

Glenwood North Lower Ditch Rehabilitation Project Assessment of Potential Environmental Impacts

Background

The proposed Glenwood North Lower Ditch Rehabilitation Project is located in the northeast part of Glenwood, New Mexico, in Catron County, within and adjacent to the Glenwood State Trout Hatchery along Whitewater Creek. The Glenwood North Lower Ditch diversion captures subsurface water that serves both the state-owned fish hatchery and irrigated cropland on both sides of Highway 180.

The ditch owners and fish hatchery personnel report that the buried pipe collection and delivery system has experienced steadily diminishing flow rates over the years. Factors thought to contribute to flow decline include:

- The presence and continued growth of trees along the buried pipeline, particularly in the perforated pipe zone, resulting in plugging of the inlet holes;
- Degradation of the pipe, resulting in damage such as deformation, crushed lengths, and/or leakage in the transmission section; and
- Accumulation of sediment within the pipe, resulting in plugging of inlet holes and/or reduced pipe cross-sectional area.

The current infrastructure for the Glenwood North Lower Ditch includes a buried pipe that is perforated along the uppermost length, an upstream access vault near the perforated pipe section, connecting buried pipe, and an access vault at the lower end near the fish hatchery. The existing pipe is composed of transite (a cement-fiber composite material) and the total length is unknown, although estimated by the system owners as 1,000 to 1,500 feet long.

Proposed Action and Alternatives

The proposed action (PA) is to rehabilitate the existing infrastructure: the subsurface diversion, transmission pipeline and associated infrastructure, and to restore the second point of water diversion as a backup to maintain flows to the fish hatchery. The ditch owners have stated that both onsite locations are registered points of diversion. The burial depth for the pipe is estimated to be 6 feet (Portage 2014).

Various combinations of pipe materials and sizes along the project's extent would result in a multitude of 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 two different pipeline sizes the owners/operators are considering (30-in. and 36-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.

When determining impacts, the analysts assumed that industry standard design features and best management practices (BMPs) typically associated with ditch rehabilitation work, such as stormwater and sediment management, would be implemented with the chosen alternative. This would include, if necessary, special removal, handling, and disposal BMPs for the existing transite pipe. Early manufacturers of transite used asbestos as part of the fiber composition and it is unknown if the in-situ pipe contains asbestos. 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 on 0.45 acres of privately-owned property and 7 acres of New Mexico Fish and Game-managed public land, as shown in Figure 1. The project area is primarily home to the New Mexico Game and Fish Glenwood Hatchery and includes the hatchery, support buildings/structures, and an individual residence. The hatchery raises female triploid (sterile) rainbow trout, for stocking in waters where interbreeding with native fish is not desired. The hatchery is slated to be New Mexico's rearing facility for native Gila trout (New Mexico Game and Fish 2012). Activities on the land in the project area are primarily related to hatchery

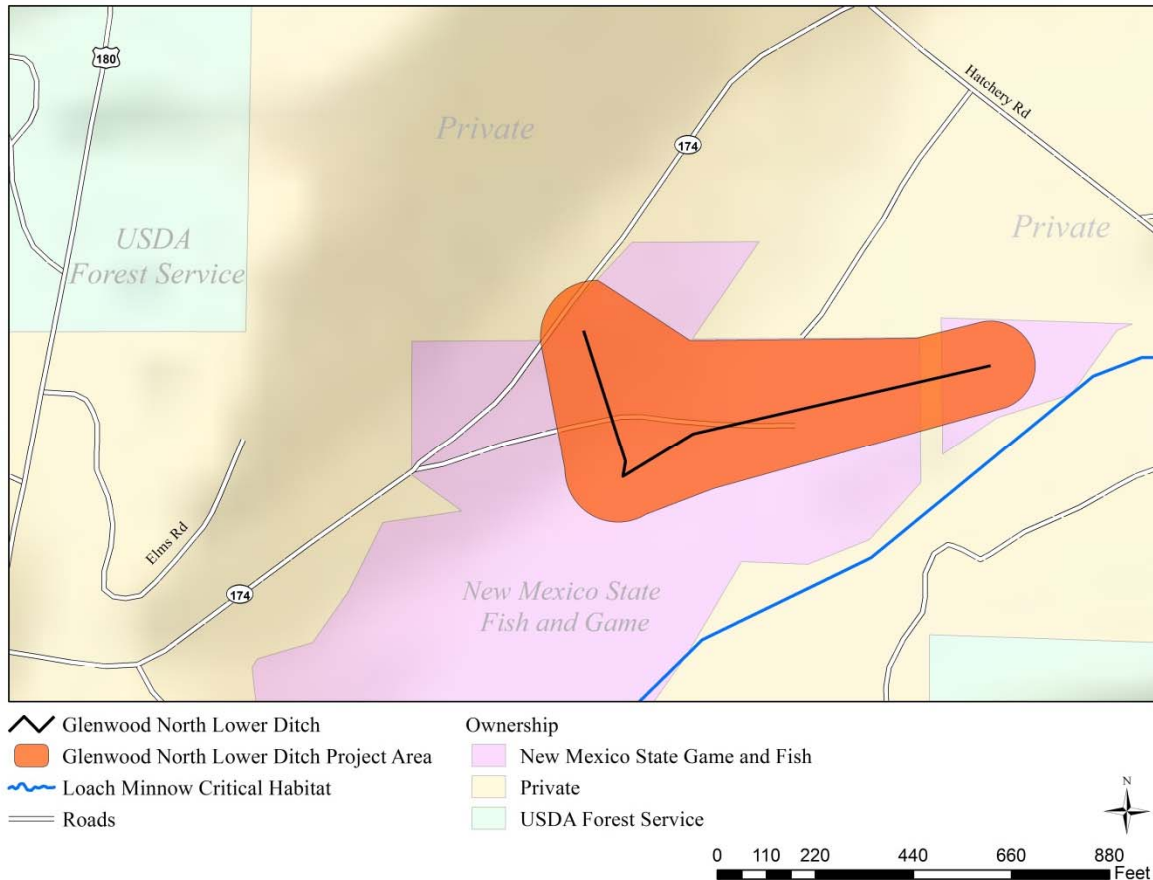


Figure 1. Glenwood North Lower Ditch Project Area.

operations. The *Catron County Comprehensive Land Plan* (National Federal Lands Conference 2012^a), 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: Under the PA, and after review of applicable plans and ordinances available via Catron County's website (<http://www.catroncounty.us/files.html>), 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. The second point of diversion is located on State-managed land and requires no easements or agreements with other property owners. Restoring the diversion, administratively, may require notification and/or approvals from appropriate State authorities. Water collected by the system would continue to be conveyed to current users.

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

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

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: Aridic ustochrepts and typic ustochrepts are the soil types associated with the project area (USDA 2006). Geotechnical information regarding the soil, subsurface conditions, and groundwater in the collection areas is currently not known, particularly for the area identified for the new diversion. However, no subsurface features of concern have been identified through literature search.

Being an agricultural area, the county and its residents value the integrity of their soils. As an example, the *Catron County Comprehensive Land Plan*, states the County’s value of its soils: “...protection of soils from wind and water erosion and maintaining its fertility is critical to 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: Under the PA, there would be dust generated in association with excavation, soil displacement, compaction, and pipe, vault, gallery, and diversion restoration/replacement activities. These impacts are local and temporary in nature, and reducible through use of BMPs. Construction of a temporary holding pond and dewatering activities would be necessary to perform diversion-point work. Historically, the area has been subject to similar activities with placement of the original ditch system. After the infrastructure is replaced and buried, the site would be reclaimed.

Water in the holding pond that has not infiltrated to the ground would be discharged, most likely, to a nearby existing ditch. There may be some sediment that discharges with the water. Sediment discharge could result in temporary turbidity and thermal changes located at and near to the point of discharge. These impacts are expected to be temporary and localized.

Holding pond water could be discharged to Whitewater Creek, but because the creek is critical habitat for the Loach minnow (See Ecological Resources section), and because sediment discharge could cause temporary 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 returning the site to a condition similar to its original condition is consistent with county policy on soils. Assuming no discharge is made to Whitewater Creek, and because there would be minor impacts to soils during implementation of the PA, primarily dust generation, a **less-than-significant impact** determination was made for the geologic environment/soils resource.

Under the NAA, the piping system is progressively declining, sediment is accumulating within the pipe system, and trees are growing along the buried pipeline and pugging holes in the perforated pipe section. This situation is not an immediate threat that results in significant changes to the existing soil or geologic landscape. However, continued degradation of the system would be expected to trend toward more significant consequences, such as surface disturbance and subsidence that could lead to local ponding.

Should Whitewater Creek experience flooding, the ponded areas could form a preferential water flow path. At present, impacts are minimal and localized and **less-than-significant**.

Water Resources

Affected Environment: The buried ditch system collects subsurface water and conveys it for hatchery and agriculture uses. The ditch system currently experiences diminished water flow through leaks and sediment accumulation in the pipe. Lost water is used by vegetation that has grown alongside, and within the perforations of the pipe.

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: Under the PA, the replacement system would recoup water loss that is diminishing current flow. The PA would result in improved performance of the diversion system and re-establish integrity of flow to the users. Construction activities would include creating a temporary holding pond for dewatering activities and, after the ditch system is replaced, discharging remaining water to a nearby existing ditch.

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. Because an existing infiltration gallery would be replaced with a new infiltration gallery, 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 nearby Whitewater Creek is expected.

Holding pond water could be discharged to Whitewater Creek, but because the creek is critical habitat for the Loach minnow (See Ecological Resources section), and because holding pond water discharge could cause temporary turbidity and thermal changes to the water, an informal Section 7 consultation, as outlined by the USFWS, would be recommended (USFWS 2013).

Implementing the PA (assuming no discharge is made to Whitewater Creek) would not result in depositing any material or discharging any substance into a waterway such that land or water is degraded or made unavailable for habitat and downstream uses. Replacing the ditch system would be consistent with county plans and ordinances. Thus, implementation of the PA is anticipated to result in **less-than-significant impact** to water resources.

Under the NAA, water that has been lost from the pipe 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 degradation of the system would be expected to result in continual and increasing impacts in reduced flows to the hatchery and agricultural water users, particularly if the ditch 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 Madrean Lower Montane Woodlands ecoregion, which covers the slopes of the Guadalupe, Sacramento, Mimbres, Big Burro, and Mogollon mountains, generally between 5500 to 7200 feet, with densities of juniper, pinyon pine, and oak varying according to aspect. At middle elevations, dense thickets of shrubs such as desert ceanothus, alderleaf mountain mahogany, and catclaw mimosa form chaparral communities. Other areas are grassy and park-like with scattered trees. A few small areas of ponderosa pine, Douglas-fir, or southwestern white pine occur at the highest elevations, outliers of nearby ecoregions (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 threatened and endangered (T&E) flora and fauna species. No T&E flora species were identified or anticipated to be found within the project area (USFWS 2014). As such, flora species were not analyzed further.

Two species, the Southwestern Willow flycatcher (*Empidonax traillii extimus*) and the Narrow-headed garter snake (*Thamnophis rufipunchatus*), are likely to be found within the project area (USFWS 2014). The Loach minnow (*Tiaroga cobitis*) and Spikedace (*Meda fulgida*), are located outside the project area but may be found in nearby Whitewater Creek, which is also designated critical habitat for the minnow, as shown on Figure 1. Species status and habitat requirements are shown in Table 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 Area
Narrow-headed garter snake	<i>Thamnophis rufipunchatus</i>	Proposed Threatened	Found near river banks or streams	Likely
Southwestern Willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Dense riparian habitats with microclimatic conditions dictated by the local surroundings. Located in the U.S. during the summer, migrates to wintering areas in Central America.	Likely
Loach minnow	<i>Tiaroga cobitis</i>	Endangered	Turbulent, rocky riffles of mainstream rivers and tributaries at or less than 2,200 meters in elevations <i>Note: The Loach minnow has critical habitat adjacent to the project area.</i>	No, but nearby in Whitewater Creek
Spikedace	<i>Meda fulgida</i>	Endangered	Midwater habitats of runs and pools especially in the downstream ends of rivers	No, but nearby in Whitewater Creek

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 were assumed to require a small crew of workers and a few pieces of construction equipment, over a period of 3 weeks, depending on weather conditions.

- **Species.** PA activities are not occurring within Whitewater Creek itself, nor assumed to involve any discharge or disturbance to the creek. 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. When the PA is completed, which is estimated to be over the course of approximately three weeks, noise levels would return to current noise and ambient background levels.

The Southwestern Willow flycatcher, Narrow-headed garter snake, and other terrestrial species could be present in the project area. These 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 already habituated to the existing noise of humans, hatchery operations, farming operations, and local traffic. Noise and vibration from PA activities may impact the Loach minnow and Spikedace, and other aquatic species. If aquatic species perceive noise and vibration, they would temporarily relocate to other parts of the stream and return when disturbance ceases.

- **Habitat.** Activities to rehabilitate 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 rehabilitation activities cease, areas that require re-vegetation would be reclaimed. Until vegetation regrows, reclaimed areas may appear barren. No aquatic habitat/aquatic vegetation, including critical habitat, is expected to be permanently reduced as a result of implementing the PA.

Under the PA, assuming no holding pond water is discharged to Whitewater Creek, there would be no take of T&E species, or any permanent reduction in species' terrestrial or aquatic habitats. Because there would be noise and vibration generated, implementation of the PA is anticipated to result in a **less-than-significant impact** to 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 lists three properties near to Glenwood, within the Mogollon Mountain area (State of New Mexico 2012). These properties, shown in Table 2, are well outside the project area.

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).

Table 2. Historic properties near Glenwood, New Mexico.

Historic Preservation Division No.	County	City	Name of Property	National Register Date
1438	Catron	Glenwood	Mogollon Baldy Lookout Cabin	1/28/1988
306	Catron	Glenwood	Mogollon Village Site	11/30/1979
581	Catron	Glenwood	Whitewater Canyon Pipeline	12/9/1977

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 and natural resource 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 3. 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 200 miles southeast of Glenwood, 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.*

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 reducible through implementation of BMPs. It is 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 and would disperse long before reaching any town, including Glenwood. Likewise, 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, northwest of Glenwood, and the Mount Baldy Wilderness, further to the west in Arizona.

Table 3. 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 ^a	13.1 ppm	
	8-hr average	9 ppm ^a	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 ³
PM ₁₀	24-hr block average	150 µg/m ^{3a}	150 µg/m ³	8 µg/m ³
	Annual average		50 µg/m ³	4 µg/m ³
PM _{2.5}	24-hr block average	35 µg/m ^{3b}		
	Annual average	12 µg/m ^{3c}		
Ozone	1-hour	0.12		
	8-hr rolling average	0.075 ppm ^d		
Sulfur dioxide	1-hr average	75 ppb		2 µg/m ³
	3-hr block average	0.50 ppm		25 µg/m ³
	24-hr block average	0.14 ppm	0.10 ppm	5 µg/m ³
	Annual average	0.03 ppm	0.02 ppm	
Lead	Rolling 3-month average	0.15 µg/m ³		
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/m³.
- To attain this standard, the 3-year average of the annual arithmetic mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
- 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.

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 3, 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/creating diversion would not be impacted, because the project area is not identified as an area of high scenic quality, is not readily used by large numbers of people, and would not be significantly changed from its existing state. Because the majority of the piping system is buried, and because the replacement system would also be buried, the area would look much the same as the existing condition. There would be temporary minor aesthetic changes to the landscape during project activities, with the presence of laborers and equipment on site. After PA implementation, some areas around the ditch-line may appear barren until vegetation re-establishes, but these are temporary aesthetic changes. After PA implementation, to the majority of viewers, there would be no noticeable change to the visual/aesthetic landscape. Thus, 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, hatchery operations, and vehicular traffic on nearby roads and highways. The project area does not lie within a noise abatement area, nor are there any residential areas within close proximity. 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 a few weeks, 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 hatchery 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 [i.e., agriculture], 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 a small section of privately-owned land and a small acreage of state-managed public land. The project area lies within Glenwood, an unincorporated community and home to approximately 300 residents. Replacement of the existing pipe system is not anticipated to affect the private owner's property value or rights.

The hatchery is an important contributor to the local economy. The hatchery's average annual production is 53,000 pounds of rainbow trout, which is more than 400,000 fish. Most of the fish are stocked in waters in the southwestern quadrant of the state. Agriculture is another important contributor to the local economy. The diversion system provides water to irrigate cropland on both sides of Highway 180.

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 few weeks. 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.

Under the NAA, diminished flow has not been reported as an immediate threat to fish populations in the hatchery or to hatchery operations, as time progresses, not replacing the infrastructure would be expected to result in further reduction of flow and would hinder, if not significantly reduce, the volume of water available to the hatchery to operate. If the hatchery could not operate to current levels, there could be potentially significant impacts to the USFWS hatchery operations locally, and throughout the USFWS's hatchery program. Diminished flow also has not been reported as an immediate threat to farming operations, but continued decline of the diversion system also would be expected to result in continual reduction of water to farmers who rely on daily availability of water for their crops during growing season.

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

Summary of Impacts and Significance

Table 4 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 resource. 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 hatchery and farming operations that over time would be expected to increase in magnitude.

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

Table 4. Summary of impacts for the Glenwood North Lower Ditch Rehabilitation 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		

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