acres for Rehabilitation of the Acequia de la Posecion, Truchas, Rio Arriba County, New Mexico. SWCA, Inc., Albuquerque.

Nellessen, J. 2000. Noxious weed management guidelines. NMSHTD Environmental Section, Santa Fe.

New Mexico Agency Technical Work Group. 2005. Potential Effects of Climate Change on New Mexico. Agency Technical Work Group, State of New Mexico.

New Mexico Climate Change Advisory Group. 2006. Final Report, December 2006. New Mexico Environment Department, Santa Fe, New Mexico.

New Mexico Rare Plant Technical Council (NMRPTC). 1999. New Mexico Rare Plants. Albuquerque, NM: New Mexico Rare Plants Home Page. http://nmrareplants.unm.edu (Latest update 14 August 2008) Accessed 2008 Aug 28.

New Mexico State University. 2008. New Mexico Climate Center, Cooperative Observer Network. http://weather.nmsu.edu/

NMAC. 1987. New Mexico Acequia Commission. Acequia List. Posted on the New Mexico Acequia Commission website. Internet website accessed September 2008: http://www.nmacequiacommission.state.nm.us/Acequia-Lists/Acequia-list-CoE.pdf

NMDWS. 2008a. New Mexico Department of Workforce Solutions. NM LASER – Labor Market Services: Area Profile for Rio Arriba County: Internet website accessed October 2008: http://laser.state.nm.us/lmi/area/areaprofiledata.asp?session=areadetail&geo=3504000039&mode=2

NMDWS 2008b. New Mexico Department of Workforce Solutions. Rio Arriba County Workforce Profile. Internet website accessed October 2008: http://www.onestopnnm.org/pdfs/Rio%20Ariba.pdf

NMDWS. 2008c. New Mexico Department of Workforce Solutions. New Mexico Annual social and Economic Indicators, 2008. Prepared for the New Mexico Department of Workforce Solutions by the Bureau of Economic Research and Analysis. Internet website accessed October 2008: http://www.wia.state.nm.us/LMI/pdf/API-2008.pdf

NMED. 2000. New Mexico Environment Department, Surface Water Quality Bureau. Water quality and water pollution control in New Mexico, 305(b) report.

NMED. 2003a. New Mexico Environment Department, Air Quality Bureau. Map: EPA Air Quality Nonattainment Areas in New Mexico. Internet website accessed September 2008: http://www.nm.nrcs.usda.gov/technical/fotg/section-1/maps.html

NMED. 2003b. New Mexico Environment Department, Air Quality Bureau. New Mexico Counties and Airsheds. Internet website accessed September 2008: http://www.nm.nrcs.usda.gov/technical/fotg/section-1/maps.html

NMED. 2007a. New Mexico Environment Department. Air Quality Bureau. Nonattainment areas in New Mexico. Internet website accessed September 2008: http://www.nmenv.state.nm.us/aqb/modeling/na_map.html

NMED. 2007b. New Mexico Environment Department, Air Quality Bureau New Mexico Air Quality Control Regions Air Quality Bureau, State of New Mexico, Internet website accessed September 2008: http://www.nmenv.state.nm.us/aqb/modeling/aqcr_map.html#157

NMDGF 2008. Rio Grande Cutthroat Trout Management (Grant F-81) Interim Report, Federal Aid in Sport Fish Restoration Act.

Moen, C. A., A. B. Franklin, and R. J. Gutierrez. 1991. Age determination of sub-adult northern spotted owls in northwest California. Wildl. Soc. Bull. 19:489-493.

Phillips, P. U.S. Army Corps of Engineers, Project Manager. Personal communication on October 10, 2008.

Rinne, J.N. 1995. Reproductive biology of the Rio Grande sucker, Catostomus plebeius (Cypriniformes), in a montane stream, New Mexico. Southwestern Naturalist 40:237-241.

Rio Arriba County. 2008a. Rio Arriba County Planning and Zoning Ordinances. Rio Arriba County, NM. Internet website accessed September 2008: http://www.rio-arriba.org/codes_and_ordinances/planning_and_zoning_ordinances.html

Rio Arriba County. 2008b. Rio Arriba County Comprehensive Plan. Rio Arriba County, NM. Internet website accessed September 2008: http://www.rio-arriba.org/pdf/20/comprehensive_plan.pdf

Sandoval, J. Personal communication August 7, 2008.

Sibley, D.A. 2003. The Sibley field guide to birds of western North America. Alfred A. Knopf, Inc., New York.

Natural Resource Conservation Service (NRCS) Soil Survey. United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ accessed 2008 Oct 02.

Sublette, J. E., M. D Hatch, and M. Sublette. 1990. The fishes of New Mexico. University New Mexico Press, Albuquerque, New Mexico.

U.S. Army Corps of Engineers. 2008a. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-13. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers. 2008b. Phase I Environmental Site Assessment Report, Acequia de la Posecion, Truchas, Rio Arriba County, New Mexico. On file at the U.S. Army Corps of Engineers, Albuquerque District.

U.S. Census Bureau. 2004. Small Area Income and Poverty Estimates, Estimates for New Mexico Counties, Rio Arriba County. U.S. Census Bureau Data Integration Division, Small Area Estimates Branch. Internet website accessed October 2008: http://www.census.gov/cgi-bin/saipe/saipe.cgi?year=2004&type=county&table=county&submit=States%20%26%20Counties&display_data=Display%20Data&state=35&areas=35039

U.S. Census Bureau. 2008a. American Fact Finder. Fact sheet, Census 2000 Demographic Profile Highlights: Rio Arriba County, New Mexico. Searchable database accessed October 2008: http://factfinder/census.gov/

U.S. Census Bureau. 2008b. American Fact Finder. T1. Population estimates [9], data set: 2006 population estimates. Searchable database accessed October 2008: http://factfinder/census.gov/

U.S. Census Bureau. 2008c. American Fact Finder. DP-3. Profile of selected economic characteristics: 2000 data set: Census 2000 summary file 3 (SF 3) - geographic area: Rio Arriba County, New Mexico. Searchable database accessed October 2008: http://factfinder.census.gov/

U.S. Census Bureau. 2008d. American Fact Finder. Fact sheet New Mexico. Internet website October 2008: http://factfinder.census.gov/servlet/SAFFFacts?_event=Search&geo_id=&_geoContext=&_street=&_county=Rio+Arriba+County&_cityTown=Rio+Arriba+County&_state=04000US35&_zip=&_lang=en&_sse=on&pctxt=fph&pgsl=010&show_2003_tab=&redirect=Y

U.S. Census Bureau. 2008d. Rio Arriba County QuickFacts. U.S. Census Bureau. State and County Quickfacts. Searchable database accessed October 2008: http://quickfacts.census.gov/qfd/states/35/35039.html

U.S. Fish and Wildlife Service (USFWS). 1995. Recovery plan for the Mexican spotted owl: Vol I, Albuquerque New Mexico.

U.S. Fish and Wildlife Service (USFWS). 11 June 2002. Candidate status review for Rio Grande cutthroat trout. Federal Register 67(112):39936-39947.

U.S. Fish and Wildlife Service. Endangered species. Southwest Region 2. New Mexico Ecological Services Field Office http://www.fws.gov/southwest/es/NewMexico/SBC.cfm. Accessed 2008 Aug 28.

U.S. Fish and Wildlife Service. Endangered species program. http://www.fws.gov/endangered/wildlife.html. Accessed 2008 Aug 28.

Western Regional Climate Center. Historical Climate Information. http://www.wrcc.dri.edu/CLIMATEDATA.html

Williams J. L. 1996. Geography of New Mexico. University of New Mexico, Professors Choice Publishing, Albuquerque, New Mexico.

Appendix A

Public Scoping Letter, Scoping Responses, and Draft Environmental Assessment Comments

Public Scoping Letter

17 September 2008

Dear Interested Party,

The U.S. Army Corps of Engineers, Albuquerque District (Corps), at the request of the Acequia de la Posecion Association, is evaluating the rehabilitation of the Acequia de la Posecion conveyance system. The legal authority for this project, the technical description, project location, and surrounding landscape features are presented in detail on the following page and in Figure 1.

This project is being proposed to reduce difficult and continual acequia maintenance activities required by the association to clean sediment and debris deposited by stormwater and snowmelt runoff. The project would replace the existing open, earthen ditch with either a half-round open or buried 30-inch polyvinylchloride (PVC) pipe.

The Corps is seeking public and agency input for consideration during planning of this project. Your contribution will be used as input during the preparation of an Environmental Assessment (EA) in compliance with the National Environmental Policy Act of 1969. Tetra Tech, Inc. is assisting the Corps with this project. Please mail, fax, or email comments by **03 October 2008.** You may use the attached comment form if you wish or send a letter or email to:

Acequia de la Posecion Comments
Attn: Ms. Joni Wood
Tetra Tech, Inc.
6121 Indian School, Suite 205
Albuquerque, NM, 87110
Tel: (505) 881-3188 ext. 125
Fax: (505) 881-3283
Email: Joni.Wood@tetratech.com; please use a subject line of "Acequia de la Posecion Comments"

If you have questions or require additional information, please don't hesitate to contact me as indicated below. Thank you for your time.

Sincerely,

Mike Marcus Ph.D.
Project Manager
(505) 881-3188 ext. 131
Mike.Marcus@tetratech.com

Proposed Rehabilitation by the U.S. Army Corps of Engineers of the Acequia de la Posecion Conveyance System

Project Authority

The rehabilitation of the Acequia de la Posecion conveyance system is being proposed by the U.S. Army Corps of Engineers under the auspices of the Water Resources Development Act (WRDA) of 1986 (Public Law 99-662; 33 U.S.C. 2201 et. seq.), as amended. The Environmental Assessment is being prepared in compliance with the National Environmental Policy Act of 1969, 42 U.S.C. § 4321 through 42 U.S.C. § 4347.

Project Location and Description

The project area is located within the Nuestra Señora del Rosario, San Fernando y Santiago Community Land Grant (1754) in Rio Arriba County, New Mexico; USGS 7.5' Quadrangle = Truchas, NM (36105a7, photo revised 1977). Having rich cultural history, Acequia de la Posecion diverts irrigation water from the Rio Truchas and has been in continuous use for about 150 years. The approximate latitude/longitude of the diversion structure is 36.0359°N, 105.7518°W located in T21N, R11E, Sec. 22. The terrain slope is approximately 35.6% with a southwest aspect (206.9°) at an approximate elevation of 8,463 feet. The approximate latitude/longitude at which the Acequia Madre (mother ditch) terminates and branches into the primary lateral is 36.0343°N, 105.7773°W located in T21N, R11E, Sec. 21 with a terrain slope of approximately 2.5% with a southeast aspect (124.9°) at an approximate elevation of 8,395 feet.

The attached figure (Figure 1) shows the location and alignment of the Preferred Alternative (green) and a portion of the existing acequia that would be abandoned with the completion and implementation of the Preferred Alternative (abandoned portion shown in red). In addition, there are two (2) 1-acre staging areas (yellow) located along existing local roadways. The roadways will provide access routes from the staging areas to the acequia rehabilitation construction area.

The Preferred Alternative traverses the area for approximately 9,321 linear feet and the abandoned portion of Acequia de la Posecion is approximately 2,185 linear feet; however, these estimates can vary slightly due to differences in the meander path of the ditch along its alignment and certain construction requirements. The area of disturbance around the Preferred Alternative is approximately 9.2 acres and is defined as an area extending for 15 feet upslope and 25 feet down slope of the centerline of the acequia. The area of disturbance falls completely within the legally defined easement of the acequia.

The proposed project would reduce difficult and continual maintenance activities performed by the acequia association in order to clean sediment and debris deposited by stormwater and snowmelt runoff by replacing the existing open ditch with either a half-round open or buried 30-inch polyvinylchloride (PVC) pipe. The pipe would span the entire length of the Acequia Madre's Preferred Alternative alignment (9,184 feet).

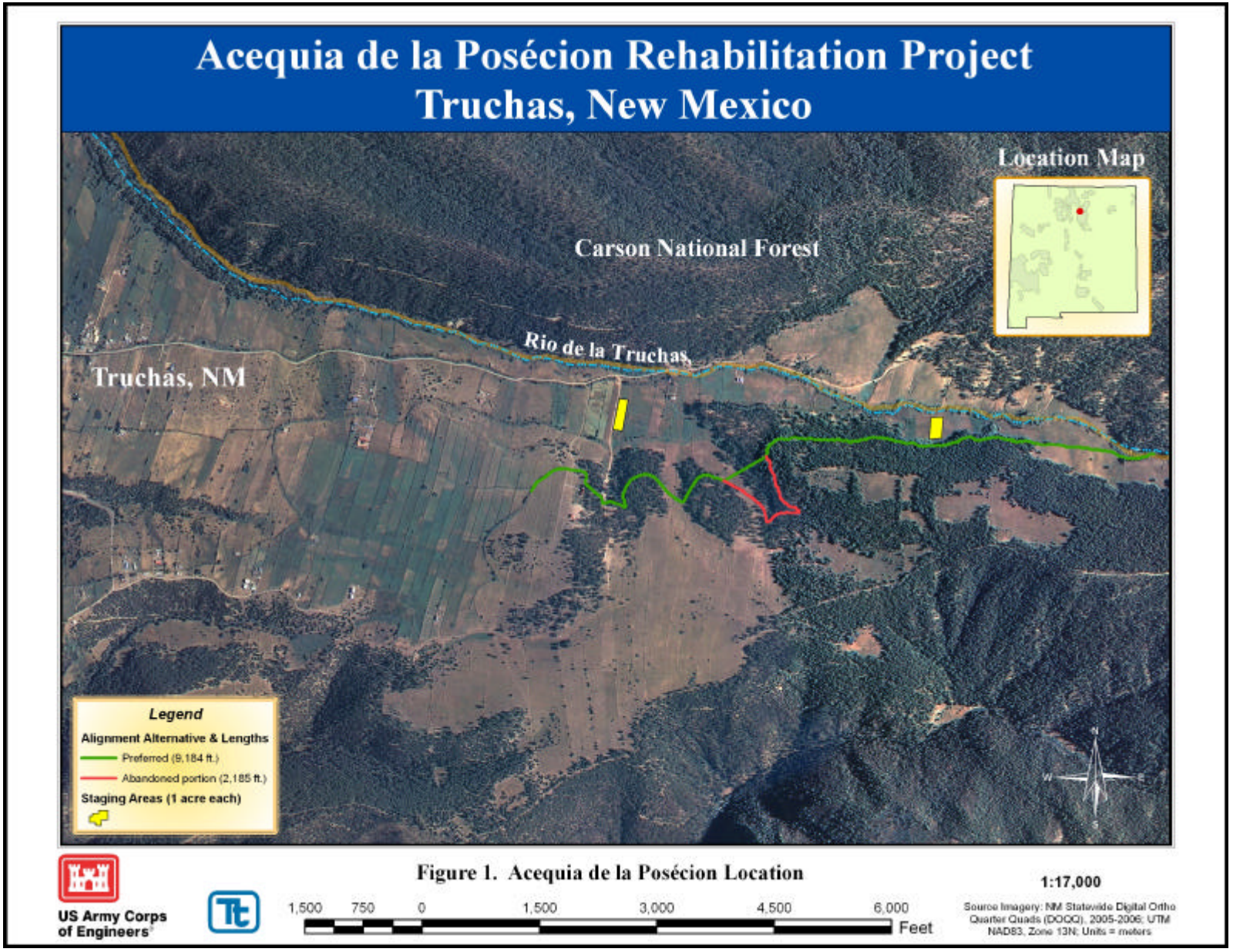

Figure 1. Acequia de la Posécion Location

Comment Form

for

Acequia de la Posecion Rehabilitation Project
Rio Arriba County, New Mexico

Please make comments specific to the project described in the attached letter.

1. What issues (for example, natural or cultural resources, social, or economic) are of concern to you in regards to the project?

2. Other comments about the project.

Please attach additional sheets or materials if desired.

Comment Form (Cont.)

- ❑ Please keep my name on the project mailing list.
- ❑ Please remove my name from the project mailing list.

Name: _____

Address: _____

City, State, Zip: _____

Responses to Scoping Letters

The following Comment Form was received from:

Mr. Bruce Donnell
104 Agenda de la Casas
Santa Fe, NM 87506-2169

Received on: September 29, 2008

He requested to remain on the mailing list with the updated address (above)

US Army Corps
of Engineers
Albuquerque District

Comment Form
for
Acequia de la Posécion Rehabilitation Project
Rio Arriba County, New Mexico

Please make comments specific to the project described in the attached letter.

1. What issues (for example, natural or cultural resources, social, or economic) are of concern to you in regards to the project?

2. Other comments about the project.

It looks like a good project.
Sara Donnell

Please attach additional sheets or materials if desired.

Environmental Assessment for
Acequia de la Posécion Rehabilitation Project

US Army Corps

[illegible] Form (Cont.)

☑ Please keep my name on the project mailing list.

☐ Please remove my name from the project mailing list.

Name: Bruce Donnell

Address: 104 Avenida de las Casas

City, State, Zip: Santa Fe, NM. 87506.

please note spelling of my last name and revised address

(You had Bruce "Donald", and 1 Casas de San Juan)

Thank ya!

Bruce Donnell

The following Comment Form was received from:

Thomas C. Gonzalas
NRCS Española Field Office
424 South Riverside Drive
Española, NM 87532

Received on: September 25, 2008

He requested to remain on the mailing list and provided the address above

09/25/2008 15:45 5057471104 RIO ARRIBA COUNTY PAGE 03

US Army Corps of Engineers

Comment Form
for
Acequia de la Posecion Rehabilitation Project
Rio Arriba County, New Mexico

Please make comments specific to the project described in the attached letter.

1. What issues (for example, natural or cultural resources, social, or economic) are of concern to you in regards to the project?

ISSUES SUCH AS DRAINAGE AND DEBRIS ARE OF CONCERN, MANY OF THE DITCHES THAT GET PIPED HAVE ISSUES WITH THE DRAINAGE WAYS AND THE LANDS BELOW THAT WERE PROTECTED BY THE DITCH. ALSO OF CONCERN WOULD BE AN ADEQUATE TRASH RACK & SLUICE @ BEGINNING OF PIPELINES.

2. Other comments about the project.

ADEQUATE TURNOUTS FOR IRRIGATED FIELDS SHOULD BE DESIGNED ALONG W/ ADAPTABLE STUB OUTS TO HAVE THE OPTION TO TIE IN W/ UNDERGROUND PIPELINE. WE NRCS FIELD OFFICE (ESPANOLA) HAS WORKED ON SOME PRELIMINARY PLANNING FOR A HEADGATE & DIVISION STRUCTURE FOR THE ACEQUIA MADRE DE TRAMPAS & THE ACEQUIA DEL LLANO QUEMADO.

Please attach additional sheets or materials if desired.

Environmental Assessment for
Acequia de la Posecion Rehabilitation Project

09/25/2008 15:45 5057471104 RIO ARRIBA COUNTY PAGE 04

US Army Corps of Engineers
Albuquerque District

Comment Form (Cont.)

☑ Please keep my name on the project mailing list.

☐ Please remove my name from the project mailing list.

Name: THOMAS C. GONZALES

Address: 424 G. SOUTH RIVERSIDE DRIVE

City, State, Zip: ESPANOLA, NM 87532

The following scoping letter response was received from:

Terra Manasco
For : Michael Sloane
Department of Game and Fish
Fisheries Management Division
One Wildlife Way
Post Office Box 25112
Santa Fe, NM 87504

Received on: October 3, 2008

They have requested to remain on the mailing list.

OCT-03-2008 11:17 From: 5054768128 To:15058813283 P.2/2

GOVERNOR
Bill Richardson

DIRECTOR AND SECRETARY
TO THE COMMISSION
Bruce C. Thompson, Ph.D.

Robert S. Jenks, Deputy Director

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way
Post Office Box 25112
Santa Fe, NM 87504
Phone: (505) [illegible]
Fax: (505) [illegible]

Visit our website at [illegible]
For information call: [illegible]
To order free publications call: [illegible]

STATE GAME COMMISSION

Dr. Tom Arvas, Chairman
Albuquerque, NM

M.H. "Dutch" Salmon, Vice-Chairman
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Albuquerque, NM

Alfredo Montoya, Commissioner
Alcalde, NM

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Albuquerque, NM

Leo V. Sims, II, Commissioner
Hobbs, NM

October 2, 2008

Ms. Joni Wood
Tetra Tech, Inc.
6121 Indian School, Suite 205
Albuquerque, NM 87110

Re: Acequia de la Posécion Comments; NMDGF 12268

Dear Ms. Wood,

Please accept this letter as a comment by New Mexico Department of Game and Fish (NMDGF) regarding the proposed rehabilitation of the Acequia de la Posécion conveyance system. Over the past year, the NMDGF has worked cooperatively with the members of the Nuestra Señora del Rosario, San Fernando y Santiago Community Land Grant. In particular, we conducted fish surveys in the Rio de Truchas and Rio Quemado watersheds to determine the presence and genetic status of Rio Grande cutthroat trout populations. As of spring 2008, the U.S Fish and Wildlife Service considers the Rio Grande cutthroat trout a candidate species for Endangered Species Act protection. Though we are still in the process of conducting these surveys and receiving genetic results, we have documented a core conservation population (>99 % native alleles) of Rio Grande cutthroat trout in the upper Rio de Truchas and likely another population in the Rio Quemado.

We do not foresee the preferred alternative causing a significant deleterious effect on the upper Rio de Truchas population of Rio Grande cutthroat trout. In fact, it is likely the historic water diversions in the area have helped to protect this population from encroachment by non-native trout. We do, however, request that the Army Corps of Engineers consider how the more efficient water conveyance system will affect hydrologic connectivity to the lower Rio Quemado watershed and potentially permit non-native trout to migrate into the Rio de Truchas watershed. In order to better understand this system and possible effects, I offer NMDGF assistance during field surveys. For further information and to coordinate field surveys, please contact Kirk Patten, Fisheries Biologist, via email (kirk.patten@state.nm.us) or phone (505-476-8058)

Please include me on any further project correspondence and thank you for the opportunity to comment on the initial phases of the project's development.

Sincerely,

Teresa Manasco
for

Michael B. Sloane
Chief, Fisheries Management Division

MBS/tm

The following scoping letter response was received from:

Georgia Cleverley
New Mexico Environment Department
Harold Runnels Building
1190 Saint Francis Drive
Santa Fe, NM 87502

Received on: October 20, 2008

Did not indicate to remain on the mailing list

NEW MEXICO
ENVIRONMENT DEPARTMENT

Office of the Secretary

BILL RICHARDSON
Governor

Harold Runnels Building
1190 Saint Francis Drive (87505)
PO Box 569, Santa Fe, NM 87502
Phone (505) 827-2855 Fax (505) 827-2836
www.nmenv.state.nm.us

RON CURRY
Secretary
Jon Goldstein
Deputy Secretary

October 6, 2008

Mike Marcus, Ph.D.
Project Manager
Tetra Tech Inc.
6121 Indian School, Suite 205
Albuquerque, NM 87110

RE: Rehabilitation of the Acequia de la Posécion Conveyance System, Truchas

Dear Dr. Marcus:

Your letter regarding the above named project was received in the New Mexico Environment Department (NMED) and was sent to various Bureaus for review and comment. Comments were provided by the Surface Water Quality Bureau and are as follows.

Surface Water Quality Bureau
The letter from Tetra Tech does not mention proposed changes to the diversion structure. If such changes are contemplated, please consider the merits of a diversion structure such as that described by David Rosgen (in a white paper available at www.wildlandhydrology.com/assets/cross-vane.pdf). Overall, the proposal to replace the ditch with a pipe has the potential to reduce undesirable impacts to water quality in the long run.

I hope this information is helpful to you.

Sincerely,

Georgia Cleverley

Georgia Cleverley
Environmental Impact Review Coordinator
NMED File #2738

The following scoping letter response was received from:

Mr. Tony Joe, Program Manager
Historic Preservation Department – Traditional Culture Program
Navajo Nation
Post Office Box 4950
Window Rock, AZ 86515

Received on: October 20, 2008

Did not indicate to remain on the mailing list.

THE NAVAJO NATION

JOE SHIRLEY, JR.
PRESIDENT

BEN SHELLY
VICE-PRESIDENT

October 03, 2008

Mr. Mike Marcus, Project Manager
Tetra Tech, Inc.
6121 Indian School Road, NE, Suite 205
Albuquerque, New Mexico 87110

Subject: Tribal Consultation Request. Proposing to rehabilitate the Acequia de la Posecion conveyance system, Albuquerque, New Mexico.

Dear Mr. Marcus:

Our apology for an oversight and missing the deadline date of our response to your request, please note that in reference to your letter of September 17, 2008, the Historic Preservation Department – Traditional Culture Program (HPD-TCP) received a request for consultation regarding the above undertaking and/or project. After reviewing your consultation documents, HPD-TCP has concluded the proposed undertaking/project area **will not impact** any Navajo traditional cultural properties or historical properties.

However, if there are any inadvertent discoveries made during the course of the undertaking, your agency shall cease all operations within the project area. HPD-TCP shall be notified by telephone within 24 hours and a formal letter be sent within 72 hours. All work shall be suspended until mitigation measures/procedures have been developed in consultation with the Navajo Nation.

The HPD-TCP appreciates your agency's consultation efforts, pursuant to 36 CFR Pt. 800.1 (c)(2)(iii). Should you have additional concerns and/or questions, do not hesitate to contact me. My contact information is listed below.

Sincerely,

Mr. Tony Joe, Program Manager
Historic Preservation Department – Traditional Culture Program

Tel: 928.871.7688 Fax: 928.871.7886 E-mail: tonyjoe@navajo.org

TCP 09-035
File: Office file/chrono

HISTORIC PRESERVATION DEPARTMENT P.O. BOX 4950 WINDOW ROCK, ARIZONA 86515 928.871.7198 (v) 928.871.7886 (fax)

The following scoping letter response was received from:

Leigh Kuwanwisiwma, Director
Hopi Cultural Preservation Office
Post Office Box 123
Kykotsmovi, AZ 86039

Received on: October 21, 2008

Did not indicate to remain on the mailing list.

THE HOPI TRIBE

Benjamin H. Nuvamsa
CHAIRMAN

Todd Honyaoma, Sr.
VICE-CHAIRMAN

September 29, 2008

Dr. Mike Marcus, Project Manager
Attention: Joni Wood, Acequia de la Posecion Comments
Tetra Tech, Inc.
One Towne Centre, 6121 Indian School Road, Suite 205
Albuquerque, New Mexico 87110

Dear Dr. Marcus,

This letter is in response to your correspondence on behalf of the U.S. Army Corps of Engineers dated September 17, 2008, regarding the proposed Acequia de la Posecion conveyance system rehabilitation in Rio Arriba County, New Mexico. Because the Hopi Tribe claims cultural affiliation to prehistoric cultural groups in New Mexico, and the Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites and Traditional Cultural Properties, we appreciate your solicitation of our input and efforts to address our concerns.

The Hopi Cultural Preservation Office considers the prehistoric archaeological sites of our ancestors to be Traditional Cultural Properties. Because this project is a federal undertaking that involves ground disturbing activities, if prehistoric cultural sites are identified in the project area that will be adversely affected by project activities, we request to be provided with copies of the cultural resource survey report of the area of potential effect and any proposed draft treatment plans for review and comment.

In addition, we recommend that if any prehistoric cultural features or deposits are encountered during project activities, these activities must be discontinued in the immediate area of the remains, and the State Historic Preservation Office must be consulted to evaluate their nature and significance. If any Native American human remains and funerary objects are discovered during construction they shall be immediately reported as required by law. Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you for your consideration.

Respectfully,

Leigh Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: New Mexico State Historic Preservation Office
Julie Alcon, Corps of Engineers, 4101 Jefferson Plaza NE, Albuquerque, New Mexico 87109-3435

P.O. BOX 123 KYKOTSMOVI, AZ 86039 (928) 734-3000

Comments on Draft Environmental Assessment

The following are comments received in response to the Draft Environmental Assessment and Notice of Availability (NOA) publication:

Mr. and Mrs. James A. Meyer
#6 Meyers Rd.
Espanola, NM 87532

Dated January 14, 2009

Tetra Tech, Inc.
6121 Indian School Road, NE, Suite 205
Albuquerque, NM 87110

December 19, 2008

Attention to Ms Joni Wood

Since your letter fails to disclose exactly who your firm represents, and what your relationship is to the Army corps of Engineers, we had to guess how the letter concerned us, the only clue being the reference to Truchas. It does not reference us by name or property description or reason.

Enclosed is our original letter sent to the Army Corps of Engineers on March 2, 2006.

Nothing has changed. We still refuse the Army Corps of Engineers or your Company access to our property, or the use of any road therein for the purpose of rebuilding/repairing the acequia.

The letter is self explanatory.

Therefore, again, we DO NOT give our permission for access to the acequia through our property.

We would appreciate it very much if you would contact us about the matter.

Sincerely,

Mr. and Mrs. James A. Meyer
#6 Meyers Rd.
Espanola, N.M. 87532
505-753-4136
nmlostlady@hotmail.com

Mr. + Mrs. James A. Meyer

To Whom it May Concern: March 2, 2006

This letter is offered as an explanation of why we are NOT going to sign a "Right of entry" document solicited by the Department of the Army, Real Estate Division, in regard to the Posecion Acequia, Truchas, N.M..

Entry to our property is gained from the main road by a 15 foot right-of-way on the East side of property formerly owned by Henry Romero of Truchas, and, to the best of our knowledge, now owned by Susie Romero.-Gurule, also of Truchas.

From the middle acequia, we own 72 feet past the upper acequia, the one we understand that is to be rehabilitated. Our property measures a distance of approximately 617 feet, north to south, and, the land is approximately 137 feet wide. Our property was surveyed in November, 2002 and certified in January 2003 by Gerald A. Sandoval N.M.P.S.12178.

Adjoining our property to the West is property owned by Viola Romero.

Adjoining our property to the south and running to the next road to the south, is property owned by Henry Romero.

There is a small bridge at the end of our right-of-way that allows us access to our property, as recorded in our deed.

This bridge was expensive for us to build and install and required many loads of dirt and gravel to achieve the slope over the bridge as it now exists.
This bridge was built for cars and pickup trucks, and was not built to sustain heavy equipment. The slope is still so steep that we cannot even get a fifth-wheel trailer up it!

On our property there is an old farming road that crosses the acequia. It is not a designated right-of-way, nor even though it has not been fenced, is it open to the public in any way. At the top of this old road, where it meets the acequia, it is very steep and undeveloped. Again, not suitable for heavy equipment.

We want to make it clear, that the fenced area on our property is not the extent of our property, but merely fences off a camping/picnic area.

We feel there are better and easier places to access the acequia for major exploration and repair than through our property.

Therefore, we DO NOT give our permission for the "Right of Entry" requested.

We would be more than willing to demonstrate the claims we have made above.

Sincerely,
Mr. and Mrs. James A. Meyer
#6 Meyers Rd., Espanola, NM 87532 phone: 505-753-4136

Mr. & Mrs. James A. Meyer

Notice of Availability

Draft Environmental Assessment

for the

Acequia de la Posecion Rehabilitation Project

Pursuant to and in accordance with the National Environmental Policy Act (NEPA) of 1969, Public Law 91-190, as amended, the Council on Environmental Quality (CEQ) Code of Federal Regulation (40 parts 1500-1508), and the U.S. Army Corps of Engineers regulations for implementing NEPA (ER-200-2-2), the U.S. Army Corps of Engineers, Albuquerque District (USACE) has completed a Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for a proposal to rehabilitate the Acequia de la Posecion in Rio Arriba County, New Mexico. The project area is located approximately three miles east of the Village of Truchas within the Nuestra Señora del Rosario, San Fernando, y Santiago Community Land Grant (1754).

The project will: 1) replace 9,321 linear feet of existing earthen ditch with a buried 24" diameter polyvinylchloride (PVC) conduit, which includes 825 linear feet for a buried inverted siphon; 2) install 23 reinforced concrete manholes; and 3) install a new sluice diversion structure.

The Draft EA/FONSI is open for a 30-day public comment period and is available on the USACE web site at http://www.spa.usace.army.mil. Paper copies may also be requested by contacting Michael Porter, USACE, at (505)342-3264 or by e-mail at michael.d.porter@usace.army.mil. Additional copies are available at the Truchas Community Library located at 60 County Road 75, Truchas, NM 87578.

All comments should be submitted to Ms. Joni Wood, Tetra Tech, Inc. (505)881-3188 ext. 125 at 6121 Indian School Rd. NE, Suite 205, Albuquerque, NM 87110 or by e-mail at joni.wood@tetratech.com.

The following are comments received in response to the Draft Environmental Assessment and Notice of Availability (NOA) publication:

Julie Trujillo, Library Director
Truchas Community Library
PO Box 330
Truchas, NM 87578

Dated January 14, 2009

Truchas Community Library

Post Office Box 330 • Truchas, NM 87578

505-689-2683/505-689-1155

December 18-2008

Tetra Tech. Inc.
6121 Indian School RD. N.E
SUITE 205
Albuquerque, NM. 87110

Dear Mr. Mark Horner:

Thank you for your donation to the Truchas Community Library. We sincerely appreciate your interest in our community and program. Gifts like yours enable the library staff and The Truchas Services Center Inc. board of directors to provide community services that we would otherwise not be able to offer. We currently provide books, magazines, research materials, videos, internet and computer services and instruction and tutoring. Your generous gift will is greatly appreciated.

Best Regards,

Julie Trujillo

Julie Trujillo, Library Director

The following are comments received in response to the Draft Environmental Assessment and Notice of Availability (NOA) publication:

Georgia Cleverly, Environmental Impact Review Coordinator
New Mexico Environment Department
Harold Runnels Building
1190 Saint Francis Drive
Santa Fe, NM 87505

Dated January 7, 2009

NEW MEXICO
ENVIRONMENT DEPARTMENT
Office of the Secretary

BILL RICHARDSON
Governor

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1190 Saint Francis Drive (87505)
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Phone (505) 827-2855 Fax (505) 827-2836
www.nmenv.state.nm.us

RON CURRY
Secretary
Jon Goldstein
Deputy Secretary

January 7, 2009

Joni Wood
Tetra Tech, Inc.
6121 Indian School Rd., NE, Suite 205
Albuquerque, NM 87110

RE: Rehabilitation of the Acequia de la Posecion

Dear Ms. Wood:

Your letter regarding the above named project was received in the New Mexico Environment Department (NMED) and was sent to various Bureaus for review and comment. Comments were provided by the Surface Water Quality Bureau and are as follows.

Surface Water Quality Bureau
The U.S. Environmental Protection Agency (USEPA) requires National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) coverage for storm water discharges from construction projects (common plans of development) that will result in the disturbance (or re-disturbance) of one or more acres, including expansions, of total land area. Because this project appears to exceed one acre (including staging areas, etc.), it will require appropriate NPDES permit coverage prior to beginning construction (small, one - five acre, construction projects may be able to qualify for a waiver in lieu of permit coverage - see Appendix D).

Among other things, this permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared for the site and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures (revegetation, paving, etc.), and permanent storm water management measures (storm water detention/retention structures, velocity dissipation devices, etc.) be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters. In addition, permittees must ensure that there is no increase in sediment yield and flow velocity from the construction site (both during and after construction) compared to pre-construction, undisturbed conditions (see Subpart 10.C.1.b)

You should also be aware that EPA requires that all "operators" (see Appendix A) obtain NPDES permit coverage for construction projects. Generally, this means that at least two parties will require permit coverage. The owner/developer of this construction project who has operational control over project specifications (probably the USACE in this case), the general contractor who has day-to-day operational control of those activities at the site, which are necessary to ensure compliance with the storm water pollution plan and other permit conditions, and possibly other "operators" will require appropriate NPDES permit coverage for this project.

The CGP was re-issued effective June 30, 2008. The CGP, Notice of Intent (NOI), Fact Sheet, and Federal Register notice can be downloaded at:
http://cfpub.epa.gov/npdes/stormwater/cgp.cfm

I hope this information is helpful to you.

Sincerely,

Georgia Cleverley

Georgia Cleverley
Environmental Impact Review Coordinator
NMED File #2784

2

The following are comments received in response to the Draft Environmental Assessment and Notice of Availability (NOA) publication:

Tony H. Joe, Jr., Supervisory Anthropologist
Navajo Nation, Historic Preservation Department
P.O. Box 4950
Window Rock, AZ. 86515

Dated February 20, 2009

THE NAVAJO NATION

JOE SHRILEY, JR.
PRESIDENT

BEN SHELLY
VICE-PRESIDENT

February 20, 2009

Joni Wood
Tetra Tech, Inc.
6121 Indian School Rd. NE, Suite 205
Albuquerque, New Mexico 87110

Dear Ms. Wood:

Our apology for an oversight and missing the deadline date of our response to your request, and that the Navajo Nation Historic Preservation Department – Traditional Culture Program (HPD-TCP) is in receipt of the proposed project: The Draft Environmental Assessment for the Acequia de la Posecion Rehabilitation Project.

After reviewing your consultation documents, HPD-TCP has concluded the proposed undertaking/project area **will not impact** any Navajo traditional cultural properties. The HPD-TCP, on behalf of the Navajo Nation has no concerns at this time.

However, the determination made by the HPD-TCP does not necessarily mean that the Navajo Nation has no interest or concerns with the proposed project. If the proposed project inadvertently discovers habitation sites, plant gathering areas, human remains and objects of cultural patrimony the HPD-TCP request that we be notified respectively in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA).

The HPD-TCP appreciates Tetra Tech's consultation efforts, pursuant to 36 CFR Pt. 800.1 (c)(2)(iii). Should you have any additional concerns and/or questions, do not hesitate to contact me electronically at tonyjoe@navajo.org or telephone at 928-871-7750. Mr. Kelly Francis will be taking over all Section 106 Consultations soon within the near future.

Sincerely,

Tony H. Joe, Jr., Supervisory Anthropologist *(Section 106 Consultations)*
Historic Preservation Department – Traditional Culture Program

TCP 2009-332
CC: Office File/Chrono

HISTORIC PRESERVATION DEPARTMENT P.O. BOX 4950 WINDOW ROCK, ARIZONA 86515 928.871.7198(V) 928.871.7886(FAX)

Appendix B

Plant Species Observed in the Survey Area

List of Plants Observed in the Survey Area

* = adventive (alien, introduced) species

Family	Common Name	Scientific Name
APIACEAE (Parsley Family)		
	Spotted or Western water hemlock	*Cicuta maculata*
	Cowparsnip	*Heracleum maximum*
	Lesser sweet – Cicely	*Osmorhiza depauperata*
ASTERACEAE (Sunflower Family)		
	Common Yarrow	*Achillea millefolium*
	Pussytoes	*Antennaria* sp.
	Louisiana Sagebrush	*Artemisia ludoviciana*
	Thistle	*Cirsium* sp.
	Spreading Fleabane	*Erigeron divergens*
	Trailing Fleabane	*Erigeron flagellaris*
	Curlytop Gumweed	*Grindelia squarrosa*
	Showy Goldeneye	*Heliomeris multiflora*
	Goldenaster	*Heterotheca villosa*
	*Prickly Lettuce	*Lactuca serriola*
	*Oxeye Daisy (class B noxious in CO.)	*Leucanthemum vulgare*
	Aster	*Machaeranthera* sp.
	Cutleaf Coneflower	*Rudbeckia laciniata*
	Mountain Groundsel	*Senecio eremophilus*
	Goldenrod	*Solidago* sp.
	White Heath	*Symphyotrichum ericoides*
	*Common Dandelion	*Taraxacum officinale*
	*Yellow or Western Salsify	*Tragopogon dubius*
BETULACEAE (Birch Family)		
	Thinleaf Alder	*Alnus incana* ssp. *Tenuifolia*
BERBERIDACEAE (Barberry Family)		
	Creeping Oregon – Grape	*Berberis repens*
BRASSICACEAE (Mustard Family)		
	*Shepherd's Purse	*Capsella bursa–pastoris*
	Common Pepperweed	*Lepidium densiflorum*
	*Tall Tumblemustard	*Sisymbrium altissimum*
CAMPANULACEAE (Harebell Family)		
	Harebell	*Campanula rotundifolia*
CAPRIFOLIACEAE (Honeysuckle Family)		
	Snowberry	*Symphoricarpos* sp.
CARYOPHYLLACEAE (Pink Family)		
	Starwort	*Stellaria* sp.

CONVOLVULACEAE (Morning Glory Family)		
	*****Bindweed (class C noxious)	*Convolvulus arvensis*
CUPRESSACEAE (Cypress Family)		
	Common Juniper	*Juniperus communis*
	Rocky Mountain Juniper	*Juniperus scopulorum*
CYPERACEAE (Sedge Family)		
	Nebraska sedge	*Carex nebrascensis*
EQUISETACEAE (Horsetail Family)		
	Common or Field Horsetail	*Equisetum arvense*
ERICACEAE (Heath Family)		
	Bearberry	*Arctostaphylos uva–ursi*
	Woodland Pinedrops	*Pterospora andromedea*
FABACEAE (Pea Family)		
	Lupine	*Lupinus* sp.
	*Black Medick	*Medicago lupulina*
	*Alfalfa	*Medicago sativa*
	*****Yellow Sweetclover	*Melilotus officinalis*
	Mountain Golden Pea	*Thermopsis montana*
	*Red Clover	*Trifolium pretense*
	*White Clover	*Trifolium repens*
FAGACEAE (Beech Family)		
	Gamble Oak	*Quercus gambelii*
GERANIACEAE (Geranium Family)		
	*Redstem Stork's Bill	*Erodium cicutarium*
	Purple Geranium	*Geranium caespitosum*
	Richardson's Geranium	*Geranium richardsonii*
GROSSULARIACEAE (Goosefoot Family)		
	Currant	*Ribes* sp.
JUNCACEAE (Rush Family)		
	Baltic rush	*Juncus arcticus* (*J. balticus*)
	Rocky Mountain Rush	*Juncus ensifolius* var. *montanus*
LAMIACEAE (Mint Family)		
	*Wild or Field Mint	*Mentha arvensis*
	Selfheal or Heal – All	*Prunella vulgaris*
LILIACEAE (Lily Family)		
	Geyer's Onion	*Allium geyeri*
	*Garden Asparagus	*Asparagus officinalis*
	Starry False Solomon's – Seal	*Maianthemum stellatum*
LINACEAE (Flax Family)		
	Blue Prairie Flax	*Linum lewisii*

MALVACEAE (Mallow Family)		
	White Checkermallow	*Sidalcea candida*
ONAGRACEAE (Evening Primrose Family)		
	Fringed Willowherb	*Epilobium ciliatum*
	Hooker's Evening Primrose	*Oenothera elata*
ORCHIDACEAE (Orchid Family)		
	Hooded Coralroot	*Corallorhiza striata*
PINACEAE (Pine Family)		
	Rocky Mountain fir	*Abies bifolia*
	Blue Spruce	*Picea pungens*
	Ponderosa Pine	*Pinus ponderosa*
	Douglas fir	*Pseudotsuga menziesii*
POACEAE (Grass Family)		
	*Redtop	*Agrostis gigantea*
	Shortawn Foxtail	*Alopecurus aequalis*
	*Smooth Brome	*Bromus inermis*
	*Orchardgrass	*Dactylis glomerata*
	*Intermediate Wheatgrass	*Thinopyrum intermedium*
	*Timothy	*Phleum pratense*
	*Kentucky Bluegrass	*Poa pratensis*
	Indian Grass	*Sorghastrum nutans*
	Weak Mannagrass	*Torreyochloa pallida* var. *pauciflora*
POLEMONIACEAE (Phlox Family)		
	Scarlet Gilia	*Ipomopsis aggregate*
POLYGONACEAE (Knotweed Family)		
	*Sheep Sorrel	*Rumex acetosella*
	Willow Dock	*Rumex californicus* var. *denticulatus*
PORTULACACEAE (Purslane Family)		
	*Purslane	*Portulaca oleracea*
RANUNCULACEAE (Buttercup Family)		
	Red Baneberry	*Actaea rubra*
	Meadowrue	*Thalictrum* sp.
ROSACEAE (Rose Family)		
	Meadow Cinquefoil	*Potentilla diversifolia*
	Chokecherry	*Prunus virginiana*
	Woods' Rose	*Rosa woodsii*
	Red Raspberry	*Rubus idaeus*
RUBIACEAE (Madder Family)		
	Bedstraw	*Galium* sp.

SALICACEAE (Willow Family)		
	Narrowleaf Cottonwood	*Poplus angustifolia*
	Quaking Aspen	*Populus tremuloides*
	Booth's Willow	*Salix boothii*
	Coyote Willow	*Salix exigua*
	Bluestem Willow	*Salix irrorata*
SCROPHULARIACEAE (Figwort Family)		
	Yellow Owlclover	*Orthocarpus luteus*
	Beardtongue	*Penstemon* sp.
	*Common Mullein	*Verbascum thapsus*
	American Brooklime	*Veronica americana*
URTICACEAE (Nettle Family)		
	Nettle	*Urtica* sp.
VERBENACEAE (Vervain Family)		
	Bigbract Verbena	*Verbena bracteata*
	MacDougal's Vervain	*Verbena macdougalii*
VIOLACEAE Violet Family		
	Canadian violet	*Viola canadensis*

Appendix C

Threatened, Endangered, and Special Status Species in Rio Arriba County, New Mexico

Special status plant and animal species that may occur in Rio Arriba County, New Mexico (list compiled through BISON-M, USFWS, and NMRPTC database queries)

Status classifications: Federal endangered (**FE**); Federal threatened (**FT**); Federal candidate (**FC**); Federal species of concern (**FS**); critical habitat (**CH**) State endangered (**SE**); State threatened (**ST**); State species of concern (**SS**); and State sensitive species (**SN**).

Habitat classifications: alpine tundra (**TUN**); subalpine coniferous forest (**SCF**); Rocky Mountain upper or lower montane coniferous forest (**MCF**); subalpine-montane grassland (**SAG**); piñon-juniper woodland or juniper savanna (**PJW**); montane scrub (**MSC**); plains-mesa grassland (**PMG**); Great Basin desert scrub (**BDS**); desert grassland (**DGR**); reservoirs (**RES**); and Chihuahuan desert scrub (**CDS**). Special habitats are coded as riparian (**Rip**); wetlands (**Wet**); aquatic (**Aq**); terrestrial (**Ter**); rocky outcrops/areas/cliffs (**Rck**); malpais or badlands (**Mal**); fossorial (**Fos**); arboreal (**Arb**); scansorial (**Scn**); bare ground (**Bgd**); woody debris on the ground surface (**Log**); selenium soils (**Sel**); gypsum soils (**Gyp**); shale or shale-clay outcrops or areas (**Shl**); lime mudstones (**Lmu**); and sand or sandy soils (**Snd**).

Common Name	Scientific Name	Status	Habitat Classification
Fish (2)			
Roundtail chub	*Gila robusta*	FS, SE, SN	PJW, MCF, CDS, RES/Aq
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis* (NM)	FS, SN	SCF, MCF/Aq
Amphibians (2)			
Jemez Mountains Salamander	*Plethodon neomexicanus*	FS, SE	SCF, MCF/Ter, Rck, Fos, Log
Mountain toad	*Bufo borea* complex (NM)	FS, SE	MCF, SAG/Aq, Rip, Ter, Fos
Birds (15)			
Yellow-billed Cuckoo	*Coccyzus americanus occidentalis* (west^{n} pop^{n})	FC, SN	MCF, CDS/Rip
Bald Eagle	*Haliaeetus leucocephalus alascanus* (NM)	ST	MCF, PJW, CDS/Rip
Peregrine Falcon	*Falco peregrinus anatum*	FS, ST	SCF, MCF, PJW/Rip, Rck
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	FS, ST	SCF, MCF, PJW/Rip
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	FE, SE CH	MCF, CDS/Rip, Aq
Northern Goshawk	*Accipiter gentilis atricapillus*	FS, SN	SCF, MCF/Rip

Boreal Owl	*Aegolius funereus*	ST	SCF, MCF
Burrowing Owl	*Athene cunicularia hypugaea* (NM, AZ)	FS	PJW, PMG, DGR, CDS/Fos
Mexican Spotted Owl	*Strix occidentalis lucida* (NM, AZ)	FT, CH, SN	MCF, PJW/Rip, Arb
Brown Pelican	*Pelecanus occidentalis carolinensis* (NM)	SE	PJW, RES, CDS/Rip, Aq
Mountain Plover	*Charadrius montanus*	FS, SN	PMG, DGR/Bgd
White-tailed Ptarmigan	*Lagopus leucurus altipetens* (NM)	SE	TUN, MCF
Baird's Sparrow	*Ammodramus bairdii*	FS, SE	PMG, DGR
Black Tern	*Chlidonias niger surinamensis* (NM)	FS	MSC, PMG, RES/Rip, Wet
Least Tern	*Sterna antillarum athalassos* (NM)	FE, SE	PJW, CDS/Wet, Aq
Mammals (6)			
Townsend's pale big-eared bat	*Corynorhinus townsendii pallescens* (NM, AZ)	FS	MCF, PJW
Spotted bat	*Euderma maculatum*	ST	MCF, PJW, RES/Rip, Rck
American marten	*Martes Americana origenes* (NM)	ST	SCF, MCF/Rip, Ter, Scn
Meadow jumping mouse	*Zapus hudsonius luteus* (NM,AZ)	FC, SE	MCF, DGR/Rip
Goat peak pika	*Ochotona princeps nigrescens* (NM)	FS	TUN, SCF, MCF/Ter, Rck, Bgd
White sands wood rat	*Neotoma micropus Leucophaea*	FS	PMG, DGR/Ter, Bgd
Gunnison's prairie dog	*Cynomys gunnisoni gunnisoni*	FC, SS	SAG (and meadows)
***Lepidoptera* –**			
Moths and butterflies (1)			
Chuska Mountains checkerspot butterfly	*Euphydryas anicia chuskae* (NM, AZ)	FS	MCF (meadows)
Plants (17)			
Tufted sand verbena	*Abronia bigelovii*	FS, SS	PJW, BDS/Gyp
Cyanic milkvetch	*Astragalus cyaneus*	FS, SS	PJW/Snd
Chaco milkvetch	*Astragalus micromerius*	FS, SS	PJW, BDS/Gyp

Pagosa milkvetch	*Astragalus missouriensis* var. *humistratus*	FS, SS	MCF, PJW
Arboles milkvetch	*Astragalus oocalycis*	FS, SS	MCF, PJW/Sel
Taos milkvetch	*Astragalus puniceus* var. *gertrudis*	FS, SS	PJW
Ripley's milkvetch	*Astragalus ripleyi*	FS, SS	MCF, PWJ, MSC
Greater yellow lady's slipper	*Cypripedium parviflorum* var. *pubescens*	FS, SE	MCF/Rip
Robust larkspur	*Delphinium robustum*	FS, SS	SCF, MCF
New Mexico stickseed	*Hackelia hirsuta*	FS, SS	MCF/Shl
Wood lily	*Lilium philadelphicum* var. *andinum*	FS, SE	MCF, PMG
Small-headed golden-weed	*Lorandersonia microcephala*	FS, SS	MCF (open areas)/Rck
Chama blazing star	*Mentzelia conspicua*	FS, SS	PJW/Shl
Pagosa phlox	*Phlox caryophylla*	FS, SS	PJW
Pagosa bladderpod	*Physaria pruinosa*	FS, SS	MCF, SAG/Shl
Arizona Willow	*Salix arizonica*	FS, SS	SCF/Rip, Wet
Clifford's groundsel	*Senecio cliffordii*	FS, SS	MCF, PJW/Lmu, Snd

*Note: Other habitat-type uses for various species are casual, infrequent, or accidental. Habitat types indicated in are generally important and/or predominant. In addition, no critical habitat for Southwestern willow flycatcher or Mexican spotted owl occur in the project area; the closest such occurrence are two Mexican spotted owl Critical Habitat Units located approximately 19 miles to the south and southwest within the Santa Fe National Forest.

Appendix D

Documentation of Section 106 Consultation and Cultural Resources Survey Report

State of New Mexico Historic Preservation Officer Correspondence

The following is the concurrence letter received from the State of New Mexico Historic Preservation Officer via the U.S. Army Corps of Engineers, Albuquerque District:

Katherine Slick
State Historic Preservation Officer
New Mexico Department of Cultural Affairs
Historic Preservation Division
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe, NM 87501

Received on: January 14, 2009

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

December 11, 2008

085941

Planning, Project and Program Management Division
Planning Branch
Environmental Resources Section

Recd 1-14-2009
GDE

Ms. Katherine Slick
State Historic Preservation Officer
New Mexico Department of Cultural Affairs
Historic Preservation Division
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe, New Mexico 87501

Dear Ms. Slick:

Pursuant to 36 CFR Part 800, the U.S. Army Corps of Engineers (Corps), Albuquerque District, is seeking your concurrence in our determination of "Adverse Effect to Historic Properties" for a proposed rehabilitation of the Acequia de la Posecion (Posecion). The Corps, at the request of the New Mexico State Engineer/Interstate Stream Commission and Acequia de la Posecion Association(Association), is planning a project that would rehabilitate a 9,321-foot segment of the Acequia. Work would be conducted under Section 1113 of the Water Resources Development Act of 1986 (Public Law 99-662), as amended.

The Acequia de la Posecion Rehabilitation Project is located approximately three miles east of the Village of Truchas, in Rio Arriba County, New Mexico. The project area is located within the historically significant Nuestra Señora del Rosario, San Fernando, y Santiago Community Land Grant (1754); USGS 7.5' Quadrangle = Truchas, NM (36105a7 1953, photo revised 1977). The Acequia de la Posecion is a 19,107 foot-long open earthen ditch system that diverts water from the Rio de Truchas, travels 10,681 feet west before splitting into one 3,953 foot-long northern and one 4,473 foot-long southern alignment that parallel each other and drain into (desagua) the Acequia Medio. The Acequia de la Posecion serves a portion of the community of Truchas, and dates to 1754. In 1900, by-laws were established to define the roles and cooperation of the acequia members, and dictate the division of labor associated with the acequia. The Acequia system currently provides water to 17 irrigators and approximately 167 acres of cultivated land.

The proposed project is to pipe the acequia madre from the diversion structure to the split at 10,681 feet. As part of this process, a more direct route (following approximately 825 feet of an earlier alignment) will be re-established. This shorter alignment was briefly in use in the early 1970s as an alternate alignment, but was not well engineered and was abandoned soon thereafter. The acequia is relatively unmodified from its original form, function, and alignment, although as part of the early 1970s alternate alignment process, approximately 2,350 feet of the existing acequia were piped with concrete; and the alternate alignment, measuring approximately 825 feet, used a steel pipe siphon (totaling 17 percent). Much of this piping and concrete has since been removed, returning the ditch to an open, earthen form.

The Corps would provide 75 percent of construction funding and is, therefore, the lead Federal agency for this project in terms of Section 106 of the National Historic Preservation Act. The Office of the State Engineer is the project sponsor, and with the local ditch association, would be responsible for the remaining 25 percent of construction costs. The Association would be responsible for assuring operation and maintenance upon project completion.

Pursuant to 36 CFR 800.2, consulting parties in the Section 106 process identified for the Undertaking include the Corps, the Association, and your office. 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's 2008 Native American Consultations List, American Indian tribes that have indicated they have concerns in Rio Arriba County were sent scoping letters regarding the proposed project. To date, the Corps has received no indication of tribal concerns that would impact this project.

Pursuant to 36 CFR 800.4, the Area of Potential Effects (APE) for the Undertaking is considered to be the construction footprint within the Association's right-of-way (ROW) as well as two 1-acre staging areas, for a total of 13.2 acres. Access is provided by existing roads.

Pursuant to 36 CFR 800.4(b), historic properties were identified by SWCA, Inc. archaeologists in early October 2008, as presented in the enclosed cultural resources survey report titled A Cultural Resources Survey of 19.2 Acres for Rehabilitation of the Acequia de la Posecion, Truchas, Rio Arriba County, New Mexico by Thomas F. Messerli and Joanne E. Eakin. The survey was conducted within Association and private property. Note that the survey

includes 6 acres surrounding the staging areas that are not in the APE.

Prior to the pedestrian survey, an archival literature search, and searches of the New Mexico Archaeological Records Management Section database, the State Register of Cultural Properties, and the National Register of Historic Places (NRHP) were completed. Six previous cultural resource investigations have been conducted within one mile of the project area. One archaeological site (LA 130785), consisting of remnants of a historic-period structure, was recorded as a result of these investigations. Although, this structure is within one mile of the project area, it is not near the acequia. The records review determined that there are no State or Federal registered historic properties within one mile of the project area.

The pedestrian survey identified two historic properties: the Acequia de la Posecion and a dilapidated historic cabin (LA 161069). Known as the Atkinson Cabin, this is considered by the current land owner to be a late 19th century log cabin with some early 20th century improvements. During the mid-20th century, it was used by shepherds who were summer-pasturing their sheep on the land grant. The cabin is located outside of the project area approximately 39 feet south of the acequia, and will not be affected by this project. SWCA, Inc. recommends that LA 161069 is eligible for listing on the NRHP under Criterion D, for its ability to contribute to the understanding of the rural lifestyle of the Truchas area during the late 19th and early 20th centuries. The Corps concurs with this eligibility determination.

SWCA Inc. recommends that the Acequia de la Posecion is eligible for nomination to the NRHP under Criteria A, C, and D, for its association with the development of irrigation and agriculture in the Truchas Valley, as well as the associated settlement of Truchas; for its engineering design characteristics; and for its potential to yield additional information on acequia construction and function. The Corps concurs with SWCA's recommendations for Criteria A and C, but does not agree that significant information could be derived from excavation of the active physical ditch. There are no unique features or technological challenges associated with this ditch that would warrant a Criterion D eligibility determination.

The Corps considers conversion of 9,321 feet of the Acequia de la Posecion from an earthen ditch to underground PVC pipeline an adverse effect to this historic property, as this represents a change in form to a little more than half of the acequia (56 percent). The project would not introduce a new alignment; it would follow the current alignment for most of its extent but would also

include the reuse of an approximately 825-foot segment discontinued shortly after its construction in the 1970s. The function of the acequia, to convey water to fields for farming, will remain the same.

The Corps considered construction options that would reduce or minimize the effects to form, function, and alignment to the acequia. The steep terrain, roots, beavers, rodent burrows, water loss, arroyos, and heavily forested nature of the proposed project area does not leave many viable alternatives. Half-piping while staying in the original alignment would have the least impact to the historic character of the acequia, but would not resolve the problem of significant sedimentation and accumulation of debris in the ditch. In addition, access for cleaning and maintenance over the last decades has become extremely problematic to the 17 remaining acequia association members. There are approximately 30 private non-acequia land owners whose boundary fences cross the acequia and make access to the acequia right-of-way difficult. Due to the steep forested terrain, it is not possible to drive up the acequia to maintain it. In the end, the proposed piping through the portion with recent land-ownership issues and ongoing debris problems will allow the declining number of acequia association members to continue operating the acequia.

To mitigate adverse effects to the acequia, the Corps recommends conducting additional research on the acequia, including photographically documenting the acequia on archival paper; conducting oral history interviews with acequia association members; scanning and translating the Association's log book, which dates from 1900; and copying and transcribing 17 hours of interviews conducted in 1971 by the Association. The Corps recommends that these efforts could serve to mitigate the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking. As conducting this research is non-destructive in nature, the Corps is in the process of conducting this research. Results, when available, will be forthcoming.

Although the Corps had already completed this research, the Corps does not consider consultation on this proposed activity to be complete. Pursuant to 36 CFR 800.5(a), we have applied the criteria of adverse effect, and are asking for your concurrence in our determination of adverse effect. In anticipation of your concurrence, we are also proposing, pursuant to 36 CFR 800.6, a potential resolution to adverse effects, as described in the previous paragraph, but will entertain any additional suggestions, comments, or requests that you or other potential consulting parties might have. Pursuant to 36 CFR 800.6(a)(1), we will also notify the Advisory Council on Historic Preservation concerning

this project, but due to the non-controversial nature of this project, do not anticipate their participation.

The USACE, therefore, is of the opinion that the proposed Acequia de la Posecion rehabilitation project will have an "Adverse Effect to Historic Properties." The Corps recommends that construction be permitted to proceed after consulting parties agree to the resolution of adverse effects.

Should work be allowed to proceed, and should previously undiscovered artifacts or features be unearthed during construction, work will be stopped in the immediate vicinity of the find, a determination of significance made, and the Corps will consult with your office and with Native American tribes that may have concerns in the project area as to the best course of action.

If you have questions or require additional information regarding the Acequia de la Posecion rehabilitation project, please contact Gregory Everhart, archaeologist, at (505) 342-3352 or me at (505) 342-3281.

Sincerely,

Julie Alcon
Chief, Environmental Resources Section

1/13/09
Date

I CONCUR
for KATHERINE SLICK
NEW MEXICO STATE HISTORIC PRESERVATION OFFICER

Enclosures

1-14-2009
Telephone conversation w/ Norman Nelson @ NMSHPO
- discussed and he concurs that the Corps recommendations regarding mitigation (noted on p. 4 of this letter) are adequate.
- concurred that construction can proceed and that the additional cultural resources documentation can be submitted when available.

GDE/LL

The following is a Memorandum of Agreement (MOA) between the State of New Mexico Historic Preservation Officer and the U.S. Army Corps of Engineers, Albuquerque District

MEMORANDUM OF AGREEMENT

BETWEEN THE U.S. ARMY CORPS OF ENGINEERS AND
THE NEW MEXICO STATE HISTORIC PRESERVATION OFFICER

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

1. WHEREAS, the U.S. Army Corps of Engineers (Corps), Albuquerque District, at the request of the New Mexico State Engineer/Interstate Stream Commission (NMISC) and Acequia de la Posecion Association (Association), is planning a project that would rehabilitate a 9,321-foot segment of the 19,107-foot-long, 255-year-old Acequia de la Posecion (Acequia); and

2. WHEREAS, field activities associated with construction of the Project include piping approximately half of the acequia, trenching, removal of vegetation, and staging of equipment. These activities are referred to herein as "Construction"; and

3. WHEREAS, Federal/Corps involvement is through the Corps' Acequia Rehabilitation Program where the Federal cost-share is 75 percent and the Corps is responsible for NEPA compliance, project design, and construction oversight, as authorized under Section 1113 of the Water Resources Development Act of 1986 (Public Law 99-662), as amended; and

4. WHEREAS, the Corps' funding of this project is subject to review under Section 106 of the National Historic Preservation Act, 16 U.S.C. § (NHPA), and its implementing regulations (36 CFR Part 800); and

5. WHEREAS, the Corps has notified the Advisory Council on Historic Preservation (ACHP) and the ACHP has advised the Corps, in a letter dated March 6, 2009 (see Attachment 1), that it will not participate in the Section 106 process; and

6. WHEREAS, the Corps has established the Project's Area of Potential Effects (APE), as defined at 36 CFR Part 800.16(d), as the construction footprint within the Association's right-of-way (ROW) as well as two 1-acre staging areas, for a total of 13.2 acres, as shown in Enclosure 1 in a letter to the New Mexico State Historic Preservation Officer (NMSHPO) dated December 11, 2008 (see Attachment 2); and

7. WHEREAS, the Corps has evaluated adverse effects associated with this project and has determined that piping a portion of the acequia constitutes an adverse effect to the Acequia as identified in (1) the report titled "A Cultural Resources Survey of 19.2 Acres for Rehabilitation of the Acequia de la Posecion, Truchas, Rio Arriba County, New Mexico" by Thomas F. Messerli and Joanne E. Eakin, (Report) dated November 25, 2008 and prepared by SWCA, Inc., a subcontractor for Tetra Tech, under contract by the Corps (see Attachment 3), and (2) the Corps' letter to the NMSHPO dated

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

December 11, 2008, and that the Corps and the NMSHPO have agreed that the Acequia meets the criteria for inclusion in the National Register of Historic Places (36 CFR 60.4); and

8. WHEREAS, the Corps has afforded the Hopi Tribal Council, the Jicarilla Apache Nation, the Kiowa Tribe of Oklahoma, the Navajo Nation, the Ohkay Owingeh, the Pueblo of Taos, the Comanche Nation of Oklahoma, the Pueblo of Pojoaque, the Pueblo of San Ildefonso, and the Pueblo of Santa Clara the opportunity to participate in this process pursuant to 36 CFR Part 800.2 and 36 CFR Part 800.4 and none of these tribes have indicated any tribal concerns related to the Project or asked to participate as a consulting party in the Project; and

9. WHEREAS, pursuant to 36 CFR Part 800.6(c)(3) the Corps has consulted with the Association and the NMISC and has invited them to sign this Memorandum of Agreement (MOA) as a concurring party; and

10. WHEREAS, the Corps has consulted with the NMSHPO in accordance with Section 106 of the National Historic Preservation Act, 16 U.S.C. § 470 (NHPA), and its implementing regulations (36 CFR Part 800.6(b)(1)) to resolve the adverse effects of the undertaking on the Acequia; and

NOW, THEREFORE, the Corps and SHPO agree that upon the Corps' decision to fund the undertaking, the Corps shall ensure that the following stipulations are implemented in order to take into account the effects of the undertaking on historic properties, and that these stipulations shall govern the Project and all of its parts until this MOA expires or is terminated.

Stipulations

The Corps shall ensure that the following stipulations are implemented:

1. Additional Documentation of the Acequia beyond Survey Level Recordation

   a. Documenting the acequia's alignment will consist of drawing the current alignment on an aerial image, presenting both the current alignment and any known past alignment(s). Sources of information will minimally include oral interviews with acequia members and an archival records search at the Office of the State Engineer and the Natural Resources Conservation Service. Current engineering drawings will be included in hardcopy in the appendix of the report. Representative archival photographs of the setting, ditch, and any associated structures, as well as representative profile drawings of the ditch will be taken to document the acequia's form. The photographic documentation will be based on the standard practices defined in the Secretary of the Interior's Standards for

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

Architectural and Engineering Documentation HABS/HAER Level II format for photographs, substituting 8x10" enlargements of black-and-white photographs printed on 100-year plus archival paper (and ink, if using inkjet) for large format photographs. Maps, drawings, and archival quality black-and-white photographs will be completed by an archaeologist or other qualified individual to document representative sections of the location and setting of the acequia and its structures.

b. Conduct oral history interviews with acequia association members to document such things as how the acequia has changed over time in terms of crops planted, total acreage irrigated, association members, and the member's involvement in maintaining and using the acequia.

c. Scan and translate from Spanish to English the Association's log book, which dates from 1900. Include up to 50 pages of acequia records focusing on the earliest history of the ditch and up to 20 photographs made available by the acequia association.

d. Copy and transcribe 17 hours of interviews conducted in 1971 by the Association.

2. Discoveries

a. In the event that unrecorded or unanticipated properties that may be eligible for inclusion on the National Register are located during Construction activities, or it is recognized that such actions may affect a known historic property in an unanticipated manner, the Corps will terminate Construction activities within 100 feet of the property and will take all reasonable measures to avoid or minimize harm to the property until consultation with the Corps and NMSHPO regarding significance and effect can be concluded. The Corps will notify the NMSHPO within 72 hours and consult to develop actions that will take the effects of the undertaking into account. The Corps and NMSHPO will mutually agree upon time frames for the consultation.

b. In the event that any human burial is discovered during construction activities, the provisions of Section 18-6-11.2 of the New Mexico Cultural Properties Act, NMSA 1978, and regulations found at 4.10.11 NMAC, shall apply.

3. Reporting and Disbursement

a. Reporting from Stipulation 1a will be included in the Report, with the exception of the archival photographs. Copies of archival photographs will be submitted to the NMSHPO with the Report. A copy of the archival photographs will also be stored at the Corps, Albuquerque District.

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

b. Reporting from Stipulation 1b, 1c, and 1d will be published as an appendix to the Report.

c. Copies of the Report with appendices will be provided to consulting parties and to the Archaeological Records Management Section of the New Mexico Historic Preservation Division. The Corps will retain 20 copies of the Report in the Albuquerque District for disbursement to interested parties.

d. For the purpose of public outreach, the Corps will prepare a public interest story on the acequia, its members, and the Corps' involvement in the acequia program, incorporating results from Stipulations 3.a. and 3.b., and will publish and/or submit the story to at minimum two of the following media outlets: 1) the Corps internet site (http://www.spa.usace.army.mil/), 2) a Press Release of the public interest story through the Corps' Public Affairs Office, 3) RipRap, the Albuquerque Corps District's quarterly newsletter, 4) Engineer Update, the Corps' national monthly internal newsletter (http://www.usace.army.mil/CEPA/ENGINEERUPDATE/Pages/Home.aspx), and 5) NewsMAC, the newsletter of the New Mexico Archaeological Council. The public interest story will be suited for a general audience, will include at least one photograph, and will be approximately one to two pages long. Other media outlets similar to those listed above will be considered, especially those local to the Truchas community.

e. Reporting will be completed by December 31, 2012.

4. Administrative Stipulations

a. Disputes arising about the implementation of the stipulations of this MOA will be resolved in the following manner:

(1) The Corps shall notify all other signatories in writing of any instance where a signatory or consulting party to this MOA objects to the implementation of any of the stipulations set forth above. The Corps shall consult to resolve the objection. If the Corps determines that the objection cannot be resolved, the Corps shall forward all documentation relevant to the dispute, including the Corps' proposed resolution, to the ACHP. Within fifteen (15) business days after receipt of adequate documentation, the ACHP shall either:

a) provide written recommendations relative to the dispute, or

b) notify the Corps that it will comment in accordance with 36 CFR Part 800.7(c).

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

(2) Any comment provided by the ACHP in response to such a request shall be taken into account by the Corps in accordance with 36 CFR Part 800 with reference to the subject of the dispute. The Corps' responsibility regarding all other actions under this MOA that are not the subject of the dispute shall remain unchanged. Prior to reaching a final decision on the dispute, the Corps shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and consulting parties, and provide them with a copy of this written response. The Corps will then proceed according to its final decision.

(3) If the ACHP does not provide its advice regarding the dispute within the fifteen (15) day time period, the Corps may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the Corps shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and consulting parties to the MOA, and provide them and the ACHP with a copy of such written response.

b. At any time during implementation of the measures stipulated in this MOA, should an objection to any such measure or its manner of implementation be raised by a member of the public regarding historic preservation, the Corps shall take the objection into account and consult as needed with the NMSHPO, or the ACHP to determine how best to address the objection.

c. If the terms of this agreement have not been implemented by December 31, 2012, this agreement shall be considered null and void, unless the signatories agree in writing to an extension for carrying out its terms. If this agreement is considered null and void, the Corps shall so notify the parties to this agreement, and if the Corps chooses to continue with the undertaking, shall re-initiate review of the undertaking in accordance with 36 CFR Part 800.

d. Any signatory to this agreement may propose to the Corps that the agreement be amended, whereupon the Corps shall consult with the other parties to this agreement to consider such an amendment. This MOA will be amended when such an amendment is agreed to in writing by all signatories. The amendment will be filed with the ACHP and go into effect on the date of the last signature from signatories.

e. If the Corps determines that it cannot implement the terms of this agreement, or if the NMSHPO determines that the agreement is not being properly implemented, such party may propose to the other parties to this agreement that it be terminated.

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

The party proposing to terminate this agreement shall so notify all parties to this agreement, explaining the reasons for termination and affording them at least 30 days to consult and seek alternatives to termination. The parties shall then consult.

Should such consultation fail, the Corps or other signatory party may terminate the agreement by so notifying all parties.

Should this agreement be terminated, the Corps shall either:

(1) Consult in accordance with 36 CFR Part 800.6 to develop a new MOA; or

(2) Request the comments of the Council pursuant to 36 CFR Part 800.7.

f. Execution of this MOA by the Corps and the NMSHPO, and its submission to the Advisory Council on Historic Preservation (Council), and implementation of its terms, evidence that the Corps has afforded the Council an opportunity to comment on the undertaking and its effects on historic properties, and that Corps has taken into account the effects of the undertaking on historic properties

SIGNATORY PARTY:

U.S. ARMY CORPS OF ENGINEERS, ALBUQUERQUE DISTRICT

By: _____ Date: 5/6/09
LTC KIMBERLY COLLOTON
COMMANDER

Note: Signatures continued on next page.

SUBJECT: Resolution of Adverse Effects to Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico.

SIGNATORY PARTY:

NEW MEXICO STATE HISTORIC PRESERVATION OFFICER

By: Jan V Biella Date: 4/22/09
Acting SHPO

Note: Signatures continued on next page.

Advisory Council on Historic Preservation Correspondence

The following is the correspondence letter received from the Advisory Council on Historic Preservation via the U.S. Army Corps of Engineers, Albuquerque District:

Raymond V. Wallace
Historic Preservation Technician
Advisory Council on Historic Preservation
Federal Property Management Section
Office of Federal Agency Programs
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 20004

Dated: March 6, 2009

Preserving America's Heritage

March 6, 2009

Ms. Julie Alcon
Chief, Environmental Resources Section
Department of the Army
Albuquerque District, Corps of Engineers
4101 Jefferson Plaze NE
Albuquerque, NM 87109-3435

Ref: Proposed Acequia de la Posecion Rehabilitation Project
Rio Arriba County, New Mexico

Dear Ms. Alcon:

On February 27, 2009, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the adverse effects of the referenced project on properties listed on and eligible for listing on the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the New Mexico SHPO and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the opportunity to review this undertaking. If you have any questions, please contact Tom McCulloch at 202-606-8554, or via email at tmcculloch@achp.gov.

Sincerely,

Raymond V. Wallace

Raymond V. Wallace
Historic Preservation Technician
Federal Property Management Section
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION
1100 Pennsylvania Avenue NW, Suite 803 -Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov www.achp.gov

NMCRIS NO. 111906

A CULTURAL RESOURCE SURVEY OF 19.2 ACRES FOR REHABILITATION OF THE ACEQUIA DE LA POSECION, NEAR TRUCHAS, RIO ARRIBA COUNTY, NEW MEXICO

Prepared by

Thomas F. Messerli

and

Joanne E. Eakin

SWCA ENVIRONMENTAL CONSULTANTS
5647 Jefferson Street NE
Albuquerque, New Mexico 87109
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www.swca.com

SWCA Cultural Resources Report No. 08-454

New Mexico Annual State General Permit No. NM-08-055

Prepared for

TETRA TECH
6121 Indian School Road NE, Suite 205
Albuquerque, NM 87110

Submitted to

U.S. ARMY CORPS OF ENGINEERS
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109-3435

January 16, 2009

NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

1. NMCRIS Activity No.: 111906	**2a. Lead (Sponsoring) Agency:** U.S. Army Corps of Engineers Albuquerque District	**2b. Other Permitting Agency:** N/A	**3. Lead Agency Report No.:** N/A
Title of Report: A Cultural Resource Survey of 19.2 Acres for Rehabilitation of the Acequia de la Posecion near Truchas, Rio Arriba County, New Mexico **Author(s)** Thomas F. Messerli / Joanne Eakin			**5.Report Type** ☐ **Negative** ☒ **Positive**

6. Investigation Type

☐ Research Design ☒ Survey/Inventory ☐ Test Excavation ☐ Excavation
☐ Collections/Non-Field Study
☐ Overview/Lit Review ☐ Monitoring ☐ Ethnographic study ☐ Site specific visit
☒ **Other** Historic Evaluation

7. Description of Undertaking (what does the project entail?):

The U.S. Army Corps of Engineers (USACE) at the request of the New Mexico Interstate Stream Commission and the Acequia de la Posecion Ditch Association proposes to install a 24-inch pipeline within the existing ditch of the Acequia de la Posecion located east of Truchas, Rio Arriba County, New Mexico. The acequia diverts water from the Rio de Truchas, a narrow perennial stream that originates in the Sangre de Cristo Mountains. The proposed project area involves the acequia easement, which traverses private land. The anticipated activity area related to pipe installation is 5 m (15 feet) above and 8 m (25 feet) below the acequia. The total length of the acequia is 5,824 m (19,107 feet) and includes the primary section and two lateral ditches. A defunct 1970s-era pipeline section measuring 251 m (825 feet) will be rebuilt as part of the project. The proposed project area will rehabilitate 2,590 m (8,496 feet) of the main section of the acequia. The open-unlined ditch will be replaced with a buried pipeline. Also, a 666 m (2,185-foot) section of acequia will be abandoned. Two proposed 1-acre (0.4-hectare) staging areas for storing construction materials are included as part of the project. The total acreage surveyed (including 4 acres [1.6 hectares] encompassing each staging area) was 19.2 acres (7.7 hectares).

8. Dates of Investigation: from:

10/1, 10/2, 10/9/2008

9. Report Date:

January 16, 2009

10. Performing Agency/Consultant: SWCA Environmental Consultants
Principal Investigator: Joanne Eakin
Field Supervisor: Thomas F. Messerli
Field Personnel: N/A

11. Performing Agency/Consultant Report No.: 2008-454

12. Applicable Cultural Resource Permit No(s): New Mexico State Permit No. NM-08-055S.

13. **Client/Customer (project proponent):** Tetra Tech
Contact: Mike Marcus, Ph.D.: Program Manager/ Senior Environmental Scientist
Address: 6121 Indian School Road NE, Suite 205 Albuquerque, NM 87110
Phone: Main: 505-881-3188 x131

14. Client/Customer Project No.: N/A

15. Land Ownership Status *(Must be indicated on project map):*

Land Owner	Acres Surveyed	Acres in APE
Private	19.2	13.2
TOTALS	19.2	13.2

16 Records Search(es): Date(s) of ARMS File Review Sept. 30, 2008	**Name of Reviewer(s):** Thomas F. Messerli	**Agency:** SWCA Environmental Consultants
Date(s) of NR/SR File Review: Sept. 30, 2008	**Name of Reviewer(s):** Thomas F. Messerli	**Agency:** SWCA Environmental Consultants
Date(s) of Other Agency File: Review N/A	**Name of Reviewer(s):** N/A	**Agency:** N/A

17. Data Recovery Data:

a. Source Graphics ☒ **NAD 27** ☐ **NAD 83**
☐ **USGS 7.5' (1:24,000) topo map** ☒ **Other topo map, Scale: 1:9600**
☒ **GPS Unit Accuracy** ☐**<1.0m** ☒ **1-10m** ☐ **10-100m** ☐**>100m**

b. USGS 7.5' Topographic Map Name | **USGS Quad Code**

Truchas, NM: 1953 photorevised 1977	36105-A7

18. County(ies): Rio Arriba

Nearest City or Town: Truchas, NM

Legal Description: NAD 27 Zone 13: BOP 432430 E/ 3987964 N to EOP 430018 E/ 3987819 N
Projected legal description? Yes ☐ **, No** ☒ **Unplatted** ☒

Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.):
Nuestra Señora del Rosario, San Fernando y Santiago del Rio de las Truchas Grant

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.):
The project area is at an average elevation of 2,574 m (8,445 feet) above mean sea level. Local vegetation includes Douglas fir, Engelmann's spruce, ponderosa pine, one-seed juniper, and Gambel oak. The pasturelands consist of timothy-grass, "volunteer" apple trees, and native grasses. The following soil associations are bisected by the acequia. Manzano clay loam is a deep, well-drained, nearly level to gently sloping soil formed in mixed alluvium. The permeability for Manzano clay loam is moderately slow. The Jaroso-Angostura-Mascarena complex consists of moderately steep to steep soils. Jaroso, Angostura, and Mascarenas soils are formed in colluvium of imbedded shale and sandstone (Hacker and Carelton 1982).

The average annual temperature for Truchas, New Mexico, is 61.1 degrees Fahrenheit (°F) (16.1degrees Celsius [°C]), while the annual average minimum temperature is 31°F (-0.55°C). The highest maximum temperature is 80.7°F (27.05°C) for the month of July, and the lowest mean minimum temperature is 14.4°F (-9.77°C) for the month of January. As in much of New Mexico, a majority of the precipitation falls in the form of warm-season monsoon rains. Overall yearly precipitation for the village of Truchas is 33.8 cm (14.53 inches), with an average yearly snowfall of 111.5 cm (43.9 inches). The growing season of frost-free days is 90 to 110 days (Western Regional Climate Center 2008).

20.a. Percent Ground Visibility: 65%

20.b. Condition of Survey Area (grazed, bladed, undisturbed, etc.): The proposed project area is a mix of forested lands and pastures. Disturbances in the area have included agriculture and grazing, fencing, and operation and maintenance of the acequia.

21. CULTURAL RESOURCE FINDINGS ☒ **Yes, See Page 4** ☐ **No, Discuss Why:**

22. Required Attachments (check all appropriate boxes):	**22. Other Attachments:**☒
☒ **USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn**	
☒ **Copy of NMCRIS Mapserver Map Check**	**23. Photographs and Log**☒
☒ **LA Site Forms - new sites (*with sketch map & topographic map)***	
☐ **LA Site Forms (update) - previously recorded & un-relocated sites (*first 2 pages minimum)***	**Other Attachments *(Describe)*:** HWDSIF Forms (2)
☒ **Historic Cultural Property Inventory Forms**	
☐ **List and Description of isolates, if applicable**	
☐ **List and Description of Collections, if applicable**	

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.
Principal Investigator/Responsible Archaeologist: Joanne Eakin

Title (if not PI): Joanne Eakin **Date:** January 16, 2009

25. Reviewing Agency:	**26. SHPO**
Reviewer's Name/Date	**Reviewer's Name/Date:**
Accepted ( ) Rejected ( )	**HPD Log #:**
	SHPO File Location:
Tribal Consultation (if applicable):	**Date sent to ARMS:**
☒ **Yes** ☐ **No**	

CULTURAL RESOURCE FINDINGS

[fill in appropriate section(s)]

1. NMCRIS Activity No.: 111906	2. Lead (Sponsoring) Agency: U.S. Army Corps of Engineers, Albuquerque District	3. Lead Agency Report No.: N/A

SURVEY RESULTS:

Sites discovered and registered: 1

Sites discovered and NOT registered: 0

Previously recorded sites revisited (site update form required): 0

Previously recorded sites not relocated (site update form required): 0

TOTAL SITES VISITED: 1

Total isolates recorded: 0 **Non-selective isolate recording?** 0

Total structures recorded (new and previously recorded, including acequias): 1

MANAGEMENT SUMMARY:

The section of the Acequia de la Posecion within the proposed project area has historically been modified to maintain a consistent supply of water. Technical upgrades to enhance the efficiency of the acequia were attempted in 1971 and 1972. The design and/or construction proved to be inadequate, and the use of the open acequia was restored. The acequia is recommended as eligible for nomination to the National Register of Historic Places (NRHP) under Criteria A, C, and D.

The Atkinson Cabin site (LA 161069) was newly recorded during this effort and is recommended as eligible for nomination for listing on the NRHP under Criterion D. The site has the research potential to contribute to the understanding of the rural lifestyle of the Truchas area during the late nineteenth and early twentieth century.

The Atkinson Cabin is outside the project area of potential effect and will be avoided by any ground-disturbing development. If the site cannot be avoided, mitigation options may be necessary.

SURVEY LA NUMBER LOG

Sites Discovered: 1: LA 161069, NRHP Eligibility Criterion D

Previously recorded revisited sites: N/A

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CHAPTER 1
INTRODUCTION AND PROJECT DESCRIPTION

The U.S. Army Corps of Engineers (USACE), Albuquerque District, at the request of the New Mexico Interstate Stream Commission and the Acequia de la Posecion Ditch Association, is planning for the rehabilitation of the Acequia de la Posecion. The USACE proposes to install a 24-inch pipeline within the existing primary ditch of the Acequia de la Posecion located east of Truchas, Rio Arriba County, New Mexico.

The Acequia de la Posecion is an open-unlined ditch that diverts water from the Rio de Truchas, a narrow, perennial stream that originates in the Sangre de Cristo Mountains east of Truchas. The primary section of acequia measures 3,256 m (10,681 feet) and traverses the high slope of the Rio de Truchas valley. The primary ditch transects private property, but the adjacent landowners do not have irrigation or domestic use rights to the water. The main ditch extends to the eastern edge of agricultural fields on the llano where it is diverted into two lateral ditches; the north lateral ditch measures 1,205 m (3,953 feet) and the south lateral measures 1,363 m (4,473 feet). The total length of the acequia system is 5,823 m (19,107 feet) (Figure 1.1, Figure 1.2, and Figure 1.3). According to ditch commissioner Joe Sandoval, there are 16 members of the Acequia de la Posecion Ditch Association and 169 acres (68 hectares) of irrigated land. The proposed project area involves the acequia easement, which transects private land.

During 1971 and 1972, the Acequia de la Posecion Ditch Association received funding to construct a steel pipeline to traverse a deep and narrow drainage, essentially diverting water from the bend of the acequia. The steel pipeline terminated at a siphon that carried the water into intersections of concrete culverts installed in the original channel of the acequia. The use of the pipeline was discontinued in stages beginning shortly after construction in 1971 and completely abandoned in the late 1990's (Frank: personal communication 2008).

The open-unlined primary ditch traverses steep terrain and porous soil that is susceptible to erosion and seepage, resulting in constant maintenance. The heavily forested area also contributes flora debris to the maintenance requirements. The Acequia de la Posecion Ditch Association is unable to maintain the ditch with the level of maintenance required. To provide a low maintenance system, the USACE, Albuquerque District, in cooperation with the Acequia de la Posecion Ditch Association proposes to: 1) replace 2,590 m (8496 feet) of existing primary earthen ditch with a buried 24-inch diameter polyvinylchloride (PVC) conduit, 2) install 825 linear feet of pipeline in an old right-of-way for a buried inverted siphon, and 3) install 23 reinforced concrete manholes and a sluice structure. All rehabilitation work would occur within the acequia's existing right-of-way. The anticipated activity area related to pipe installation is 5 m (15 feet) above and 8 m (25 feet) below the acequia. The proposed action would not change or affect water rights or the amount of water diverted. The proposed action would also abandon 666 m (2,185 feet) of existing primary ditch in favor of the inverted siphon. In addition, two 1-acre (0.4-hectare) staging areas have been identified near the acequia alignment and existing roads would be utilized as access to these staging areas. The survey area total is 19.2 acres (7.7 hectares), which includes 4 acres [1.6 hectares] each encompassing the staging areas, the defunct pipeline section through the drainage, and the primary ditch within the project. The proposed project would affect 56 percent of the Acequia de la Posecion.

Thomas F. Messerli (tmesserli@swca.com) of SWCA Environmental Consultants (SWCA) (5647 Jefferson Street NE, Albuquerque, NM 87109; [505] 254-1115) served as project manager and author of the report. Joanne Eakin (jeakin@swca.com) served as principal investigator and co-author. Ryan Trollinger and Rachel Cooper provided geographic information systems (GIS) support and report graphics. Justin Elza was the technical editor, and Sheri Waldbauer formatted and produced the report. Enid Messerli (enidm@email.arizona.edu) completed Spanish to English translation of portions of the acequia log book. Katherine Roxlau (Kathy.Roxlau@tetratech.com) was the technical representative for Tetra Tech. The fieldwork was completed under New Mexico State Permit Number NM-08-055-S.

SWCA conducted a cultural resources survey of the Acequia de la Posecion on October 1, 2, and 9, 2008, now listed as NMCRIS Activity No. 111906. The survey was conducted to assist the USACE in fulfilling federal responsibilities regarding cultural resources. The undertaking complies with the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended through 1992, and applicable regulations. This report is consistent with applicable federal and state standards for cultural resources management. All work conducted was in compliance with federal and state cultural resources laws and regulations, executive orders, and USACE regulations, including the NHPA of 1966 (Public Law [PL] 89-665 et seq.), the National Environmental Policy Act (NEPA) of 1969 (PL 90-190), the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (PL 101-601), and Executive Order 13007 (Indian Sacred Sites, May 24, 1996). The standards and methods used during the project adhered to the requirements of the New Mexico Administrative Code (NMAC), Title 4, Chapter 10, Part 15 (NMAC 4.10.15), Standards for Survey and Inventory.

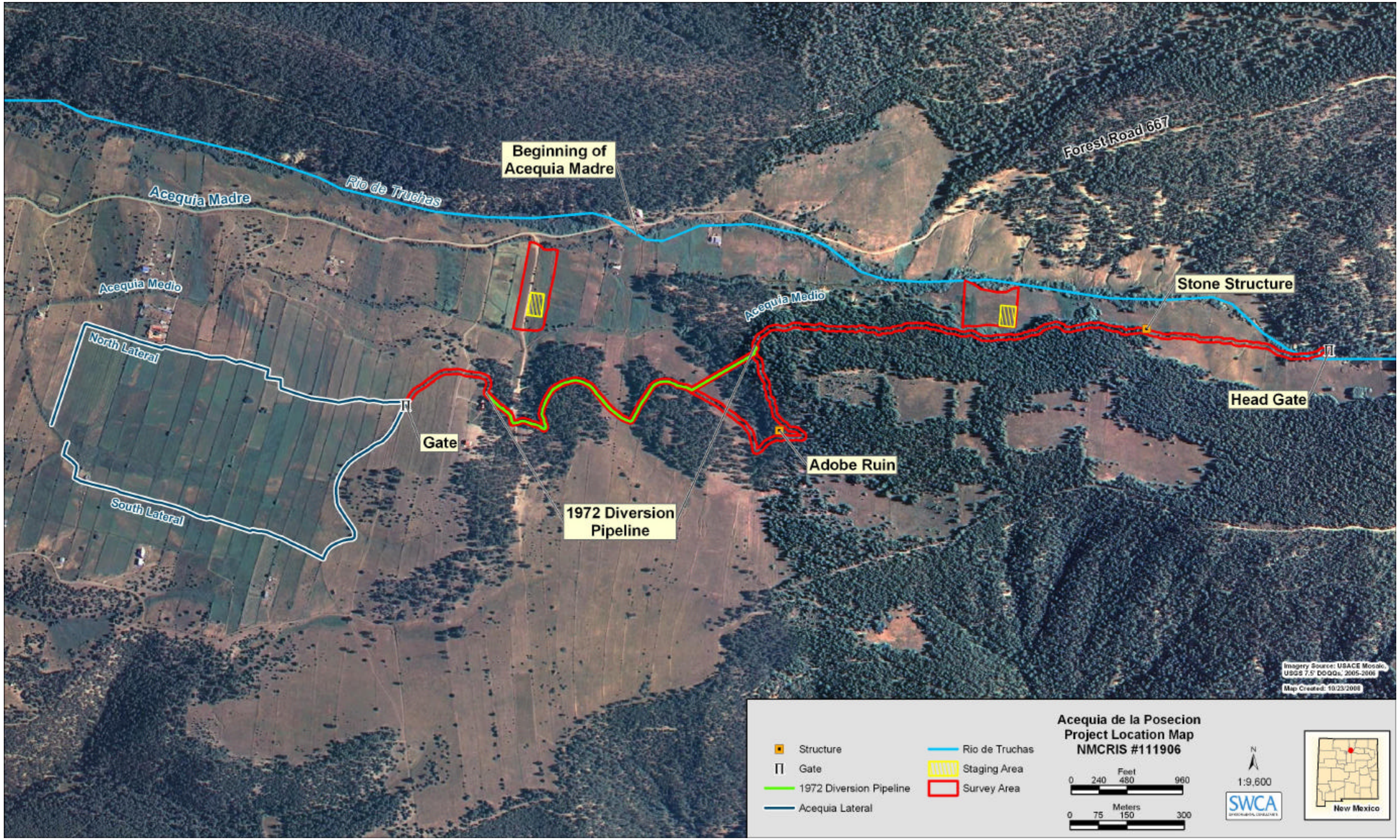

Figure 1.1. Map of the project area.

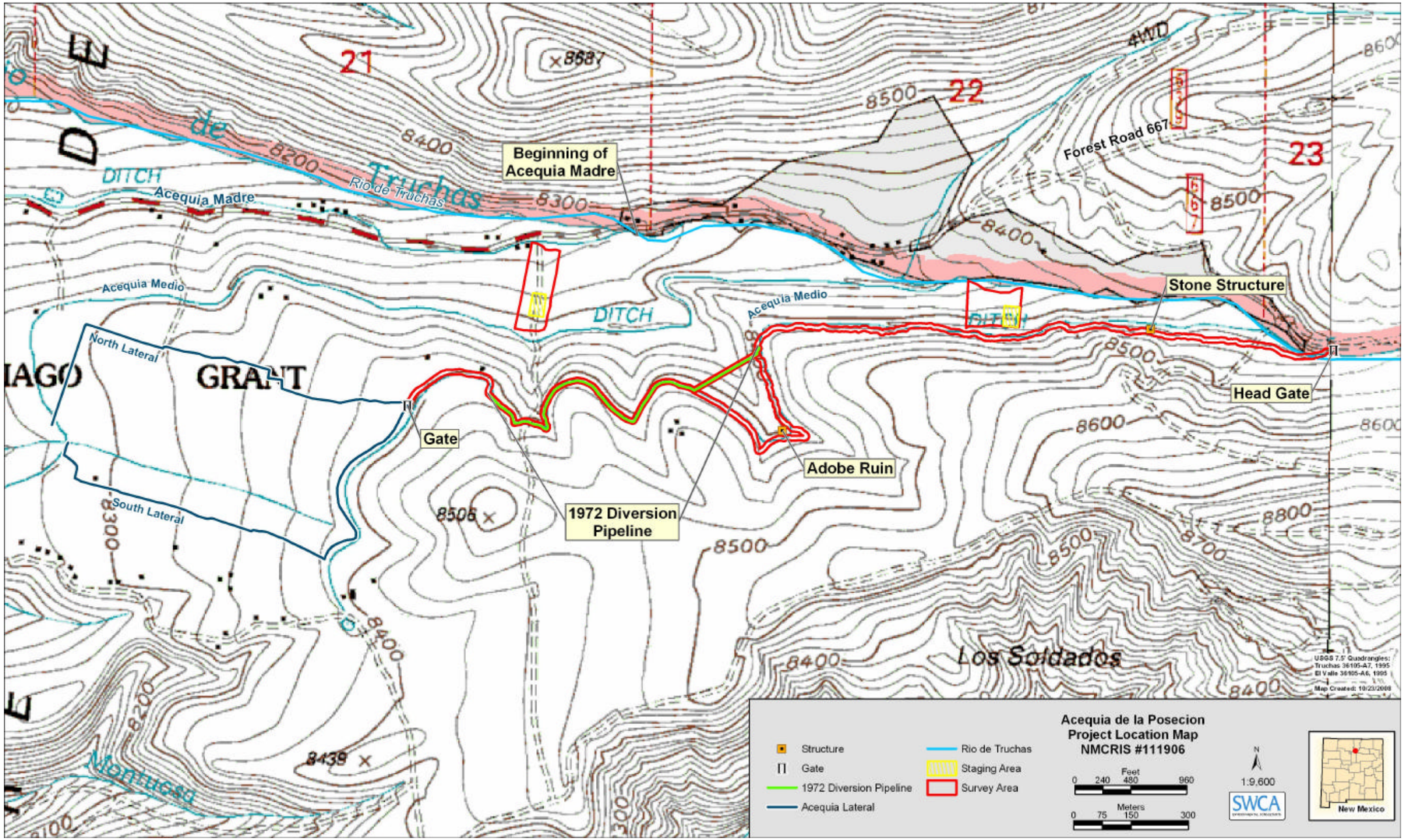

Figure 1.2. Proposed project area.

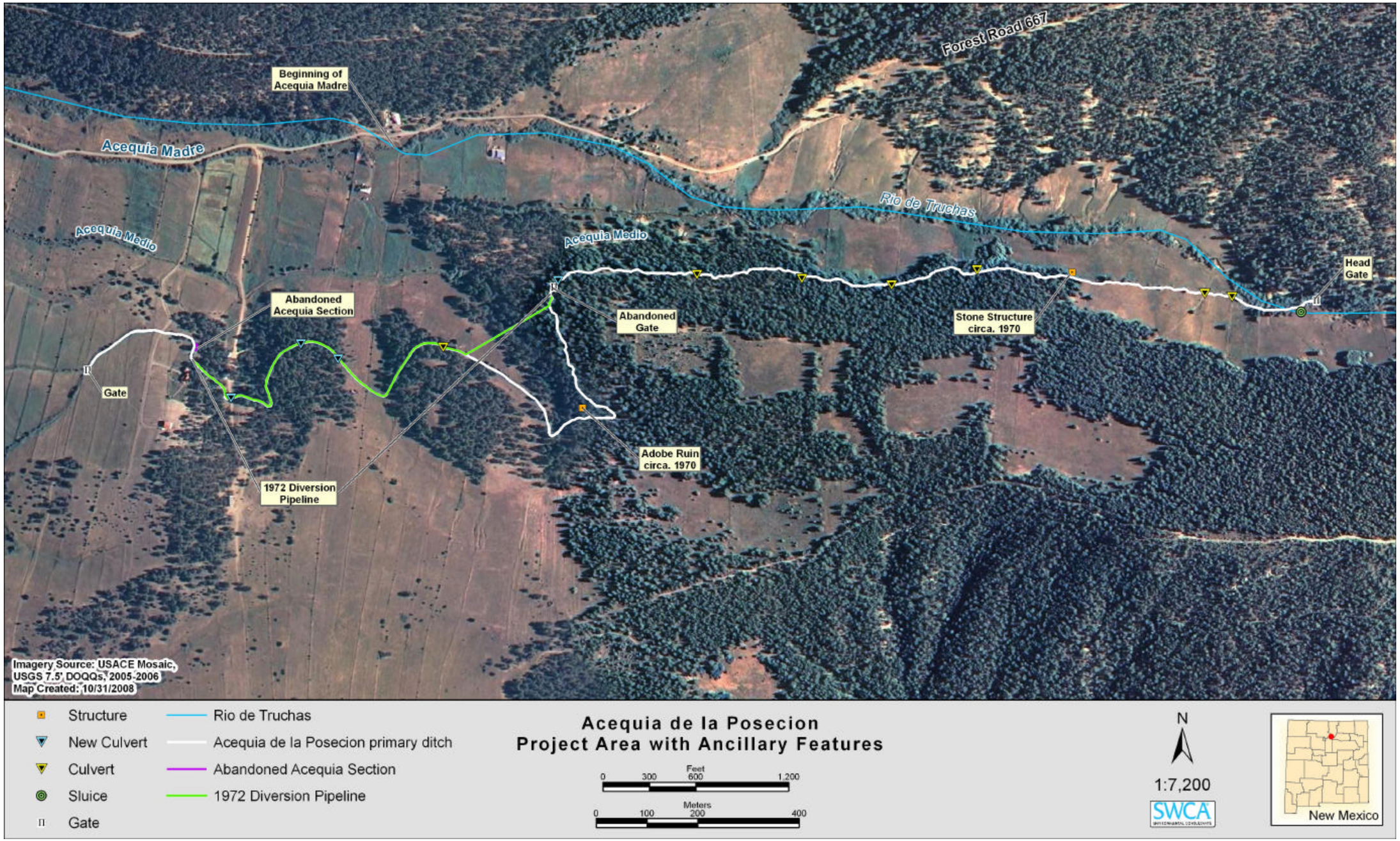

Figure 1.3. Project area with ancillary features.

CHAPTER 2
ENVIRONMENTAL AND CULTURAL SETTING

NATURAL ENVIRONMENT

GEOLOGY AND GEOMORPHOLOGY

The project area is in the valley drained primarily by the Rio de Truchas, a creek that flows from the Sangre de Cristo Mountains on the east to the Santa Clara Pueblo to the west. The Rio Grande valley is generally broad near Picuris Pueblo (Pueblo) and is bisected by numerous low ridges and ephemeral washes. The Sangre de Cristo Mountains, part of the Southern Rocky Mountain Physiographic Province, have cores of Precambrian rock with exposures of Mesozoic, Paleozoic, and Cenozoic materials (Williams 1986). The Picuris Range is an isolated spur of the Sangre de Cristo Mountains, defining the southeast portion of the Taos Plateau. Micaceous schist is a major component of this largely metamorphic range. The range's landform is a series of ridges and deep canyons radiating around Picuris Peak, whose elevation is 3,295 m (10,819 feet). The U-shaped valleys on the upper reaches of the Sangre de Cristo Mountains show evidence of past glaciations. The project area is situated along the piedmont overlooking the Rio de Truchas drainage.

The following soil associations are bisected by the acequia. Manzano clay loam is a deep, well-drained, nearly level to gently sloping soil formed in mixed alluvium. The permeability of this loam is moderately slow. The Jaroso-Angostura-Mascarena complex consists of moderately steep to steep soils. Jaroso, Angostura, and Mascarenas soils are formed in colluvium of imbedded shale and sandstone (Hacker and Carelton 1982).

CLIMATE

The average annual temperature for Truchas, New Mexico, is 61.1 degrees Fahrenheit (°F) (16.1 degrees Celsius [°C]), while the annual average minimum temperature is 31° F (-0.55°C). The highest maximum temperature is 80.7°F (27.05°C) for the month of July, and the lowest mean minimum temperature is 14.4°F (-9.77°C) for the month of January. As in much of New Mexico, a majority of the precipitation falls in the form of warm-season monsoon rains. Overall yearly precipitation for the village of Truchas is 33.8 cm (14.53 inches), with an average yearly snowfall of 111.5 cm (43.9 inches). The growing season of frost-free days is 90 to 110 days (Western Regional Climate Center 2008).

FLORA AND FAUNA

Engelmann's spruce (*Picea engelmannii*), Douglas fir (*Pseudotsuga menziesii*), one-seed juniper (*Juniper monsperma*), and ponderosa pine (*Pinus ponderosa*) grow densely in the project area. The most common grass species are blue grama (*Bouteloua gracilis*), three-awn (*Aristida* sp.), sand dropseed (*Sporobolus cryptandrus*), timothy-grass (*Phleum pratense*), cheatgrass (*Bromus secalínus*), and perennial ryegrass (*Lolium perenne*).

A number of vertebrate species may be found in the project area, including black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), coyote (*Canis latrans*), and several bird, reptile, and raptor species. Mule deer (*Odocoileus hemionus*) and various rodents could be expected in this habitat. Small mammals include mountain cottontail (*Sylvilagus nuttallii*), ground squirrel (*Spermophilus* sp.), Gunnison's prairie dog (*Cynomys gunnisoni*), and possibly pocket gopher (*Thomomys* sp.) and woodrat (*Neotoma* sp.). A number of species could be exploited for pelts or hides, including fox (*Vulpes* sp.), common raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), and striped skunk (*Mephitis mephitis*).

CULTURAL ENVIRONMENT

RESULTS OF RECORD CHECK

A remote records search of the New Mexico Historic Preservation Division's Archaeological Records Management Section (ARMS) database was performed on September 30, 2008, by Thomas F. Messerli of SWCA. No state/federal registered historic properties and/or districts are within 1 mile (1.6 km) of the project area. Six previous cultural resource investigations have been conducted within 1 mile (1.6 km) of the project area (Table 2.1). One archaeological site (LA 130785), remnants of a historic structure, was recorded within one mile of the project area (Table 2.2, Appendix B).

LA 130785 is a historic structure associated with the nineteenth to mid-twentieth century (New Mexico Territory to World War II) historic period and is located outside the area of potential effect (APE). No artifacts other than the log structure were observed. The log structure measured approximately 4 × 4 m (13 × 13 feet) and appears to have only three sides. The structure is possibly a cabin or a livestock pen (Westbury 2000). LA 130785 is not within the APE of this project and will not be impacted by the proposed construction.

Table 2.1. Cultural Resources Surveys within 1 Mile of the Project Area

NMCRIS No.	Agency	Survey Acreage	Date
22660	USFS Carson District	56	03/Jan/1983
25842	USFS Carson District	1	12/Jul/1989
33462	USFS Carson District	354	07/Aug/1990
34114	USFS Carson District	6.7	29/Oct/1990
71342	USFS Carson District	250	02/Aug/2000
81229	USFS Carson District	3	04/Jun/2001

Table 2.2. Archaeological Sites within 1 Mile of the Project Area

LA No.	Type	Occupation Type
130785	Structural	Historic

Portions of one volume of the mayordomo daily log dating from A.D. 1918 to 1987 were transcribed from Spanish into English for additional research. Transcriptions of Curtis Frank's 1971 interviews with community members were also used in the research of the history of the Acequia de la Posecion. Current interviews with two of the commissioners and two of the landowners who live adjacent to the project area were also conducted.

RESULTS OF 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, consultation with Native American Indian tribes was conducted to identify any tribal concerns regarding the proposed project. Based on the State of New Mexico Indian Affairs Department's 2008 Native American Consultations List, Native American Indian tribes that have indicated they have concerns in Rio Arriba County include the Jicarilla Apache Nation, Comanche Indian Tribe, Navajo Nation, Ohkay Owingeh, Hopi Tribal Council, Kiowa Tribe of Oklahoma, Pueblo of San Ildefonso, Pueblo of Pojoaque, Pueblo of Santa Clara, and Pueblo of Taos. Informal consultation (scoping) letters were mailed to these tribes on September 17, 2008. Responses were received from the Navajo Nation and the Hopi Tribe. To date, the USACE has received no indication of tribal concerns that would affect this project. No Traditional Cultural Properties (TCPs) are known to occur in the area. Copies of the tribal response letters are located in Appendix A.

PREHISTORIC CONTEXT

The cultural history of the Truchas area is a local expression of trends that occurred over a much larger geographic area. Human prehistory in the area begins with the highly mobile hunter-gatherers of the Paleoindian tradition, followed by the Archaic tradition in which hunter-gatherers adapted to changing environmental conditions. Human population in the region increased substantially, and toward the end of this time frame, some local groups began farming. The Ancestral Pueblo tradition, marked by the introduction of ceramics, also encompasses a time of great change involving intensified agriculture, population growth, and the formation of sedentary villages and more complex societies. For further discussion of regional prehistory see Adler and Dick (1999) and Stuart and Gauthier (1988).

The arrival of Spanish explorers, then colonists, marks the beginnings of recorded history in the area—a time of abrupt changes in the human landscape of northern New Mexico.

HISTORIC CONTEXT

After initial explorations, the Spanish established a permanent foothold in New Mexico in 1598, with a capital near San Juan Pueblo. In 1609–1610, the capital was shifted to the depopulated but well-watered upper Santa Fe River, where it remains today. As time passed, much of the area was parceled into grants, confirming Pueblo land use or opening lands to Spanish colonists (Post 2001:37–41).

The effort spent obtaining grants and then litigating their boundaries shows that upland areas were of some value for hunting, mining, and fuel-wood gathering, but most of all for grazing sheep. In the subsistence economy of the Spanish colonists, sheep provided wool for clothing, a

ready source of animal protein, and an insurance policy against crop failure. In addition, through the *partido* system, sheep became wealth for many leading New Mexico families (e.g., Simmons 1982:114–115). Under Spanish law, the uplands were held as common lands where residents could graze their sheep as part of a seasonal round—livestock were grazed in the uplands during the summer and brought down to the valley for the winter. Consistent with the low level of available technology, Spanish shepherds left few archaeological traces of their activity. Although stock rearing in New Mexico shifted largely from sheep to cattle in the 1900s, flocks of sheep were grazed in the hills east of Truchas into the twentieth century.

Coronado's earliest Spanish expedition into northern New Mexico may or may not have made it into the Truchas area. Other early expeditions eventually traveled through the Picuris region, the first of which may have gone up a valley adjacent to the Pueblo, missing it entirely. Today, the Pueblo's valley is referred to in local folklore as "the Hidden Valley." On January 13, 1591, Castano de Sosa made it through deep snow to Picuris Pueblo, whose inhabitants did not immediately emerge to greet him. The Pueblo was reported by Sosa to be the tallest on record. In 1621, Fray Martin de Arvide established the first mission church at Picuris, though the Picuries reportedly did not warm to the idea of converting to Christianity (Adler and Dick 1999). The name given to Picuris by the Spanish, San Lorenzo, was not accepted by the Picuries. The word Picuris may come from *pe'ewi*, the name the Picuris call themselves, meaning "the mountain people" in the native Tiwa language (Adler and Dick 1999).

Large areas of land in the Truchas area and across New Mexico were divided into land grants by the Spanish and Mexican governments during the eighteenth and nineteenth centuries. Governor Cachupín had begun establishing communities in remote areas as barriers to raids from Plains Indians, particularly Comanches, on more established towns such as Santa Fe (Baxter 1997). Many communities, including Las Trampas (1751), Truchas (1754), 3Hkasco, Vadito, and Rio Lucio, were established during this time. The Law of the Indies provided the basis for Spanish town planning through this period, requiring settlers to develop high, well-drained sites with access to timber, water, and grazing lands. Spanish plazas, acequia systems, and long lot fields began to take shape in many of northern New Mexico's well-watered valleys. The early plaza building form was an attempt to fortify in the event of an attack by indigenous groups. As populations grew and such threats diminished, many Spaniards began building residences outside plazas at the tops of their fields, often on the north sides of valleys in an effort to maximize solar gain during cold months (Wilson 2005). Ditch irrigation (acequia) systems have provided water for agriculture and drinking possibly back to the Puebloan Rio Grande Classic period or earlier in the Southwest and continue to be an important component of the local Hispanic lifestyle to this day. For further information on acequia systems and Hispanic settlement patterns in New Mexico, refer to Rivera (1998) and Weigle (1975).

In 1754, twelve families (members of Espinosa and Romero families) of Chimayo and Pueblo Quemado officially received a grant of land from Governor Tomas Velez Cachupín. The grant is known as the Nuestra Señora del Rosario, San Fernando y Santiago del Rió de las Truchas Grant (Baxter 2000). The community grant consisted of 14,786 acres (5,984 hectares) (Government Accounting Office 2001:25). By 1752, the group of Truchas had already created an acequia (presumed to be Acequia Madre; see Figure 1.1) and begun farming. According to Baxter (see Ackerly 1996:50–51) additional acequias were built in the Truchas area in 1755, 1760, 1776, 1836, and sometime between 1850 and 1860.

In 1782, Fray Diego Munoz Jurado completed a census of the communities in the Santa Cruz jurisdiction and Nuestra Senora del Rosario de Truchas had 49 inhabitants. By 1790, population increases caused lawsuits and demand for more irrigable land in the Santa Cruz drainage. A need for more acequias to water these lands was an issue (Baxter 2000).

On August 18, 1846, Doniphan's California Column entered Santa Fe, ushering in a new era in the region's history. With the subsequent defeat of the Mexican Army, New Mexico officially became a territory of the U.S. Water issues were to be heard by the Justice of the Peace not the villa alcalde. Documentation of legal records such as land sales and water compacts were recorded with the county officials. In 1905, justices of the Court of Private Land Claims approved the Truchas Land Grant (Baxter 2000). Irrigation or water rights adjudication continues in U.S. District Courts into the twenty-first century.

Disputes over water occurred from the inception of the acequia system. The success of the acequia was based, therefore, on the defined roles and cooperation of its members, the commissioners and the mayordomo. The 1900 bylaws of the Acequia de la Posecion, as written in the Acequia Log Book, also dictate the division of labor between mayordomo and members and also the cooperation of other acequia associations.

From the Acequia Log Book:

> Page 3 January 4 A.D. 1900
>
> We the body of *comicionados* of the *Acequia de la Posecion* elected in the first Monday of December A.D. 1900 by the Parciantes legal of the mentioned *Acequia* that is situated in the *Truchas* county of *Rio Arriba* and territory of New Mexico in virtue of the faculties that we free the law and in complement of our duties as such *comicionados* we have met in regular session for to give establishment and enact the next rules and regulations that will be observed in the management and government of the mentioned *acequia*, as known
>
> Sec 1 That the *mayordomo* of the *acequia de la Posecion* so prompt as is practicable will cause that while not being used to irrigate the labor(?) should keep the water for domestic uses of the families
>
> Sec 2 That the mentioned *mayordomo* when is convenient (he) plow what is dried up or reconstruct the mentioned *Acequia de la Posecion.*
>
> Sec 3 That all persons required by the *mayordomo* or by his order fails the job of the mentioned *acequia* will pay for each one time that (he) fails to the job the sum of $150c he that will be recovered by the *mayordomo* and in fault of such payment (he) will deprive (himself) of the rights of the water until that there will be payment according to the law
>
> Page 4
>
> Sec 4 That when the *mayordomo* of the *acequia de la Posecion* is incapacitated by illness or which is that other legal inconvenient can name a manager so that act as *mayordomo* while that the *mayordomo* does not exist for the reasons before mentioned understood that the manager *mayordomo* that will give his individual to the official deposit of the principal *mayordomo* with prior consent from the *Comicion*
>
> Sec 5 That the *mayordomo* and *tesorero* each one will implement a deposit in the sum of 50 *pesos* and that the money that they collect in place of the work will be invested in benefit of the mentioned *acequia* as will be agreed by the *comicionados* and the *mayordomo.*

> Sec 6 That the *mayordomo* of the *acequia de la Posecion* will have the duty of collecting the dues of the work of the *acequia Madre* or *de la sierra* and surrendering it to the *tesorero* of the mentioned *acequia Madre* or *de la sierra*, and that the mentioned *mayordomo* of the *Acequia de la Posecion* will have that to meet with the *mayordomo* of the *acequia Madre* and determine between both the day in that they should warn to his people for to construct the mentioned *acequia Madre* or *de la sierra*
>
> Sec 7 That if the *mayordomo* cannot rule in the distribution of the water to proportion of the irrigation honestly of the *acequias* then the *comicionados* will take part in the ruling the difficulty.
>
> Sec 8 That so many member before rules will not be amended or modified the same will have effect.

The proposed project is located east of the community of Truchas in the Rio de Truchas drainage. There are three distinct acequia systems fed by the Rio de Truchas: the *Acequia Madre* (also known as *Acequia de la Sierra*), the *Acequia Medio*, and the *Acequia de la Posécion*. The Acequia de la Posécion begins 1,900 m (6,234 feet) upstream on the Rio de Truchas from the Acequia Madre. Portions of the in situ Rio de Truchas have had anthropogenic manipulation since 1752 (Ackerly 1996:50–51) and have taken on some characteristics of an acequia rather than a natural drainage.

The crops grown within the proposed project area have changed, as has the land use. Prior to the second half of the twentieth century, farmers depended on crops for subsistence. Commonly raised plants included corn, beans, and potatoes (Joe Sandoval, personal communication, September 2008). Wheat was an important crop to the Spanish colonists and remained a preferred crop among the Spanish colonizers in the Santa Cruz drainage (Baxter 1997). Wheat was important as well to the twentieth century farmers of the Truchas community. Myrtle Walmsley (1981:46) wrote in her memoir about her first harvest season in Truchas (ca. 1936). She described the wheat being cut with hand scythes, then hauled to a central location. The wheat was threshed by goats walking over the pile, scooped up and poured to a clean cloth as the chaff blew away in the slight breeze. The grain was washed and sun-dried, and taken to a grist mill that was located on the stream behind the (Presbyterian) mission.

Most land is now used for grazing and hay production rather than row crops. Corn and potatoes are now raised as a hobby rather than a necessary staple to survive. No wheat fields were observed in the farming community adjacent to Truchas. One small stand of dry-land field corn was observed. During this investigation, a small herd of yaks was observed, as well as bison, horses, goats, and cattle in the general area of the project.

After World War II, men from Truchas began working outside the community on a more regular basis. Men who had taken work (much of which were seasonal tasks) outside the community as loggers, sheepherders, railroad workers, and miners began taking jobs in Los Alamos. The subsistence economy was replaced by outside steady income for many.

CHAPTER 3
FIELD METHODS

Thomas F. Messerli and Joanne Eakin of SWCA surveyed 100 percent of the project area in 5-m (15-foot) pedestrian transects along the acequia and 15 m (49 foot) transects at the staging areas on October 1 and 2, 2008. The purpose of the survey was to document (1) the Acequia de la Posecion; (2) ancillary features associated with the acequia and any archaeological remains of an apparent or likely age of 50 years or more within the survey area; (3) any standing buildings or structures of an apparent or likely age of 50 years or more within or adjacent to the survey area; and (4) buildings and structures that would qualify as historic within five years. The acequia was measured for average width and depth of associated berm as well as depth of ditch and flood pool. Sections of the 1972 diversion pipe were measured for length and diameter of concrete culvert and the steel pipe used in the construction.

Daily field notes were completed. All global positioning system (GPS) coordinates/locations of features associated with Acequia de la Posecion and the LA 161069 were documented using a Garmin 60Cx with <4-m (13-foot) accuracy. Photographs were taken of all features with a Lumix DMC-FZ18 camera with 8 megapixel resolution of the proposed project location. Field conditions were excellent, with clear weather. Ground visibility averaged an estimated 65 percent throughout the area.

CHAPTER 4
RESULTS OF SURVEY

LOCATION OF CULTURAL PROPERTIES

The public disclosure of the location of archaeological sites on state and private lands is prohibited by Section 18-6-11.1 New Mexico Statutes Annotated (NMSA) 1978. Public disclosure of archaeological site locations is federally prohibited by 16 United States Code 470hh (36 Code of Federal Regulations [CFR] 296.18). Confidential site location information is provided in Appendix B. Appendix B should be removed prior to public disclosure of this report.

Staging areas: A 4-acre (1.6-hectare) total area was surveyed for each of the proposed 1-acre (0.4-hectare) staging areas. No cultural resources were identified within the survey areas associated with the two staging areas. The ground visibility of Staging Area 1 (Figure 4.1) was 50 percent and Staging Area 2 (Figure 4.2) was 60 percent.

Figure 4.1. Staging Area 1, view to the north.

Figure 4.2. Staging Area 2, view to the south.

Acequia survey: One water delivery system, Acequia de la Posecion, was recorded during this investigation. Also, one archaeological site, LA 161069, a mid-nineteenth to late-nineteenth century log ruin located outside the APE, was documented. The ground visibility of the acequia corridor averaged 60 percent.

There are three acequia systems located within the Rio de Truchas drainage. Each acequia is diverted from the Rio de Truchas, a meager perennial stream that originates in the Sangre de Cristo Mountains east of Truchas. The three acequias include the Acequia Madre (A.D. 1752) (Baxter 1997:11; Baxter 2000:72–73), the Acequia de la Posecion (ca. 1754 or post A.D. 1860 [Ackerly 1996: 50; First Judicial District Court: Preliminary Injunction 1971:1; Curtis Frank, personal communication 2008; Coco Atkinson, personal communication 2008; Joe Sandoval, personal communication 2008]), and the Acequia Medio (date unknown). Each of these acequias irrigates a distinct area. The Acequia de la Posecion currently irrigates 169 acres (68 hectares) and has 16 parcientes/water users.

The discrepancies in the exact date of original use of the Acequia de la Posecion are somewhat problematic. The acequia commissioner, Curtis Frank, thought the construction date was 1870, and Joe Sandoval thought it was sometime in the 1800s. Mr. and Mrs. Atkinson claimed their warranty deed stated the acequia had been in existence since 1840. Ackerly (1996:50–51) based on Baxter's (1997, 2000) information states the acequia was constructed either in 1754 or post-1860.

ACEQUIA DE LA POSECION

The Acequia de la Posecion is an open-unlined ditch that diverts water from the Rio de Truchas, a narrow, perennial stream that originates in the Sangre de Cristo Mountains east of Truchas. The acequia is diverted from the Rio de Truchas, a narrow, meandering perennial stream at an elevation of 2,574 m (8,445 feet) above mean sea level. The primary section of acequia measures 3,256 m (10,681 feet) and traverses the high slope of the Rio de Truchas valley. The primary ditch transects private property, but the adjacent landowners do not have irrigation or domestic use rights to the water. The main ditch extends to the eastern edge of agricultural fields on the llano where it is diverted into two lateral ditches; the north lateral ditch measures 1,205 m (3,953 feet) and the south lateral measures 1,363 m (4,473 feet). The total length of the acequia is 5,823 m (19,107 feet) (Figure 1.1, Figure 1.2, and Figure 1.3). According to ditch commissioner Joe Sandoval, there are 16 members of the Acequia de la Posecion Ditch Association and 169 acres (68 hectares) of irrigated land. The proposed project area involves the acequia easement, which transects private land.

The ditch channel averages 60 cm (24 inches), and the flood pool is 35 cm (14 inches) deep (Figure 4.3). The earthen berm averages 1.2 m (3.9 feet) wide and cascades downslope up to 2 m (6.6 feet). The ditch varies by width and depth based on the soil it truncates. The cubic feet per second (cfs) flow is unknown, but by appearances the ditch discharge is adequate for no more than the prescribed acreage.

Figure 4.3. Section of the acequia through the timber looking upstream, view to east.

During 1971 and 1972, the Acequia de la Posecion Ditch Association received funding to construct a steel pipeline to traverse a deep and narrow drainage, essentially diverting water from the bend of the acequia. The steel pipeline terminated at a siphon that carried the water into intersections of concrete culverts installed in the original channel of the acequia. The use of the pipeline was discontinued in stages beginning shortly after construction in 1971 and completely abandoned in the late 1990's (Frank: personal communication 2008).

During the investigation and documentation of the Acequia de la Posecion, all ancillary feature locations were noted using a GPS receiver (see table in Appendix B). The acequia appears to be in the original channel (see Figure 1.3) as originally created. There are eleven corrugated steel culverts, one sluice, and three gates (Figure 4.4–Figure 4.6). The head gate was replaced in 1984 with a ¼-inch steel plate model. Seven of the corrugated steel culverts and the sluice and the gate diverting water to the two lateral ditches were installed in the early 1970s, according to Acequia Commissioner Joe Sandoval (personal communication 2008). The abandoned gate was constructed and abandoned in the early 1970s as part of the failed diversion pipeline. Four additional culverts have been installed since the very late twentieth or early twenty-first century because of new home construction.

Figure 4.4. Head gate for Acequia de la Posecion on Rio de Truchas.

Figure 4.5. Sluice, view to north.

Figure 4.6. Predominant type of culvert, view from upstream.

During 1971 and 1972, the Acequia de la Posecion Ditch Association requested and received funding from the Agriculture Stabilization and Conservation Service, the New Mexico Interstate Stream Commission, and the Acequia de la Posecion Ditch Association. The funding was used for construction of an approximately 251 m (825 foot) steel pipeline to traverse a deep and

narrow drainage, essentially diverting water from the bend of the acequia near the adobe ruin. The steel pipeline terminated at a siphon that would carry the water into intersections of concrete culverts installed in the original channel of the acequia (see Figure 1.1). The steel pipe measures ¼ inch thick and 45 cm (18 inches) in diameter. The steel pipe flowed into interlocking concrete pipe measuring 1.8 m (6 feet) long and 53 cm (21 inches) in diameter, with a 36 cm (14 inch) interior. The siphon from the defunct pipeline project is also found in the area (Figure 4.7). The pipeline was abandoned because of design flaws and inadequate construction, and according to Curtis Frank, it was abandoned in stages as problems arose. Sections were abandoned beginning around 1972, and the pipeline was completely abandoned in the late 1990s. The remnants of this system are currently being disassembled by the Acequia de la Posecion Ditch Association. The steel pipe will be used elsewhere on the acequia system (Figure 4.8). The abandoned route is currently within the proposed project area.

Figure 4.7. Siphon from abandoned 1972 pipeline project.

Figure 4.8. Disarticulated steel pipeline from 1971–1972 project, view to the west.

Two contemporary (ca. 1960–1970s) structural ruins were built inside the acequia easement but do not have any direct association with the acequia. The acequia easement is 8 m (25 feet) downslope and 5 m (15 feet) upslope of the ditch.

The first contemporary structure, built with adobe block, is located within a bend of the acequia (see Figure 1.1). Mr. Sandoval claimed he witnessed a "hippie" building this adobe home next to the acequia in the late 1960s or early 1970s (Figure 4.9). He did not mention when it was abandoned, and the adobe ruins remain visible. The roof either collapsed or was removed and used elsewhere, and the adobe is melting. The adobe structure does not meet the age criterion requirement as a historic structure.

Construction of another structure had begun further upstream where the acequia begins to traverse through the timber (Figure 4.10). The stone and masonry structure abutted the acequia berm. The Acequia de la Posecion Ditch Association expressed concern in a formal letter to the builder about the structural integrity of the berm and the construction was halted (Joe Sandoval, personal communication 2008). The stone masonry ruin does not meet the age criterion requirement as a historic structure.

Figure 4.9. "Hippie-built" adobe structure circa 1968–1971; the acequia is to the left, view to the south.

Figure 4.10. Stone structure abandoned during construction.

COMMUNITY INTERVIEWS

Chris and Coco Atkinson bought their property in 1989 and settled into the community in 1993. Prior to their move to Truchas, Mr. Atkinson had spent his later professional life in Liberia, Africa, working for an insurance company. The Acequia de la Posecion flows through the upper ridge of the Atkinsons' land. They thought the acequia was built in 1840, according to their warranty deed. The Atkinsons said they had met a man who had spent his summers with an uncle tending sheep and living in the log cabin ruin (LA 161069). Though the cabin is only 12 m (39 feet) from the Acequia de la Posecion, they did not know if the cabin and the ditch were contemporaneous. They are not members of the Acequia de la Posecion Community Ditch Association, and therefore only have livestock watering rights. During 1989, the Acequia commissioners realigned a 9-m (30-foot) section of the ditch while the Atkinsons were in Africa; they still voice their concern. According to the Atkinsons, the Acequia de la Posecion Ditch Association has a 5.5-m (18-foot) easement corridor, but some of the realignment ventured outside that easement. The Atkinsons have another ditch, the Acequia Medio, flowing through their property and have irrigation rights to that acequia.

Curtis Frank was at Colorado State University when he bought his parcel of land in 1961. Back then, irrigated land was selling for about fifty dollars an acre. He has been commissioner of Acequia de la Posecion Ditch Association since 1990. He stated that he has been encouraging efforts to place a pipe in the ditch for five years because of maintenance issues. He currently operates a bed and breakfast establishment from his home north of the ditch.

During the 1970s Mr. Frank was a professor of sociology at Colorado State University. He received a grant to interview residents of Truchas and document the village and acequia system.

Joe Sandoval was born in Truchas and has served as a ditch member, a mayordomo, or commissioner of the acequia for over fifty years. His father was the mayordomo before him. The Acequia de la Posecion does not have a mayordomo at this time.

Mr. Sandoval said that prior to World War II, most landowners were subsistence growers of corn, potatoes, and beans. After the war and with the lure of prosperity in a modern outside world, the people began to sell their land and move from the community. This exodus of farmers changed the use of the land to irrigated pasture and alfalfa and hay production. As a teenager in the early 1950s, Mr. Sandoval went to work in the mines of Colorado and saved his money and bought a new 1951 Ford. Returning to Truchas, his mother responded to the new car by telling him "they make cars every day but they don't make land. If you are going to spend your money, buy land." Mr. Sandoval heeded his mother's advice over the years. When neighbors wanted to sell, they offered it to him. Mr. Sandoval, whether working in the mines near Grants, New Mexico, or at the laboratory in Los Alamos, kept his roots in the Truchas community and he remains the largest property holder of the Acequia de la Posecion Ditch Association. Retired from Los Alamos, he moved back to Truchas and still relishes the ability to grow hay and raise a few head of cattle.

Mr. Sandoval stated that most of the "farmers" in the area are retired from other occupations, and that farming is now mainly a hobby. Mr. Sandoval says there currently are 169 acres (68 hectares) under irrigation and 16 members of the Acequia de la Posecion Ditch Association.

According to the Daily Log book of 1923, 14 members appeared for the annual cleaning and six paid their dues because they did not attend the cleaning (Daily Log book: page 2). The 1989 bylaws archived at the Office of the State Engineer documents 166.6 acres (67.4 hectares) of irrigable land associated with Acequia de la Posecion.

According to Mr. Sandoval, before he became mayordomo, the acequia delivery schedule was haphazard at best. The schedule was revised, and now the water of Acequia de la Posecion is delivered in a rotation system by elevation. The parcel at the lowest elevation gets the first water. The amount of water is based on the size of the plot. A small plot of land would be irrigated for one half day while a larger parcel may get a full day of watering. Because of the high elevation and only 90 to 110 frost-free days, water delivery usually does not happen until June with fields irrigated through October to saturate the land prior to the next growing season.

Mr. Sandoval's nephew, Peter Sandoval, is the third of the Acequia de la Posecion Ditch Association commissioners. Peter, in his early fifties, is the youngest on the commission. He, like so many others, was unavailable for interview, just as many in the area are unavailable to participate in the general maintenance of the acequia. The younger generations who work elsewhere are unable or unwilling to maintain the system. Joe Sandoval currently walks and maintains the ditch every one or two weeks during irrigation season, but anticipates a time when he will be unable to monitor the ditch.

NRHP RECOMMENDATION

The Acequia de la Posecion is a historic ditch constructed circa A.D. 1754 or post-1860. SWCA recommends that the Acequia de la Posecion is eligible for nomination to the National Register of Historic Places (NRHP) under Criteria A, C, and D, of 36 CFR 60.4 for its association with the development of irrigation and agriculture in the Truchas area uplands, as well as the associated settlement of Truchas; for its engineering design characteristics; and for its potential to yield additional information on acequia construction and function. The Acequia de la Posecion currently retains its integrity of design, location, setting, workmanship, materials, feeling, and association.

The proposed rehabilitation project will not change the historic irrigation function or alignment. The visual quality (form) has been previously modified by years of operation and maintenance activities. The proposed project will change the form of the acequia. The proposed project will have no effect on the integrity of setting, location, or association. The integrity of setting and location will not be affected because the proposed undertaking will be in situ of the acequia. The proposed undertaking will not affect the integrity of association because the project extends the use and improves the efficiency of the acequia for the community.

SWCA recommends the proposed rehabilitation pipeline undertaking will adversely affect the integrity of workmanship, design, feeling, and material of the Acequia de la Posecion. The proposed pipeline will replace materials and improve the design to maximize the efficiency of the water delivery system. By doing so, the proposed project will affect the workmanship of the ditch by displacing soil from the berm and installing a pipe in the unlined ditch.

TREATMENT OF PROPERTY

SWCA recommends the conversion of the primary ditch of Acequia de la Posecion from an earthen ditch to underground PVC pipeline would be an adverse effect to this historic property. Approximately 3,256 m (10,681 feet) would be affected by this undertaking, 2,590 m (8,496 feet) by installing pipeline in the ditch and 666 m (2,185 feet) by abandonment. Another 2,568 m (8,426 feet) of acequia system is outside the area of potential effect. Thus 56 percent of this historic property would be adversely affected.

To mitigate this adverse effect, extensive information on the acequia and its history is being collected. These non-destructive efforts could serve to mitigate the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking. These mitigation efforts include recording the acequia and its associated features on a New Mexico Historic Water Delivery System Inventory form; photo-documenting the acequia on archival paper; conducting oral history interviews with Acequia de la Posecion Ditch Association members and adjacent landowners; scanning and translating the acequia association's log book, which dates from A.D.1918–1987; and dubbing and transcribing 17 hours of interviews conducted previously by the association. The Corps will consult with the SHPO to resolve the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking.

NEWLY RECORDED SITE

LA Number: 161069
Site Name: Atkinson Cabin
UTM Location: NAD 27; Zone 13
USGS Quadrangle: Truchas, NM
Elevation (AMSL): 2,560 m (8,400 feet)
Land Ownership: Private
Site Type: Log cabin ruin
Cultural Affiliation and Age: Historic U.S. Territorial to WWII: A.D. 1846–1945
Site Size: 21 × 29 m (609 m^2 [6,555 square feet])

The Atkinson Cabin (Figure 4.11) ruin is probably a late-nineteenth century construction with some early-twentieth century improvements. The cabin is situated 13 m (39 feet) south of the Acequia de la Posecion and outside the APE. The exterior measurements are 5.01 × 5.3 m (16.4 × 17.4 feet), and the interior measurements are 4.9 × 4.2 m (16.0 ×13.8 feet). The door threshold measures 1.1 m (3.6 feet) wide and is in the center of the east wall, and a milled lumber framed window portal measuring 55 × 55 cm (22 × 22 inches) is located in the central portion of the west wall. The logs used in the construction of the cabin measure 15 to 20 cm (6–8 inches) in diameter and up to 5.3 m (17.4 feet) in length.

The wire nails and milled dimensional lumber in the door threshold and window sash appear to indicate later-date improvements. A cast-iron panel from a wood-burning stove was unearthed by the landowner 5 m (16 feet) west of the cabin (Figure 4.12). Remnants of adobe chinking remain in situ. Adobe melt that was chinking has pooled along the interior walls of the cabin. Logs were saw and axe cut. One log exhibits hewn sides and may have been salvaged from another structure during the intial construction or was used as a replacement log. The current owners attest to the story that the cabin was used during the mid-twentieth century by shepherds who were summer pasturing their sheep on the land grant.

NRHP Recommendation: The structural integrity of the feature has been diminshed since its abandonment. No extraneous cultural debris is associated with the structure. It appears that the roofing material was intentionally removed from the site boundary. Only one artifact, a cast-iron stove part, was observed. The soil deposition observed at the site and within the feature ruin is such that there is a potential for buried cultural deposits. The site is similar to other log structure ruins in the Rio de Truchas drainage observed during this project. The site is recommended as eligible for nomination for listing on the NRHP under Criterion D. The site has the research potential to contribute to the understanding of the rural lifestyle of the Truchas area during the late-nineteenth and early-twentieth century.

Site Treatment: The Atkinson Cabin, is outside the APE and would be avoided by any ground-disturbing activity and will not be affected. If the site cannot be avoided, mitigation measures may be necessary.

Figure 4.11. Atkinson Cabin, acequia in background; view to the north.

Figure 4.12. Cast-iron stove part located 5 m west of the cabin.

RURAL HISTORIC LANDSCAPE

There are three acequia systems located within the Rio de Truchas drainage. Each acequia is diverted from the Rio de Truchas, a meandering perennial stream that originates in the Sangre de Cristo Mountains east of Truchas. The three acequias include the Acequia Madre (A.D. 1752), the Acequia de la Posecion (ca. A.D. 1754 or post-1860), and the Acequia Medio (date unknown). Each of these acequias irrigates areas with distinct habitation sites associated with each acequia. The Acequia de la Posecion currently irrigates 169 acres (68 hectares). This acequia system may represent a segment of the history from Spanish colonization of the Upper Rio Grande valley to the expansion and growth of New Mexico territory.

The historic landscape of Truchas may qualify for listing with the NRHP, with the Acequia de la Posecion serving as a contributing resource for the historic landscape. The Truchas/Acequia de la Posecion landscape illustrates the adaptation of Spanish farmers to the natural environment over the past three and a half centuries. The acequias (de la Posecion and los Medios) wind through the Rio de Truchas valley amidst terraced agricultural fields that once grew corn, beans, and wheat. However, with respect to NRHP criteria, historic integrity, a measure of a property's evolution and current condition, must also be considered. Recent changes that have erased historic characteristics and do not have exceptional importance may make a property ineligible, even if scenic qualities are still present. In the case of the Truchas/Acequia de la Posecion landscape, changes in land utilization are pronounced. While the fields remain, with terraces and property lines intact, agriculture for sustaining the community has given way to farming as a hobby, and most landowners grow hay rather than food crops. These changes in land use and agriculture began in the community after World War II.

Nevertheless, the qualities of the landscape of the project area and the nearby village of Truchas appear to satisfy NRHP Criterion C. Criterion C applies to properties embodying the distinctive characteristics of a type, period, or method of construction; possessing high artistic values; or representing a significant and distinguishable entity whose components may lack individual distinction. The organization of space, visible in the arrangement of fields or siting of farmsteads, may illustrate a pattern of land use significant for its representation of traditional practices unique to a community. Similarly, an irrigation or transportation system may reflect an important innovation in engineering that fostered a community's prosperity (McClelland et al. 1999:14).

Based on this information, it is unclear if the Truchas/Acequia de la Posecion area is eligible to be designated as a Rural Historic Landscape. The land use within the project area has changed. Residents are no longer dependent upon farming for sustenance. Livestock and beasts of burden essential in a subsistence environment have been replaced with recreational and novelty animals such as yaks, trail or pleasure horses, and bison. The proposed project will allow the acequia to continue functioning, thereby preserving the historic landscape. This would likely not adversely affect a potential Rural Historic Landscape designation. Additional historic research and pedestrian access to the landscape community would be necessary to develop historic context, select boundaries, assess historic integrity, and define the significance of the area. The proposed acequia rehabilitation project would have no effect upon the potential eligibility of the local area as a rural historic landscape.

TRADITIONAL CULTURAL PROPERTY

Consideration of the village of Truchas and surrounding agricultural landscape and water system for its cultural significance may qualify it as a TCP. "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. An example of such significance as it may apply to Truchas and the surrounding agricultural area, including the acequias, is "a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents" (McClelland et al. 1999:14). A property can be eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (1) are rooted in that community's history and (2) are important in maintaining the continuing cultural identity of the community (McClelland et al. 1999:1).

In the case of a TCP, there are two fundamental questions to ask about integrity: does the property have an integral relationship to traditional cultural practices or beliefs, and is the condition of the property such that the relevant relationships survive? Certainly the physical property survives in good condition. The village of Truchas and the agricultural community were tied to the landscape and the acequia system and its organization. However, changes in land use, agricultural practices, and economics associated with working outside of the community arose during and after World War II. Accompanying the economic change was a decrease in opportunity and motivation within the community to maintain the landscape and water system for sustenance. In evaluating the criteria for designating the system as a TCP, further research, primarily through interviews in the community, would serve to ascertain whether relationship with the acequia, maintenance activities, and overall way of life is still a part of the traditional value system of the contemporary community that now inhabits the historic landscape.

Based on this definition, additional interviews with spiritual and community leaders, farmers, and water users may be necessary to determine whether the acequia system and associated practices are part of the value system of the community. The proposed undertaking will allow the farming and community practices to continue and not effect potential TCP designation.

CHAPTER 5
SUMMARY AND RECOMMENDATIONS

EVALUATION AND STATEMENT OF SIGNIFICANCE

The current investigation recorded the Acequia de la Posecion alignment and examined two proposed staging areas. One historic water delivery system was documented and one historic site, LA 161069, was recorded. This investigation also addressed whether the proposed project area is potentially eligible as a Rural Historic Landscape or a Traditional Cultural Property.

The Acequia de la Posecion is an open-unlined ditch that diverts water from the Rio de Truchas. It is located in Nuestra Señora del Rosario, San Fernando y Santiago del Rio de las Truchas Grant, east of the village of Truchas, Rio Arriba County, New Mexico. The acequia distributes water to 16 irrigators and 169 acres (68 hectares). The Acequia de la Posecion is a historic ditch constructed circa A.D. 1754 or post-1860.

SWCA recommends that the Acequia de la Posecion is eligible for nomination to the NRHP under Criteria A, C, and D, of 36 CFR 60.4 for its association with the development of irrigation and agriculture in the Truchas area uplands, as well as the associated settlement of Truchas, for its engineering design characteristics, and for its potential to yield additional information on acequia construction and function.

LA 161069 consists of a log cabin ruin built during the mid- to late-nineteenth century period and a cast iron stove part. SWCA recommends LA 161069 as eligible for nomination for listing on the NRHP under Criterion D. The site has the research potential to contribute to the understanding of the rural lifestyle of the Truchas area during the late-nineteenth and early-twentieth centuries. Site LA 161069 is outside the APE and would be avoided by any ground-disturbing activity and thus there would be no effect.

The Truchas area community may qualify as a Rural Historic Landscape, with the Acequia de la Posecion serving as a contributing resource. The qualities of the landscape of the project area and the nearby village of Truchas appear to satisfy NRHP Criterion C; however, SWCA recommends that additional historic research and pedestrian access of the landscape community would be necessary to develop historic context, select boundaries, assess historic integrity, and define significance of the area. The proposed acequia rehabilitation project would have no effect upon the potential eligibility of the local area as a rural historic landscape.

Consideration of the village of Truchas and surrounding agricultural landscape and acequia system for its cultural significance may qualify it as a TCP. SWCA recommends that further research, primarily through interviews in the community, would serve to ascertain whether relationship with the acequia, maintenance activities, and overall way of life are still part of the traditional value system of the contemporary community that now inhabits the historic landscape. The proposed undertaking will allow the farming and community practices to continue and not effect potential TCP designation.

EFFECT DETERMINATION

Under 36 CFR 800.5, Assessment of Adverse Effects, examples are provided in subsection (2) and include seven examples of adverse effects to historic properties. The proposed project has the potential to affect Acequia de la Posecion. LA 161069 is outside the APE and would not be affected by the undertaking

The criteria of adverse effect pursuant to the seven types of adverse effects

(i) Physical destruction of or damage to all or part of the property.

The proposed pipeline installation would be confined to 3,256 m (10,681 feet) of the acequia and would alter the property from an open-unlined ditch to a buried pipe; therefore, the existing ditch would not be destroyed by this undertaking. All water control features, such as gates, culverts, an abandoned siphon, and a sluice, are less than fifty years old. All have been documented as constructed or installed from circa 1970 to present. The staging areas are located along existing roads, and the undertaking would not destroy or damage these roads.

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material, remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.

The proposed rehabilitation project would affect a historical element, the "open-unlined earthen ditch" design of the Acequia de la Posecion. The proposed undertaking would not affect other historic elements, such as function or setting. The proposed project would involve 56 percent of the acequia system.

(*iii) Removal of the property from its historical location.*

This statement does not apply to this project

(iv) Change of the character of the property's use or of physical features within the property's setting which contribute to its historic significance.

The proposed project would alter the open ditch form for 3,256 m (10,681 feet) of the acequia to buried pipe; however, piping would allow this segment of the acequia to remain in its historic location while preserving its function.

(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic feature.

This category does not apply to this project.

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian Organization.

The proposed action would abandon 666 m (2,185 feet); therefore, the abandonment is considered an adverse effect.

(vii) Transfer, lease or sale of property of official ownership or control without adequate and legally enforceable restrictions or conditions to endure long-term preservation of the property's historic significance.

This category does not apply to this project.

SUMMARY AND RECOMMENDATIONS

SWCA conducted a cultural resources survey that documented the Acequia de la Posecion and one archaeological site, a historic cabin (LA 161069). LA 161069 is a log cabin ruin built during the mid- to late-nineteenth century and may represent a sheep camp habitation used seasonally into the mid-twentieth century. The Acequia de la Posecion is a historic ditch constructed circa A.D. 1754 or post-1860. This acequia system may represent a segment of the agrarian history from Spanish colonization of the Upper Rio Grande valley to the expansion and growth of New Mexico territory. There are three acequia systems located within the Rio de Truchas drainage: the Acequia Madre (A.D. 1752), the Acequia de la Posecion (ca. A.D. 1754 or post–1860) and the Acequia Medio (date unknown). Each acequia is diverted from the Rio de Truchas, a meandering perennial stream that originates in the Sangre de Cristo Mountains east of Truchas, and the acequias irrigate areas with distinct habitation sites associated with each acequia. The Acequia de la Posecion currently irrigates 169 acres (68 hectares). This acequia system and LA 161069 represent a segment of the history from Spanish colonization of the Upper Rio Grande valley to the expansion and growth of New Mexico territory.

The historic landscape of Truchas may qualify for listing on the NRHP, with the Acequia de la Posecion serving as a contributing resource for the historic landscape. The Truchas/Acequia de la Posecion landscape illustrates the adaptation of Spanish farmers to the natural environment over the past three and a half centuries. The acequias (Acequia de la Posecion and Acequia Medio) wind through the Rio de Truchas valley amidst terraced agricultural fields that once grew corn, beans, and wheat.

SWCA recommends the conversion of the primary ditch of Acequia de la Posecion from an earthen ditch to underground PVC pipeline would be an adverse effect because 56 percent of this historic property will be affected. Approximately 3,256 m (10,681 feet) would be affected by this undertaking, 2,590 m (8,496 feet) by installing pipeline in the ditch and 666 m (2,185 feet) by abandonment. Another 2,568 m (8,426 feet) of acequia system is outside the area of potential effect.

To mitigate this adverse effect, extensive information on the acequia and its history is being collected. These non-destructive efforts could serve to mitigate the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking. These mitigation efforts include recording the acequia and its associated features on a New Mexico Historic Water Delivery System Inventory form; photo-documenting the acequia on archival paper; conducting oral history interviews with Acequia de la Posecion Ditch Association members and adjacent

landowners; scanning and translating the acequia association's log book, which dates from A.D.1918–1987; and dubbing and transcribing 17 hours of interviews conducted previously by the association. The Corps will consult with the SHPO to resolve the adverse effect that would occur to the Acequia de la Posecion from the proposed undertaking.

Native American Indian tribes that have indicated they have concerns in Rio Arriba County include the Jicarilla Apache Nation, Comanche Indian Tribe, Navajo Nation, Ohkay Owingeh, Hopi Tribal Council, Kiowa Tribe of Oklahoma, Pueblo of San Ildefonso, Pueblo of Pojoaque, Pueblo of Santa Clara, and Pueblo of Taos. Informal consultation (scoping) letters were mailed to these tribes on September 17, 2008. Responses were received from the Navajo Nation and Hopi Tribe. To date, there has been no indication of tribal concerns that would affect this project. No TCPs are known to occur in the area.

Should previously undiscovered artifacts or features be unearthed during project development, work will cease in the immediate area of the find, a determination of significance will be made, and a mitigation plan will be formulated, in coordination with the New Mexico Historic Preservation Officer and Native American groups that may have concerns in the project area.

REFERENCES CITED

Ackerly, Neal W.
1996 A Review of the Significance of and Management Recommendations for Preserving New Mexico's Acequia Systems. Report to the N.M. Historic Preservation Division by Dos Rios Consultants, Silver City.

Adler, Michael A., and Herbert W. Dick
1999 *Picuris Pueblo Through Time: Eight Centuries of Change at a Northern Rio Grande Pueblo.* Southern Methodist University, Dallas, Texas.

Baxter, John O.
1997 *Dividing New Mexico's Waters, 1700–1912.* University of New Mexico Press, Albuquerque.

2000 *Settlement And Irrigation in the Santa Cruz Valley.* Submitted to the U.S. District Court Special Master. Manuscript on file at the Office of the State Engineer, Santa Fe, New Mexico.

General Accounting Office
2001 *Treaty of Guadalupe Hidalgo: Definition and List of Community Land Grants in New Mexico.* United States General Accounting Office, Washington D.C. Report No. GAO-01-951.

Hacker, Leroy W., and Joseph O. Carleton
1982 *Soil Survey of Taos Counties and Parts of Rio Arriba and Mora Counties, New Mexico.* United States Department of Agriculture, Soil Conservation Service and Forest Service, Washington D.C.

McClelland, Linda Flint, J. Timothy Keller, Genevieve P. Keller, and Robert Z. Melnick
1999 *National Register Bulletin Guidelines for Evaluating and Documenting Rural Historic Landscapes* U.S. Department of the Interior National Park Service.

Post, Stephen S.
2001 *The Archaic Project: A Sample Archaeological Inventory of the Former Santa Fe Ranch Lease, Taos Field Office, Bureau of Land Management, Santa Fe County, New Mexico.* Santa Fe Northwest Advisory Council Report No. 2. Submitted to Taos Field Office, Bureau of Land Management, Taos, New Mexico.

Rivera, Jose A.
1998 *Acequia Culture: Water, Land, and Community in the Southwest.* University of New Mexico Press, Albuquerque.

Simmons, Marc
1982 *Albuquerque: A Narrative History.* University of New Mexico Press, Albuquerque.

Stuart, David E., and Rory P. Gauthier
1988 *Prehistoric New Mexico: Background for Survey*. University of New Mexico Press, Albuquerque.

Walmsley, Myrtle
1981 *I Remember, I Remember Truchas The Way It Was: 1936-1956*. Menaul Historical Library of the Southwest. Albuquerque.

Weigle, Marta
1975 *Hispanic Villages of Northern New Mexico.* The Lightning Tree Press, Santa Fe, New Mexico.

Westbury, William A.
2000 *Entranas Timber Sale: Camino Real*. U.S. Forest Service Carson National Forest, Camino Real Ranger District. Report number: 2000-02-091.

Western Regional Climate Center
2008 Western Regional Climate Center homepage. Available at: www.wrcc.dri.edu. Accessed November 2008.

Williams, Jerry L.
1986 *New Mexico in Maps*. 2nd Edition. University of New Mexico Press, Albuquerque.

Wilson, Chris M.
2005 *Supplemental Guide to Southwest Architecture and Cultural Landscapes.* University of New Mexico College of Education Publications/Copy Center, Albuquerque.

APPENDIX A
TRIBAL LETTERS

THE HOPI TRIBE

Benjamin H. Nuvamsa
CHAIRMAN

Todd Honyaoma, Sr.
VICE-CHAIRMAN

September 29, 2008

Dr. Mike Marcus, Project Manager
Attention: Joni Wood, Acequia de la Posecion Comments
Tetra Tech, Inc.
One Towne Centre, 6121 Indian School Road, Suite 205
Albuquerque, New Mexico 87110

Dear Dr. Marcus,

This letter is in response to your correspondence on behalf of the U.S. Army Corps of Engineers dated September 17, 2008, regarding the proposed Acequia de la Posecion conveyance system rehabilitation in Rio Arriba County, New Mexico. Because the Hopi Tribe claims cultural affiliation to prehistoric cultural groups in New Mexico, and the Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites and Traditional Cultural Properties, we appreciate your solicitation of our input and efforts to address our concerns.

The Hopi Cultural Preservation Office considers the prehistoric archaeological sites of our ancestors to be Traditional Cultural Properties. Because this project is a federal undertaking that involves ground disturbing activities, if prehistoric cultural sites are identified in the project area that will be adversely affected by project activities, we request to be provided with copies of the cultural resource survey report of the area of potential effect and any proposed draft treatment plans for review and comment.

In addition, we recommend that if any prehistoric cultural features or deposits are encountered during project activities, these activities must be discontinued in the immediate area of the remains, and the State Historic Preservation Office must be consulted to evaluate their nature and significance. If any Native American human remains and funerary objects are discovered during construction they shall be immediately reported as required by law. Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you for your consideration.

Respectfully,

Leigh Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: New Mexico State Historic Preservation Office
Julie Alcon, Corps of Engineers, 4101 Jefferson Plaza NE, Albuquerque, New Mexico 87109-3435

P.O. BOX 123 KYKOTSMOVI, AZ 86039 (928) 734-3000

THE NAVAJO NATION

JOE SHIRLEY, JR.
PRESIDENT

BEN SHELLY
VICE-PRESIDENT

October 03, 2008

Mr. Mike Marcus, Project Manager
Tetra Tech, Inc.
6121 Indian School Road, NE, Suite 205
Albuquerque, New Mexico 87110

Subject: Tribal Consultation Request. Proposing to rehabilitate the Acequia de la Posecion conveyance system, Albuquerque, New Mexico.

Dear Mr. Marcus:

Our apology for an oversight and missing the deadline date of our response to your request, please note that in reference to your letter of September 17, 2008, the Historic Preservation Department – Traditional Culture Program (HPD-TCP) received a request for consultation regarding the above undertaking and/or project. After reviewing your consultation documents, HPD-TCP has concluded the proposed undertaking/project area **will not impact** any Navajo traditional cultural properties or historical properties.

However, if there are any inadvertent discoveries made during the course of the undertaking, your agency shall cease all operations within the project area. HPD-TCP shall be notified by telephone within 24 hours and a formal letter be sent within 72 hours. All work shall be suspended until mitigation measures/procedures have been developed in consultation with the Navajo Nation.

The HPD-TCP appreciates your agency's consultation efforts, pursuant to 36 CFR Pt. 800.1 (c)(2)(iii). Should you have additional concerns and/or questions, do not hesitate to contact me. My contact information is listed below.

Sincerely,

Mr. Tony Joe, Program Manager
Historic Preservation Department – Traditional Culture Program

Tel: 928.871.7688 Fax: 928.871.7886 E-mail: tonyjoe@navajo.org

TCP 09-035
File: Office file/chrono

HISTORIC PRESERVATION DEPARTMENT P O BOX 4950 WINDOW ROCK, ARIZONA 86515 928 871 7198 (v) 928 871 7886 (fax)

APPENDIX B

LOCATIONAL MAPS AND DATA

The public disclosure of the location of archaeological sites on state and private lands is prohibited by Section 18-6-11.1 New Mexico Statutes Annotated (NMSA) 1978. Public disclosure of archaeological site locations is federally prohibited by 16 United States Code 470hh (36 Code of Federal Regulations [CFR] 296.18).

Material Intentionally Removed