

# Mid Frisco/Keihne Ditch Rehabilitation Project

## Assessment of Potential Environmental Impacts

### Background

The proposed Mid Frisco/Keihne Ditch project is located in the southeast part of Reserve, New Mexico, and extends a few miles south along the San Francisco River. The Mid Frisco/Keihne Ditch diversion dam captures surface water from the San Francisco River and open ditches deliver the water to irrigated cropland in the San Francisco Plaza area along the east side of Highway 435. Reserve is located in Catron County.

The ditch owners report that the function of the existing diversion has been affected by river channel scour and realignment due to flood events. They currently address this situation by a temporary diversion dam made of existing river materials, which directs water into the west channel and, therefore, over the existing diversion dam. Temporary diversion dams typically must be reconstructed after large flows in the river, and this is a costly and unreliable method of operating the irrigation ditch system. Additionally, the open ditches in current operation create long-term concerns with maintenance, stability on slopes, and loss of water due to infiltration, evaporation, and plant root uptake.

The current infrastructure within the project area for the Mid Frisco/Keihne Ditch includes a diversion dam on one of two river channels, a headgate structure alongside the diversion dam, a regulating structure where the ditch splits into two separate ditches (the Mid Frisco and the Keihne Ditches), and approximately 2.5 mi of unlined ditch with various outlets.

### Proposed Action and Alternatives

The proposed action (PA) is to install an alternate point of diversion consisting of a subsurface infiltration gallery and connecting pipeline, installing water transmission pipeline within the existing ditch, replacing the regulating structure where the ditch splits into two ditches, and improving any associated infrastructure. The burial depth for the transmission pipe would vary between 2 and 8 feet (Portage 2014).

Various combinations of pipe materials and sizes along the project's extent would result in several alternatives that could meet system rehabilitation and the owner's/operator's budget needs. From an environmental impacts perspective, the action alternatives to the PA would be use of three different transmission pipeline sizes the owners/operators are considering (30-in., 24-in and 18-in diameter), which also could be made of various combinations of pipe materials (e.g., steel corrugated metal, high-density polyethylene, polyvinyl chloride).

The activities needed to rehabilitate/improve the ditch, which are a direct contributor to environmental impacts under any action alternative, would be the same regardless as to the size of pipe used or materials chosen (since materials being considered offer equivalent performance). As such, the PA appropriately bounds other possible action alternatives when assuming the PA uses the larger pipe size along the entire ditch extent. Additional activities conducted under the PA include site preparation, trenching, stockpiling

materials, backfilling, compaction and site reclamation. The no action alternative (NAA) is to leave the existing system in place.

## Affected Environment

The affected environment considered for the PA and alternatives included the following resource areas and uses: land use; geologic environment/soils resource; water and ecological resources; historical and cultural resources; air quality; noise; aesthetics; and socioeconomics.

## Evaluation of Impacts – Assumptions and Methods

Environmental impacts were assumed to primarily result from operations activities associated with improving/rehabilitating the system. For analysis, the PA project area was defined as the ditch/piping infrastructure and a 100-ft buffer area, which is considered conservative, on either side of the ditch/pipe. The buffer area was chosen as an approximation of where project activities (e.g., pipe removal/installation, equipment/vehicle travel, materials staging) would likely take place and where impacts would have the highest likelihood of occurring. The PA project area is shown on Figure 1.

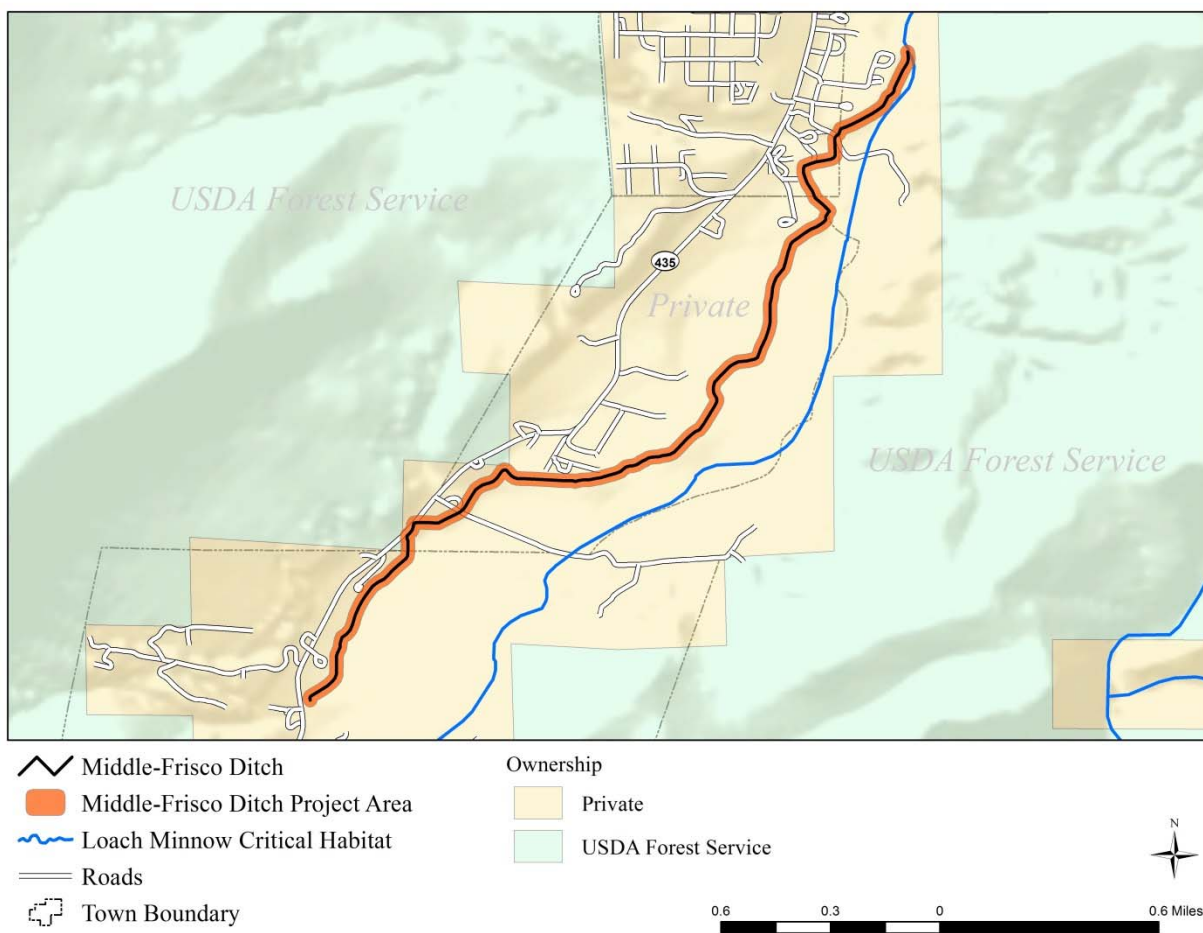


Figure 1. Mid Frisco/Keihne Ditch Rehabilitation Project Area.

When determining impacts, the analysts assumed that industry standard design features and best management practices (BMPs) typically associated with ditch rehabilitation/improvement work, such as storm water and sediment management, would be implemented with the chosen alternative. Other assumptions made, as needed, are noted in the impact determination discussions in the next section.

## Impact Determinations

The impact determination discussions that follow include: brief descriptions of the affected resource/environment, criterion/criteria used to evaluate impacts, impact discussions for the PA and NAA, with impact determination statements for both the PA and the NAA.

### **Land Use**

**Affected Environment:** The PA project area, which includes the buffer area, lies across 0.32 acres of Forest Service-managed public land and 84 acres of privately-owned land near to the rural, agriculturally-based town of Reserve.

Activities on the land in the project area are primarily related to agriculture operations. The *Catron County Comprehensive Land Plan* (National Federal Lands Conference 2012<sup>a</sup>), the *Catron County Capital Improvement Plan/ Comprehensive Plan* (Consensus Planning Inc. 2007), and various county ordinances guide land use and growth within the County.

*Evaluation Criterion: The PA and NAA would be considered to have potentially significant impacts if implementing either would be inconsistent with land use plans and ordinances.*

**Impacts:** After review of applicable plans and ordinances available via Catron County's website (<http://www.catroncounty.us/files.html>), for the PA, replacing an existing owner/operator's ditch infrastructure with a similar system, does not require or result in property acquisition, change in ownership/management, or change how the land is currently used. Water collected by the system would continue to be conveyed to current users. Installing an alternate point of diversion, administratively, may require notification and/or approvals from appropriate State authorities. According to J. Pierson, Reserve District Ranger, Gila National Forest, the 50 ft width from centerline of the ditch needed for the proposed project lies entirely on private land and would not impact any USFS lands (USFS 2014).

Under the NAA, the ditch infrastructure would not be replaced.

Because no changes to land use are needed or being made under either alternative, and because the PA and NAA would not be inconsistent with Catron County's land plan and ordinances, **no impacts** to land use would be anticipated under either the PA or NAA.

### **Geologic Environment/Soils Resource**

**Affected Environment:** Aquic ustifluvents and fluventic haploborolis are the soil types present within the project area (USDA 2006). Geotechnical information (complete surveying/mapping) regarding the soil, subsurface conditions, and groundwater in the collection areas is currently not known.

Catron County values the integrity of their soils. As an example, the *Catron County Comprehensive Land Plan*, states, "...protection of soils from wind and water erosion and maintaining its fertility is critical to

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<sup>a</sup> The Catron County Comprehensive Land Plan was published in 1992. The online version shows updates to the plan up to 2012.

sustaining a viable agricultural economy and maintaining high levels of air and water quality” (National Federal Lands Conference 2012).

*Evaluation Criteria:* The PA and NAA would be considered to have potentially significant impacts if either would result in changes to the geologic landscape, and/or diminish/deplete area soils, and/or be inconsistent with county values regarding its soils.

**Impacts:** The PA would be conducted during the irrigation off-season, when surface water and groundwater levels are low and the chance of a flood event is minimal. Under the PA, there would be excavation, displacement, and compaction of soils, and cleanout and structure placement activities, which would all generate dust within the project area. Activities involving use of concrete for structure placement, could also generate dust. These impacts are local and temporary in nature, and reducible through application of BMPs. The area was subject to similar impacts with establishment of the existing ditch system. After the new infrastructure is placed, the site would be reclaimed.

Construction of temporary holding/dewatering areas may be necessary to perform in-stream diversion-point work and structure placements at various points along the ditch. When this work is completed, water flow berming/barriers would be removed. Water in temporary holding areas should have either evaporated or infiltrated to the ground, or may need to be released to adjoining agricultural fields. If released, water is not expected to be of sufficient volume to carry sediment through farm fields and back to source water. However, because the San Francisco River is critical habitat for the Loach minnow (See Ecological Resources section), and because in-stream work could result in temporary sediment discharge/disruption, turbidity, and thermal changes to the water, an informal Section 7 consultation, as outlined by the USFWS, would be recommended (USFWS 2013).

Overall, the soils in the area are not expected to be reduced, depleted, or significantly impacted by these activities. Replacing the ditch/pipe system and reclaiming the site is not inconsistent with county policy on soils. Because there will be minor impact to soils, primarily dust generation, during implementation of the PA, a **less-than-significant** impact determination was made for the geologic environment/soils resource.

The unlined ditch system delivers water to users and recharges ground water. Some soil bank erosion also occurs in the process. River scour and channel realignments from flood events was significant enough to necessitate a temporary diversion dam, which requires reconstruction after large flows. Under the NAA, and in spite of continual maintenance, the open ditches create long-term concerns with maintenance, sediment accumulation, and slope stability.

While the current situation is not an immediate threat, it would be expected to trend toward increasingly significant changes to the existing soil and geologic landscape. At present, a **less-than-significant** impact determination was concluded for the NAA.

## **Water Resources**

**Affected Environment:** The ditch system captures surface water from the San Francisco River and conveys it for irrigation use. The ditch system loses water to infiltration, evaporation, and plant root uptake. The diversion dam provides more reliable flow/water availability to users, but must be reconstructed after flood events. Water that is lost from the ditch evaporates, is used by nearby vegetation, and also recharges ground water.

The *Catron County Comprehensive Land Plan*, and ordinances such as Ordinance 011-92, “An Ordinance Providing for the Protection of Rights to and Uses of Water,” and Ordinance 009-92, “An Ordinance

Providing for Water Allocation and Riparian Management,” are examples of the county’s policies and rules concerning water rights and water allocation affecting the project area.

*Evaluation Criteria:* The PA and NAA would be considered to have potentially significant impacts if either would be inconsistent with county plans or ordinances, result in impacts to uses of the water, or results in changes to water that make it unavailable for use.

**Impacts:** The PA would be conducted during the irrigation off-season, when surface water and groundwater levels are low and the chance of a flood event is minimal. Under the PA, an improved ditch system would reduce water loss to the surrounding environment, improve water flow and delivery performance to users, and reduce maintenance needs.

Construction of temporary holding/dewatering areas may be necessary to perform in-stream diversion-point work and structure placements at various points along the ditch. When this work is completed, water flow berming/barriers would be removed. Water in temporary holding areas should have either evaporated or infiltrated to the ground, or may need to be released to adjoining agricultural fields. If released, water is not expected to be of sufficient volume to carry sediment through farm fields and back to source water. However, because the San Francisco River is critical habitat for the Loach minnow (See Ecological Resources section), and because in-stream work could result in temporary sediment discharge/disruption, turbidity, and thermal changes to the water, an informal Section 7 consultation, as outlined by the USFWS, would be recommended (USFWS 2013).

When in use, and by design, a subsurface infiltration gallery pulls/collects subsurface water. The volume of this pulled water is generally small when compared to the overall volume of available groundwater. If an infiltration gallery is placed/replaced, an increase in draw down of subsurface water would be expected over the current condition, as a result of improved gallery performance. However, no measureable unintended drawdown of subsurface/ground water sources is anticipated. Additionally, no measureable withdrawals/drawn downs of the San Francisco River is expected.

Implementing the PA would not result in depositing any foreign material or discharging any substance into a waterway such that land or water is degraded or made unavailable for habitat and downstream uses. Implementing the PA would not be inconsistent with county plans and ordinances. Thus, implementation of the PA is anticipated to result in **less-than-significant** impacts to water resources.

Under the NAA, water that has been lost from the unlined ditch to the surrounding environment has been used by vegetation or seeped into the soils/groundwater. With reduced performance of the current system, less water has been collected, delivered and available to the users. No critical shortages have been reported. However, continued decline of the system would be expected to result in continual and increasing impacts to the water users, particularly if a ditch component completely failed in the near term. Thus, implementation of the NAA was concluded to result in **potentially significant** impacts to water resources.

## **Ecological Resources**

**Affected Environment:** The project area is located within the larger Conifer Woodlands and Savannas ecoregion is an area of mostly pinyon-juniper woodlands, with some ponderosa pine at higher elevations. It often intermingles with grasslands and shrublands. Because of its higher elevations, the region is generally cooler, with more uniform winter and summer seasonal moisture compared to nearby ecoregions. This ecoregion lacks the milder winters, wetter summers, chaparral, Madrean oaks, and other species found in the ecoregion surrounding the nearby town of Glenwood, New Mexico. (Griffith et al 2006). The project area lies within a section of coniferous mixed forest vegetation (Dick-Peddie 1991).

The U.S. Fish and Wildlife Service’s (USFWS’) Information, Planning, and Conservation System (IPaC) was used to identify federally-designated T&E flora and fauna species. No T&E flora species were identified or anticipated to be found within the project area (USFWS 2014).

Four species, the Loach minnow (*Tiaroga cobitis*), Southwestern Willow flycatcher (*Empidonax traillii extimus*), Spikedace (*Meda fulgida*) and the Narrow-headed garter snake (*Thamnophis rufipunctatus*), are likely to be found within the project area (USFWS 2014). Their status and habitat requirements are shown in Table 1. The Loach minnow has designated critical habitat within the PA project area, mainly in the buffer areas, as shown on Figure 1.

Table 1. T&E animal species likely to be found in the project area presented in order of listing status (USFWS 2014).

Common Name	Scientific Name	Status	Habitat Requirements	Occurrence in Project Areas
Loach minnow	<i>Tiaroga cobitis</i>	Endangered	Turbulent, rocky riffles of mainstream rivers and tributaries at or less than 2,200 meters in elevations	Likely
Southwestern Willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Dense riparian habitats with microclimatic conditions dictated by the local surroundings. Located in the US during the summer, migrates to wintering areas in Central America.	Likely
Spikedace	<i>Meda fulgida</i>	Endangered	Midwater habitats of runs and pools especially in the downstream ends of rivers	Likely
Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>	Proposed Threatened	Found near river banks or streams	Likely

**Evaluation Criteria:** *The PA and NAA would be considered to have potentially significant impacts if either would result in “take” of T&E species within federally-designated critical habitat, which includes killing, harming, harassing, pursuing, hunting, capturing, collecting or attempting to engage in any such conduct; or result in habitat reduction for T&E species.*

**Impacts:** Under the PA, project activities are assumed to require a small crew of workers and a few pieces of construction equipment, over a period of one to two months, depending on weather conditions.

- **Species.** PA activities at the point of diversion within the San Francisco River would occur within Loach minnow designated-critical habitat. In-stream activities could cause temporary soil, water, and vibrational disturbance within the stream in the immediate area of activities. If present during operations, Loach minnow, Spikedace, and other aquatic species would likely relocate to a nearby area in the stream away from disturbance and would return to the area when disturbance ceases. PA activities do not involve any foreign material discharge to the creek.

The Southwestern Willow flycatcher, the Narrow-headed garter snake, and other terrestrial species could be present in the project area. For these areas, construction activities would

generate ground vibration and noise. Fauna species and human activity have been studied extensively in the literature. An umbrella study of the topic was conducted by Whittaker and Knight (1998) who found that species will be attracted to, habituate to, or avoid an activity and that, in most cases, wildlife habituate to an activity as long as its habitat needs (e.g., food, water, cover) are met. During operations, noise and vibration would occur during daylight hours, would be somewhat constant at low levels (e.g., idling equipment/vehicles) for longer periods and/or intermittent at more intense levels (e.g., digging, earth moving), depending on the specific activity and equipment used, and would cease at the end of each day. Terrestrial species may temporarily leave the immediate area of the noise and vibration and return to it when operations diminish or cease. They are not expected to permanently leave or abandon the area. The area's wildlife is habituated to existing rural noise of humans, farming operations, and local traffic. When the PA is completed, which is estimated to be over the course of a couple months, noise levels would return to current noise and ambient background levels.

- **Habitat.** Activities to improve the ditch system require moving soil and may consequently impact native vegetation in the area immediately around ditch infrastructure. Vegetation in this area may be untouched, disturbed, or removed during the course of construction activities. When improvement activities cease, areas that require re-vegetation would be reclaimed. Until vegetation regrows, reclaimed areas may appear barren. Installing piping would reduce ditch seepage water that some vegetation species are using along the ditch. In these areas, less vegetation may recover. No aquatic habitat/aquatic vegetation, including critical habitat, is expected to be permanently reduced as a result of implementing the PA.

Under the PA, no take of T&E species is anticipated and no permanent reduction in terrestrial or aquatic habitats is expected. Because project activities occur within Loach minnow designated-critical habitat, an authorization from the appropriate public-land/water management agency may be required. Because noise and vibration would be generated under the PA, but would be temporary, and because vegetation may be removed in the short-term, but recover, a **less-than-significant** determination was concluded for ecological resources.

Under the NAA, because the ditch infrastructure would not be replaced, **no impacts** to ecological resources are anticipated.

## ***Historical and Cultural Resources***

**Affected Environment:** Section 106 of the National Historic Preservation Act (NHPA) requires government agencies to take into account the effects of their actions on historic properties. These properties are listed on the National Register of Historic Places. New Mexico's Cultural Properties Act (Sections 18-6 through 18-6-23, NMSA 1978), among other things, requires that state agencies provide the state historic preservation office (SHPO) with an opportunity to participate in planning for activities that will affect properties that are on the State Register of Cultural Properties or the National Register of Historic Places.

The Prehistoric and Historic Sites Preservation Act of 1989 (Sections 18-8-1 through 18-8-8, New Mexico Statutes Annotated 1978), among other things, prohibits the use of state funds for projects or programs that would adversely affect sites on the State or National Registers unless the state agency or local government demonstrates that there is no feasible and prudent alternative and that all possible planning has been done to minimize the harm to the register site.

The National Register shows 11 properties within Catron County; none of which are within the project area. The New Mexico Historic Preservation Division State Register of Cultural Properties was reviewed

and showed no properties in project area (State of New Mexico 2012). The Apache Creek Ruin, in Apache Creek, located approximately 12 mi to the northeast of Reserve, is the nearest property.

The first settlers in the Reserve area were Spanish families in the 1860s who migrated west from the Rio Grande Valley and began raising livestock. Many of the families also settled around the communities of Aragon, Datil and Quemado. The first settlements around Reserve which sets along the San Francisco River, were called Upper Frisco Plaza, Middle Frisco Plaza and Lower Frisco Plaza. Sometime during the 1870s Milligan's Plaza was established just north of Upper Frisco Plaza. Then, when forest lands were set aside as National Forest Reserves, the name of Milligan's Plaza was changed to Reserve (Catron County 2014).

A trace of an old Spanish village still remains at Middle Frisco Plaza. An old adobe store bears the peeling words “M.D. Romero, Frisco Store” and faces a field that was once the plaza. Lower Frisco Plaza consists of a few ranch homes, barns and log corrals along the San Francisco River (Catron County 2014).

The *Catron County Comprehensive Land Plan* (National Federal Lands Conference 2012) shows the County's value of its culture and customs in its policies. As examples, “Remnants of early life forms, geological history and cultures have evolved as an important segment of a local economy and has become the signature of the local tourism trade”; “To support agriculture on private and public lands as part of our custom, culture, heritage, and as an important segment of our local economy, as well as providing for a secure national food supply”; “Many sites represent a unique culture and are closely related to early religious settlement of the area. They continue to have historical significance that are held by many residents as reverent or consecrated sites, and are the essence of their entity. These sites must remain accessible and be preserved” (National Federal Lands Conference 2012).

*Evaluation Criteria:*     *The PA and NAA would be considered to have potentially significant impacts if either would result in violations to the NHPA or be inconsistent with Catron County's values for its culture and customs.*

**Impacts:** Under the PA, replacing ditch infrastructure that serves agricultural uses is consistent with the county's culture and customs. Because no national or state historic properties or religious sites are located within or near to the project area, there would be no impacts to historical and cultural resources, or subsequent violation to the NHPA. Under the PA, **no impacts** to historical and cultural resources would be anticipated.

Under the NAA, the ditch infrastructure would not be replaced and **no impacts** to historical and cultural resources would be anticipated.

## **Air Quality**

**Affected Environment:** The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, suspended particulate matter, and lead). New Mexico also has standards that are more stringent than federal standards. Both sets of standards are shown in Table 2. The EPA lists only one area in the entire state that is not in attainment with criteria pollutants: Anthony, located in Dona Ana County approximately 233 miles southeast of Reserve, is in non-compliance for PM-10. *Catron County Comprehensive Land Plan* policy statements place a priority on high air quality and protection of the area's air from degradation to protect its residents' health and well-being (National Federal Lands Conference 2012).



**Evaluation Criteria:** The PA and NAA would be considered to have potentially significant impacts if implementing either would result in a NAAQS non-compliance violation, or be inconsistent with Catron County's policy regarding its air quality.

Table 2. National and New Mexico Ambient Air Quality Standards.

Air Pollutant	Measure	National AAQS	New Mexico AAQS	PSD Increment Class I
Carbon monoxide	1-hr average	35 ppm <sup>a</sup>	13.1 ppm	
	8-hr average	9 ppm <sup>a</sup>	8.7 ppm	
Nitrogen dioxide	1-hr average	100 ppb		
	24 hr		0.10 ppm	
	Annual average	53 ppb	0.05 ppm	2.5 µg/m <sup>3</sup>
PM <sub>10</sub>	24-hr block average	150 µg/m <sup>3a</sup>	150 µg/m <sup>3</sup>	8 µg/m <sup>3</sup>
	Annual average		50 µg/m <sup>3</sup>	4 µg/m <sup>3</sup>
PM <sub>2.5</sub>	24-hr block average	35 µg/m <sup>3b</sup>		
	Annual average	12 µg/m <sup>3c</sup>		
Ozone	1-hour	0.12		
	8-hr rolling average	0.075 ppm <sup>d</sup>		
Sulfur dioxide	1-hr average	75 ppb		2 µg/m <sup>3</sup>
	3-hr block average	0.50 ppm		25 µg/m <sup>3</sup>
	24-hr block average	0.14 ppm	0.10 ppm	5 µg/m <sup>3</sup>
	Annual average	0.03 ppm	0.02 ppm	
Lead	Rolling 3-month average	0.15 µg/m <sup>3</sup>		
Hydrogen sulfide	1 hr		0.025 ppm	

Table Notes:

- Not to be exceeded more than once per year.
- To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m<sup>3</sup>.
- To attain this standard, the 3-year average of the annual arithmetic mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>
- To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

General Notes:  
ppb = parts per billion, ppm = parts per million

Data Sources:  
40 CFR § 50, 2013, "National Primary and Secondary Ambient Air Quality Standards," *Code of Federal Regulations*, Office of the Federal Register, June 13, 2013.  
New Mexico Administrative Code 20.2.3: Title 20, Environmental Protection, Chapter 2, Air Quality (Statewide), Part 3, Ambient Air Quality Standards, December 30, 2013.

**Impacts:** Under the PA, activities that could affect air quality result from digging, compacting, and moving soil, all which release small particulate/dust to the atmosphere. Construction equipment, such as

small to mid-size front-end loaders, bulldozers, forklifts and electrical generators, release fuel emissions that could also affect air quality.

Implementing the PA is a short-term, temporary, small-scale construction operation that would generate dust and equipment emissions in small quantities. These impacts are reduced through implementation of BMPs. It is highly unlikely that either dust or emissions would be of sufficient quantity during operations to result in local or regional non-compliances. Most dust and emissions would be localized to the project area itself. Project dust/emissions would not contribute to air quality non-compliance in Anthony. As such, **less-than-significant** impacts to air quality are anticipated to result from implementing the PA.

Under the NAA, the ditch/piping system would not be replaced. No construction activities would be conducted, and **no impacts** to air quality would be anticipated.

## **Aesthetics**

**Affected Environment:** The visual character of an area is defined in terms water, landform, vegetation, and cultural modifications. These components are characterized or perceived in terms of the design elements' form, line, color, texture, and scale. Visual components also may be described as being distinct (unique or special), average (common or not unique), or minimal (a liability) elements of the visual field and in terms of the degree to which they are visible to surrounding viewers (e.g., foreground, middle ground, and background).

The visual quality of an area is defined in terms of the visual character and the degree to which these features combine to create a landscape that has the following qualities: vividness (memorable quality), intactness (visual integrity of environment), and unity (compositional quality). An area of high visual quality usually possesses all three of these characteristics. The visual quality of an area also is defined in terms of the visual sensitivity within the view shed of the project area. Locations of visual sensitivity are defined in general terms as areas where high concentrations of people may be present or areas that are readily accessible to large numbers of people. Visual quality is negatively impacted by atmospheric particulate resulting from human activities (e.g., construction, prescribed fires) and natural events such as dust storms and lightning-caused wildfires

Clean Air Act amendments protect particulate matter and sulfur dioxide emissions into federal Class I (e.g., wilderness, large national memorial parks), Class II (e.g., national monuments, national recreation areas, national wild and scenic rivers, national wildlife refuges) and III (areas less protected than Class I and II areas). There are no protected classes within or adjacent to the project area. The nearest Class I area is the Gila Wilderness, southeast of Reserve, and the Mount Baldy Wilderness, further to the west in Arizona.

*Evaluation Criteria: The PA and NAA would be considered to have potentially significant impacts to aesthetics if implementing either would result in changes to/degradation of visual quality, views, and the aesthetic landscape.*

**Impacts:** Under the PA, and as presented in the air quality and geologic environment/soils sections, it is unlikely that sufficient dust would be generated from construction activities to hinder visual quality or exceed any of the Prevention of Significant Deterioration standards in Table 2, which apply to visibility, or impact either of the two Class I wilderness areas. There may be dust that temporarily obscures localized visibility at the project site during construction activities.

The visual sensitivity associated with replacing ditch infrastructure would not be impacted, because the project area is not identified as an area of high scenic quality and not readily used by large numbers of

people. Replacing an unlined/lined ditch system with a pipe that is subsequently buried, would alter a small portion of the landscape from a casual viewer's perspective as the ditch would not continue to look like a ditch. To viewers accustomed to seeing the unlined/lined ditch as a "stream" the improvement may not be positive. To viewers who see the ditch as a manmade structure, the reclaimed land could appear more natural, particularly when the area's vegetation re-establishes.

There would be temporary minor aesthetic changes to the landscape during project activities, with the presence of laborers and equipment on site for a few days. After PA implementation, some areas around the ditch-line may appear barren until vegetation re-establishes, but these are temporary aesthetic changes. Overall, impacts to visual and aesthetic resources were concluded to be **less than significant** under the PA.

Under the NAA, the ditch/pipe system would not be replaced and visual quality and sensitivity would not be changed from the current condition. **No impacts** to aesthetic resources would result from the NAA.

## Noise

**Affected Environment:** Noise is unwanted sound. Noise-control for aircraft and airports, interstate motor carriers and railroads, workplace activities, trucks, motorcycles, and portable air compressors, etc., is regulated through various federal and state standards and local ordinances. For environmental noise, the EPA is the agency that enforces the Noise Control Act. For occupational noise, the federal Occupational Health and Safety Administration (OSHA) is the agency that enforces noise standards for workers. Towns and municipalities have local ordinances to control residential/community noise levels. BMPs exist to reduce noise levels to workers and the environment if noise is expected to reach levels of concern.

Ambient noise sources in the project area consist of birds, insects, wildlife, wind and water. Sources that generate noise above background levels are generally associated with humans in and around the area, farming operations, and vehicular traffic on nearby roads. The project area does not lie within a noise abatement area. Wildlife and noise is discussed in the Ecological Resources section; this section addresses noise and the human environment.

*Evaluation Criteria:*     *The PA and NAA would be considered to have potentially significant impacts if implementing either would degrade the existing noise landscape or impact workers.*

**Impacts:** For the PA, a few pieces of construction equipment are required to move soils and to place pipe and other infrastructure. Noise would be generated during these operations, would occur during daylight hours, would be constant at low levels (i.e., idling equipment) for longer periods and/or intermittent at higher levels, depending on the specific activity and equipment used, and would cease at the end of each day. When the PA is completed, which is estimated to be over the course of one to two months, noise levels would return to current noise and ambient background levels. Because the PA is a relatively small-scale operation, noise generated from implementing the PA is not anticipated to result in noise levels above background sufficient to interrupt or impact farming operations or other activities in the area. Operational noise may be perceived as a nuisance, initially and possibly intermittently during operations, but is not expected to change the existing soundscape.

New Mexico operates its own occupational safety and health program under a plan approved by the U.S. Department of Labor. This program provides safety and health protections to most private sector workers and state and local government employees within the state. Workers implementing the PA, because the project area is located on state land, would fall under the rules and regulation of the State Plan (New Mexico Environment Department 2014), under the construction industry standard. In general, New

Mexico has adopted the federal regulations for construction workers. As such, the State Plan addresses noise (and other health and safety protections) for construction workers, and no impacts to workers are anticipated. Because noise would be generated under the PA, a less-than-significant impact determination was concluded.

For the NAA, because the ditch/pipe system would not be replaced, there would be no noise introduced to the existing landscape. No impacts would result from implementing the NAA.

## **Socioeconomics**

**Affected Environment:** Catron County is New Mexico's largest and most sparsely settled county, with more than half of its land area set aside in three National Forests: the Gila, Cibola, and Apache. Catron County's economy is based on cattle ranching, lumber, tourism, and recreation (National Federal Lands Conference 2012). Indicators used to describe the affected environment for socioeconomic resources typically include population size, economic health (e.g., impacts on local housing markets), employment/unemployment, and income.

The PA project area lies across 0.32 acres of Forest Service-managed public land and 84 acres of privately-owned land near to Reserve, which is the county seat of Catron County. Reserve sits at the junction of Highways 12 and 435. Nearby, Apache Creek is located approximately 12 mi to the north and Glenwood is located approximately 30 mi south. The New Mexico/Arizona border is approximately 10 mi west. Reserve is a small, one-stop sign, gateway community to the national forest with a population of 289. The majority of the ditch project already exists on private property. Making improvements and rehabilitating the existing ditch system is not anticipated to affect any current private owner's property value, private rights, or water rights.

*Evaluation Criteria:*     *The PA and NAA would be considered to have potentially significant impacts if implementing either could measurably change the existing socioeconomic environment.*

**Impacts:** Under the PA, it is estimated that a small crew of workers would conduct activities over a period of a one to two months. Workers may be locally based or relocate temporarily to perform the work. It is unlikely non-local workers would be permanently relocated to the area as a result of the PA. Project personnel would spend some income locally for food, housing, transportation, recreation/leisure activities during the project duration. However, the type of project (infrastructure) and short-term nature of its implementation make it unlikely to result in any significant, measureable longer-term change to the local economy, housing, employment, or personal income. Thus, the PA was determined to have **less-than-significant** impacts.

The ditch system provides water for irrigation. Although diminished flow has not been reported as an immediate threat to farming operations, under the NAA, continued decline of the diversion system would be expected to result in continual reduction of water to farmers who rely on daily availability of water during growing season. Because the main problem is the availability of the actual point of diversion, a continued trend toward unavailability would be expected to result in increasingly significant impacts to water users.

Because implementing the NAA trends toward measurable change of the existing socioeconomic environment, a **potentially significant** determination was concluded.

## Summary of Impacts and Significance

Table 3 provides a summary of the impacts identified in the analysis. For the PA, no impacts were found for land use and historical and cultural resources. Less-than-significant impacts were found for geologic environment/soils, water resources, ecological resources, air quality, aesthetics, noise, and socioeconomics. Less-than-significant impacts were generally found to be short-term, localized and directly related to project activities.

For the NAA, no impacts were found for land use, ecological resources, historical and cultural, air quality, aesthetics, and noise. Less-than-significant impacts were found for geologic environment/soils. Potentially significant impacts were found for water resources and socioeconomics. The potentially significant findings were related to trends for continual loss of water from a declining system to farming operations that over time would be expected to increase in magnitude.

Because the proposed action is to improve a system that already exists, the PA is not anticipated to contribute additional incremental impacts (i.e., cumulative impacts) to either the environmental or human landscapes.

Table 3. Summary of impacts for the Mid Frisco/Keihne Ditch Improvement PA.

Resource Area	No Action	Proposed Action
Land Use	NI	NI
Geologic Environment/Soils	LS	LS
Water Resources	PS	LS
Ecological Resources	NI	LS
Historical and Cultural Resources	NI	NI
Air Quality	NI	LS
Aesthetics	NI	LS
Noise	NI	LS
Socioeconomics	PS	LS
NI = No impact LS = Less than significant impact PS = Potentially significant impact		

## References

- Catron County, 2014, "Catron County Rich in History, Reserve," Catron County New Mexico, website: <http://www.catroncounty.us>, accessed January 22, 2014.
- Consensus Planning, Inc., 2007 Catron County Capital Improvement Plan/ Comprehensive Plan, online via [http://swnmcog.org/images/Catron\\_County\\_Comprehensive\\_Plan\\_3-07\\_Complete\\_Final.pdf](http://swnmcog.org/images/Catron_County_Comprehensive_Plan_3-07_Complete_Final.pdf), accessed 1-2014, March 21, 2007, 46 pp.
- Dick-Peddie, W., 1991, General Vegetation of New Mexico, Earth Data Analysis Center, Albuquerque, NM, [digital data] online via <http://gstore.unm.edu/apps/rgis/datasets/c42a0f67-9d1b-420f-84bf-16746ab4a24b/veg1shp.original.zip>
- Griffith, G.E., Omernik, J.M., McGraw, M.M., Jacobi, G.Z., Canavan, C.M., Schrader, T.S., Mercer, D., Hill, R., and Moran, B.C., 2006, "Ecoregions of New Mexico" (color poster with map,

- descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,400,000).
- National Federal Lands Conference, 2012, Catron County Comprehensive Land Plan, Multiple Use 1992, Catron County, New Mexico, online via [http://yourfirstdue.com/manager/data/1316726401/File/catron\\_county\\_land\\_plan\\_final\\_update\\_d\\_2012.pdf](http://yourfirstdue.com/manager/data/1316726401/File/catron_county_land_plan_final_update_d_2012.pdf), updated September 1, 2012, accessed 1-2014, 360 pp.
- New Mexico Environment Department, 2014, *State Plan*, New Mexico Occupational Health & Safety Bureau, Santa Fe, online via: [http://www.nmenv.state.nm.us/Ohsb\\_Website/StatePlan/index.htm](http://www.nmenv.state.nm.us/Ohsb_Website/StatePlan/index.htm), accessed 1-2014.
- Portage, 2014, Preliminary Engineering Assessment – Mid Frisco/Keihne Ditch, PI-14-003, correspondence from R. Schwaller, P.E., Idaho Falls, Idaho, to C Roepke, Deputy Director, New Mexico Interstate Stream Commission, Santa Fe, New Mexico.
- State of New Mexico, 2012, “New Mexico’s Rich Cultural Heritage,” Listed State and National Register Properties by County, online via <http://www.nmhistoricpreservation.org/programs/registers.html>, accessed 1-2014, September 21, 2012, 145pp.
- USDA, 2006, Taxonomic Classification of the Soils, Natural Resources Conservation Service, U.S. Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>, accessed 1/20/2014.
- USFS, 2014, Personal communication memo from J.D. Pierson, Reserve Forest Ranger, USFS, to Whom it May Concern re: Mid Frisco-Keihne ditch, March 12, 2014, file code 1500.
- USFWS, 2014, Natural Resources of Concern, Frisco, Information, Planning, and Conservation System (IPAC) via from the world wide web at <http://ecos.fws.gov/ipac/> on January 10, 2014.
- Whittaker, Doug, and Knight, Richard, 1998, “Understanding Wildlife Responses to Humans,” *Wildlife Society Bulletin*, 1998, 26(2):312-317.