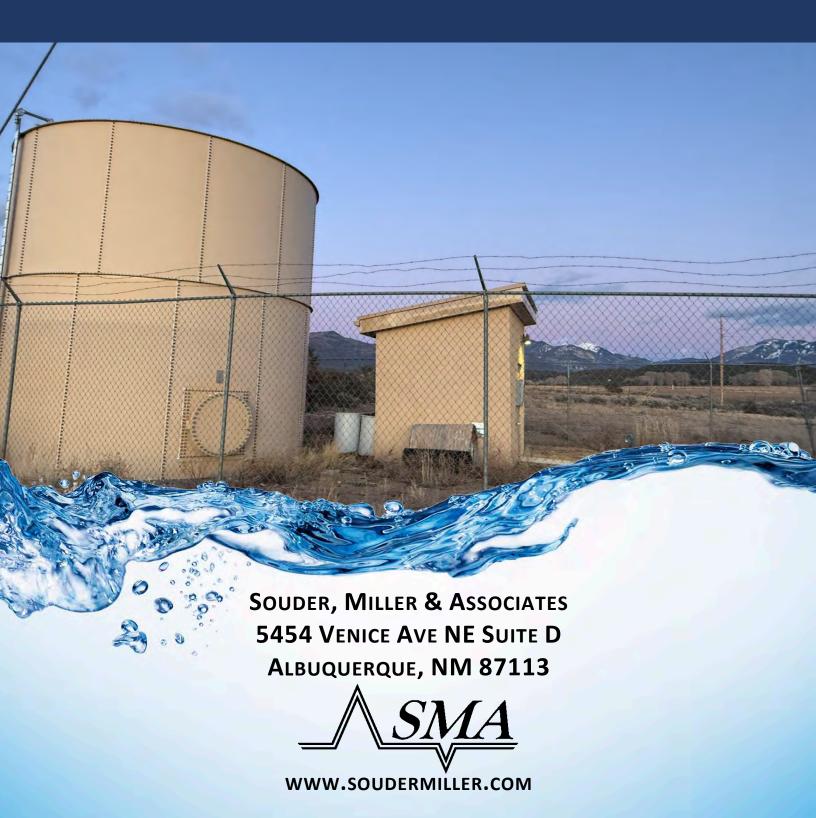
# Lower Arroyo Hondo MDWCA Taos County, NM

PRELIMINARY ENGINEERING REPORT
WATER SYSTEM IMPROVEMENTS PROJECT
MAY, 2025



### PROFESSIONAL ENGINEER CERTIFICATION

The Preliminary Engineering Report for the Lower Arroyo Hondo MDWCA was prepared by:

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The technical material and data contained in the Preliminary Engineering Report was prepared under the supervision and direction of Keaton Chancellor, P.E., whose seal as a Professional Engineer licensed to practice in the state of New Mexico, is affixed below.

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New Mexico P.E. License #24899

SSIONAL ENG

All questions about the meaning of intent of these documents shall be submitted only to the Engineer of Record stated above, IN WRITING for interpretations.



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### **ABBREVIATIONS**

AFY: Acre-Feet per Year

aMSL: Above Mean Sea Level APE: Area of Potential Effect bgs: below ground surface

CCR: Consumer Confidence Report CFR: Code of Federal Regulations CPB: Construction Programs Bureau

DWB: Drinking Water Bureau

EID: Environmental Information Document

EMNRD: Energy Mineral and Natural Resources Department

EPA: Environmental Protection Agency

FEMA: Federal Emergency Management Agency

gpm: gallons per minute

GWQB: Ground Water Quality Bureau

hp: horse power

LCCA: Life Cycle Cost Analysis

LF: Linear foot

MCL: Maximum Contaminant Level

NMDGF: New Mexico Department of Game and Fish NMDOT: New Mexico Department of Transportation

NMED: New Mexico Environment Department NMOSE: New Mexico Office of the State Engineer

NPV: Net Present Value

NRCS: Natural Resources Conservation Service

psi: pounds per square inch PVC: Polyvinyl Chloride

O&M: Operations and Maintenance PER: Preliminary Engineering Report

PPA: Project Planning Area

ROW: Right of way

RUS: Rural Utilities Service SDWA: Safe Drinking Water Act SMA: Souder, Miller & Associates

SHPD: State Historic Preservation Division

SPPW (S): Single Payment Present Worth Salvage value



SWQB: Surface Water Quality Bureau

USACE: United States Army Core of Engineers USDA: United States Department of Agriculture

USFS: United States Forest Service

USFWS: United States Fish & Wildlife Service USPW: Uniform Series Present Worth



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### I. GENERAL

Souder, Miller & Associates (SMA) prepared this Preliminary Engineering Report (PER) for Lower Arroyo Hondo Mutual Domestic Water Consumers Association (LAH MDWCA, Association) according to the guidelines established in United States Department of Agriculture (USDA) Rural Utilities Services (RUS) Bulletin 1780-2, "Preliminary Engineering Reports for the Water and Waste Disposal Program". This PER evaluates alternative projects for improvements to the Association's water supply, storage, and distribution system, and compares alternative projects to address existing deficiencies, then proposes recommended alternatives based on objective criteria with an emphasis on cost effectiveness. The planning period used for this PER is 20 years.



### **II. PROJECT PLANNING AREA**

#### A. LOCATION

The Lower Arroyo Hondo MDWCA water system is located in Taos County, New Mexico, approximately 11 miles northeast of the town of Taos along New Mexico State Road (SR) 522 (NM-522). The Project Planning Area (PPA) occupies approximately 1.1 square miles, the majority of which is on the west side of SR 522. The PPA is shown in Figure II-1 below.

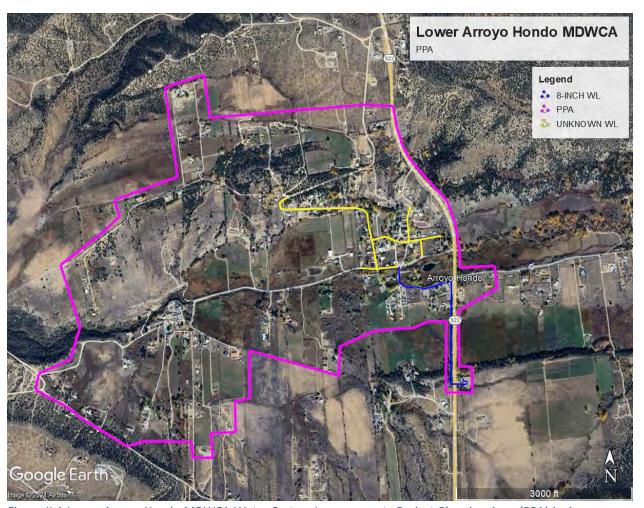


Figure II-1:Lower Arroyo Hondo MDWCA Water System Improvements Project Planning Area (PPA) in Arroyo Hondo, NM.



#### **B. ENVIRONMENTAL RESOURCES**

This section describes the environmental resources present within the PPA. The improvements proposed in this PER will be almost entirely confined to existing rights of way and/or areas that have previously been disturbed.

#### 1. Land Use

The PPA – depicted in the United States Geological Society (USGS) 7.5-minute series topographic map in Figure C in Appendix A, and the BLM Map in Figure D in Appendix A - is located within the Arroyo Hondo Land Grant. Land use within the PPA is residential and commercial and the community setting is rural. Roads within the PPA include County and local roads, as well as NM-522, which is maintained by the New Mexico Department of Transportation (NMDOT).

#### 2. Soils

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) provides detailed soil surveys and maps that include information about soils in a specific area. SMA generated an NRCS Custom Soil Resource Report (NRCS Soil Report) for the PPA comprised of the types summarized in *Table II-1* below.

Table II-1: NRCS Custom Soil Source Report, Soil Types Summary

Soil Type Name	Percent of PPA
Caruso variant silty clay loam, 0 to 3 percent slopes	5.8%
Fernando silt loam, 0 to 7 percent slopes	6.0%
Fernando silt loam, 0 to 7 percent slopes	6.4%
Fernando clay loam, 3 to 5 percent slopes	5.4%
Fernando clay loam, 5 to 7 percent slopes	2.9%
Loveland clay loam, 0 to 3 percent slopes	10.7%
Manzano clay loam, 1 to 3 percent slopes	5.6%
Manzano clay loam, 3 to 5 percent slopes	6.8%
Poganeab silty clay loam, nearly level	2.0%
Rock outcrop, very steep	2.7%
Sedillo-Orthents association, 9 to 45 percent slopes	0.0%
Sedillo-Silva association, 0 to 25 percent slopes	31.6%
Silva loam, 0 to 2 percent slopes	12.4%
Silva-Sedillo association, 1 to 15 percent slopes	1.6%



Sedillo-Silva association is the most prevalent soil found in the PPA. It is located throughout the PPA and along areas on the edges of the PPA and is typically applied to the rangeland categorization. A copy of the NRCS Soil Report is included in Appendix A and includes soils maps illustrating NRCS-mapped soils in the PPA.

#### 3. Farmland

The USDA NRCS provides detailed soil maps and identifies soils as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland – those soils best suited to food, feed, fiber, forage, and oilseed crops. The NRCS Soil Report for the PPA indicates that there is farmland of statewide importance, prime farmland if irrigated, and not prime farmland areas. The proposed project improvements presented in this PER should be designed to minimize impacts to any land used for agricultural purposes as determined by the NRCS Farmland Classification Map. This map, along with the legend and summary, are included in Appendix A.

#### 4. Rangeland

According to the NRCS, an ecological site is a site with characteristic soils, infiltration, runoff, and plant communities that have developed over time. Rangeland ecological sites within the PPA are primarily meadow, loamy, breaks, and gravely slopes rangelands. The proposed project improvements presented in this PER will either remain within existing roadway rights-of-way or will not permanently affect rangeland ecological sites. Furthermore, the NRCS Soil Report does not indicate any restrictions with respect to development within these soils. A copy of the NRCS Rangeland Classification Map, legend, and summary are included in Appendix A.

#### 5. Forestland

The NRCS identifies soils that are forestland ecological sites with characteristic soils, infiltration, runoff, and plant community that have developed over time. The NRCS Custom Soil Resource Report indicates that there are no forestland soils within the PPA. A copy of the report is included in Appendix A.

#### 6. Wetland

SMA utilized the United States Department of the Interior Fish and Wildlife Service (USFWS) National Wetlands Inventory to identify wetlands and riparian areas surrounding and within the PPA. The inventory indicates that riverine, freshwater emergent wetlands, freshwater forested/shrub wetlands, and freshwater ponds wetlands exist within the PPA. According to the USFWS Environmental Conservation



Online System (ECOS) Information for Planning and Consultation (IPaC) planning tool, Riverine includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. Freshwater emergent wetlands are Palustrine systems, emergent, persistent, and seasonally saturated. Freshwater forested/shrub wetlands are Palustrine systems, scrub-shrub, broad-leaved deciduous, and seasonally flooded. Lastly, freshwater ponds are Palustrine systems, unconsolidated bottom, permanently flooded, and excavated by humans. The proposed project improvements presented in this PER will either remain within existing roadway rights-of-way or will not permanently affect any of the wetlands. A copy of the IPaC report is included in Appendix A, and a full description of the wetland codes contained in the IPaC report can be found at the National Wetlands Inventory website. A map showing the wetlands present within the PPA can be found in Figure E in Appendix A.

#### 7. Floodplains

The United States Department of Homeland Security Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) and National Flood Hazard Layer (NFHL) designate special flood hazard areas, base flood elevations, and insurance risk zones. Some parts of the PPA fall within the 100-year flood zone (Zone A), as shown in Figure F in Appendix A, these areas are centered around the Rio Hondo itself (a tributary of the Rio Grande); however, the water distribution system is not present in this area surrounding the river and in any case the improvements in all Alternatives presented in this PER will not impair the function of the floodplain, because all improvements will be buried.

#### 8. Historical Sites

The New Mexico Department of Cultural Affairs Historic Preservation Division (HPD) identifies, documents, evaluates, and registers prehistoric and historic properties throughout New Mexico. A review of the HPD cultural resource information system (NMCRIS) indicates some portions of the proposed project area, or Area of Potential Effect (APE) have been surveyed.

The APE is defined in the Code of Federal Regulations (36 CFR 800.16(d)) as:

the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic



properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Three archaeological sites that are eligible or potentially eligible to the State Register of Cultural Properties (SR) and/or the National Register of Historic Places (NRHP) are within or adjacent to the proposed ROW. An additional site, whose eligibility to the SR and/or NRHP has not yet been assessed, is also within the proposed ROW. Consultation with a qualified archaeologist is recommended for inclusion during design of system improvements should they be proposed in the immediate vicinity of these designated locations. SMA does not expect the proposed project improvements presented in this PER to have any adverse effects on any recognized historic resources. If any archaeological resources are encountered during construction, it is recommended that work be immediately stopped so that the design engineer can consult with an approved archaeologist to evaluate the significance of the discovery.

Appendix A includes the response to SMA's request for information pertaining to historic sites from the New Mexico State Historic Preservation Office (SHPO) and their review of the proposed project area, as well as a recommendation for a Class I survey in consultation with an archaeologist on the SHPO directory of approved archaeologist (HPD Log #122342).

#### 9. Endangered Species/Critical Habitats

The New Mexico Department of Game and Fish Biota Information System of New Mexico (BISON-M) website provides detailed information about endangered and other species, as well as habitat information, for Taos County, NM. Taos County is residence to the state identified endangered species the Meadow Jumping Mouse, White tailed Ptarmingan, Southwestern Willow Flycatcher, and the Wrinkled Marshsnail. The Meadow Jumping Mouse and Southwestern Willow Flycatcher is also a federally identified endangered species. Federally identified species that are designated as threatened include the Canada Lynx, Yellow-billed Cuckoo, and Mexican spotted owl. State identified species that are designated as threatened include the Pacific Marten, White-eared Hummingbird, Bald Eagle, Common Black Hawk, Boreal Owl, Peregrine Falcon, Gray Vireo, and Baird's Sparrow.

The USFWS is the federal agency with direct responsibility for implementing the Endangered Species Act, listing species as threatened or endangered, and protecting such listed species. The USFWS Threatened & Endangered Species Active Critical



Habitat Report online mapping tool indicates no critical habitat in the PPA; therefore, the proposed project is not likely to affect any of the species listed above. A copy of the critical habitat map and list of endangered species are included in Figure G in Appendix A. Furthermore, the proposed project improvements presented in this PER will be completed in previously- disturbed areas, and SMA does not believe there will be any impacts to threatened or endangered species. SMA recommends that the construction documents require escape ramps for any trenches left open overnight to ensure animals cannot be inadvertently trapped.

#### 10. Geology

The Arroyo Hondo MDWCA lies within the footprint of the northern Rio Grande Rift, within the Southern San Luis Basin west of the Sangre de Cristo mountains. The Rio Grande Rift is an area of east-to-west crustal extension that was active during the Oligocene and Miocene epochs, generally over the last 35 million years (Thorn et al., 1993). The rift has developed in a fashion characteristic of similar major structures elsewhere in the world; successive episodes of extension caused large blocks of crust to drop down relative to the adjacent ground, forming a series of fault-bound structural and physiographic basins. The basins are characterized by thin crust, high heat-flow, active faulting, recent volcanism, and thick basin-fill. Local structural features resulting from the Rio Grande Rift extension include the north-south trending Sile fault. The fault passes through the southwest corner of the PPA and down dropped older Tertiary sediments to the west against younger sediments to the east.

The PPA is located within the Rio Hondo valley and the Southern San Luis basin, which consist of unconsolidated quaternary alluvial sediments interbedded with thick basalt volcanic rocks which were deposited in the Pliocene. The east-central portions of the PPA, located within the valley near the Rio Hondo, are situated on quaternary and tertiary sediments deposited from the current and ancestral Rio Hondo fluvial system. Valley sediments in the eastern portions of the PPA are over 150 feet thick and consist of alternating sand, gravel, and clays overlying Tertiary-aged volcanics. The northern portions of the PPA, located at higher elevations, are situated on thinner packages of quaternary alluvial terrace and fan sediments deposited by the ancestral Rio Hondo or sheet flow from the Sangre de Cristos to the east; sediments in this area are typically less than 75 feet thick. No quaternary sediments are present in the western portion of the PPA. The tertiary-aged Servilleta Basalt and Cerro Negro Dacite, which compose the bedrock units in the area, consist of dark gray to black volcanics which are present throughout much of the region; the Servilleta basalt is the unit which composes the walls of the Rio Grande Gorge to the west. The volcanics can have a total thickness of up to 1,000 feet in the area and are often interbedded



with unconsolidated sedimentary units consisting of sands, clays, and gravels which can have thicknesses of up to 200 feet (Bauer et al, 2021).

#### 11. Hydrogeology

Water resources within the PPA are managed as part of the Rio Grande Management Basin, a district overseen by the New Mexico Office of the State Engineer (NMOSE). Surface water resources are managed as part of the Upper Rio Grande Basin, which spans from the Colorado-New Mexico state line to the Otowi gage located near State Highway 4 and San Ildefonso Pueblo. Approximately 1.1 million acre-feet of water run through the basin each year (long-term average, NMOSE 2024), and upper Rio Grande tributaries include the Red River, Rio Hondo (which runs through the PPA), Pueblo de Taos, Embudo Creek, and the Rio Chama. The PPA lies within the Rio Hondo watershed, which drains surface water from 75 surrounding square miles including the northwest portion of Wheeler Peak and the southern Taos Mountains before flowing into the Rio Grande approximately two miles to the west (Johnson, Bauer, and Felix, 2009).

Groundwater within the PPA is managed under the broader Rio Grande underground water basin, which spans from the Colorado state line south to Truth or Consequences, New Mexico. Within the PPA, there are two primary aquifers utilized for water supply — a shallow aquifer contained with the upper alluvial sediments (depth to groundwater less than 100 feet) and a deeper aquifer within the Tertiary volcanic units with groundwater located at a depth of approximately 400 feet (Johnson, Bauer, and Felix, 2009).

SMA reviewed well records on file with the NMOSE that were available on the Point of Diversion (POD) Location Geographical Information Systems (GIS) website (https://gis.ose.state.nm.us/gisapps/ose pod locations/) as well as *Hydrogeologic Investigation of the Arroyo Hondo Area, Taos County, New Mexico* by Johnson, Bauer, and Felix published in 2009. These well records and this study indicate that the majority of wells within the valley to the south of the Rio Hondo typically utilize the shallow, alluvial aquifer, with well depths typically between 80-200 feet deep. Groundwater in this aquifer is typically found from 30 to 100 feet below ground surface (bgs), and it is noted here that the central portion of the PPA exists at approximately 6,900 above mean sea level (aMSL), and generally flows westward towards the Rio Grande. Existing area wells report production ranging from 15 to 30 gallons per minute (gpm), with the most productive zones consisting of course-grained sands and gravels. Information on the existing Arroyo Hondo MDWCA supply well (NMOSE File No. RG-16502) is sparse, but the recorded depth of 175 feet suggests it is completed in this shallower alluvial aquifer. Wells located in the



northern portion of the service area outside of the Rio Hondo valley are completed in the deeper Tertiary volcanic aquifer, with total depths between 300-600 bgs. Groundwater in this unit is found at depths between 300 and 450 feet bgs (at an approximate elevation of 6,600 feet above msl) and is contained within fractured basalt zones and unconsolidated sediments within the volcanics. Groundwater flow is also to the west towards the Rio Grande, and wells within the deeper aquifer report production ranging from 10 to 30 gpm.

Groundwater quality from the shallow alluvial aquifer is reportedly very good. Samples collected between 1997 and June, 2023 from the existing Lower Arroyo Hondo MDWCA well, as reported in the New Mexico Environment Department (NMED) Drinking Water Bureau (DWB) Drinking Water Watch database, do not have any constituents exceeding the United States Environmental Protection Agency (EPA) Primary and Secondary Constituent Maximum Contaminant Levels (MCLs) or those established by New Mexico Water Quality Standards to protect human health. Primary contaminants of concern typically considered in Rio Grande Basin groundwater include arsenic, which is naturally occurring and is sourced from water interactions with volcanic ash or silicic volcanics, and nitrate, which often occurs in rural or agricultural areas due to discharge from leaking septic systems or infiltration of crop fertilizers. Samples collected from the existing well indicate arsenic concentrations below the EPA MCL of 10  $\mu$ g/L, and nitrate concentrations of less than 4 mg/L, which is below the EPA MCL of 10 mg/L.

Water quality information for the deeper volcanic aquifer in the Arroyo Hondo area is limited, but regional water quality in the aquifer according to existing records is generally good. The closest wells completed in the Tertiary volcanics with readily available water quality data are located approximately five miles south of the PPA near Highway 64. Water quality samples collected from a well near the Taos Airport by the United States Geological Survey (USGS) in 1989 indicated good water quality with no exceedances of arsenic, nitrate, or other primary standards (USGS National Water Information System, 2024). Wells completed within the Tertiary basalts as part of the groundwater monitoring program for the Taos Regional Landfill (located approximately six miles south of the PPA), also indicate very good water quality, with no primary or secondary exceedances (SMA, 2023).

#### C. POPULATION TRENDS

The Association's service area is located within Taos County. Historically, the population in Taos County has increased based on decennial census data collected by the U.S. Census Bureau for a period between 1990 and 2020. Census data compiled by the University of New



Mexico Bureau of Business and Economic Research (UNM BBER, <a href="http://bber.unm.edu/">http://bber.unm.edu/</a>) are depicted in *Figure II-2* below. Historical Taos County census data indicate a historical increase in population in Taos County. As can be seen in *Figure II-2*, the population has trended upwards over the past three decades.

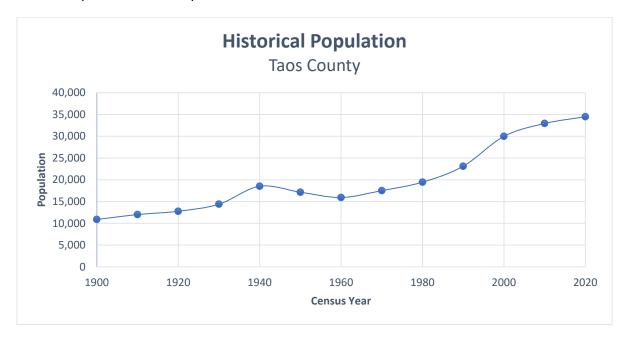


Figure II-2: Historical population in Taos County

New Mexico Drinking Water Bureau (DWB) Drinking Water Watch reports the Lower Arroyo Hondo MDWCA (Water System No. NM3505429) as serving a federal population of 180 within Taos County. SMA estimated the current population in the PPA by multiplying the current number of water system connections (78 active and inactive residential connections) by the average household size of 2.36 people per home based on 2020 census data the U.S. Census Bureau data. This results in an estimated 184 people currently being served by the Association's water system.

SMA assumes that the population will change at rate similar to that projected for Taos County, and utilizing UNM Geospatial and Population Studies (UNM GPS) population projections for Taos County.

UNM GPS population projections for Taos County are shown in *Figure II-3* below and in Appendix B. The population projections show a slight negative population trend is projected through 2050. Assuming the population trend for Taos County will continue at a similar projected rate through 2045, which is the conclusion of the 20-year planning period



considered in this PER, as per USDA Bulletin 1780-2, an increase in population within the PPA during the 20-year planning period is anticipated.

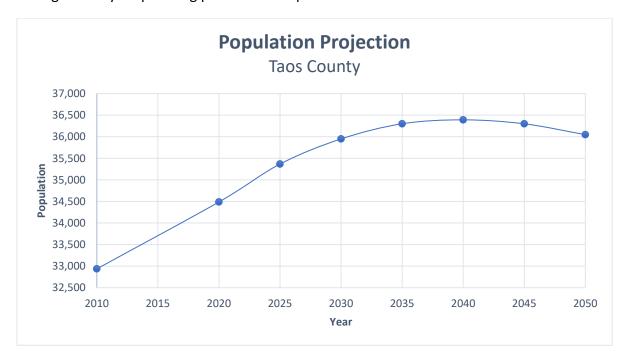


Figure II-3: UNM GPS Population Projections for Taos County

*Table* II-2 shows the estimated annual growth rates based on the 5-year incremental UNM GPS population projections. SMA applied the Mora County growth rates to the PPA and estimated that the population will increase from 184 to 194, or 78 residential connections to 82 by 2045.

Table II-2: UNM GPS projected population and annual growth rates in Mora County and the Mora County Water Alliance PPA.

Year	Taos County Population	% Growth per Year	Lower Arroyo Hondo MDWCA PPA Population
2020 <sup>(3)</sup>	34,488	0.92%	184
2025 <sup>(3)</sup>	35,367	0.50%	189
2030 <sup>(3)</sup>	35,949	0.33%	192
2035 <sup>(3)</sup>	36,300	0.19%	194
2040 <sup>(3)</sup>	36,391	0.05%	194
2045 <sup>(3)</sup>	36,299	-0.05%	194
Growth rate over 20-year period (2025-2045):		0.10 %	



#### Notes:

(1) 2010 Census Count (source: U.S. Census Bureau)

(2) UNM GPS Estimate (source: https://gps.unm.edu/pru/estimates)
(3) UNM GPS Projection (source: https://gps.unm.edu/pru/projections)

A 2010 PER prepared by SMA for the Association identified 128 projected service connections for the 20-year planning period: 81 existing, 10 additional to accommodate population growth and 37 future proposed connections due to expansion of the service area. This would indicate a projected population of 302 for the service area, based on the above statistics. However, since that time the existing service connections for the Association seem to have been reduced from 81 to 78. The Association confirmed that there has been a drop in membership in recent years. Nevertheless, the Association seems intent upon providing services to as many community members as are willing to join and to prepare the system to best accommodate a minimum level of service to provide for the future sustainability and resiliency of the system. Actual expansion of service connections within the PPA are likely dependent upon the condition of private wells utilized by residents in the community who are not active members of the Association. Predictability of system expansion, population growth, and future Association membership growth is limited by these influencing factors.

According to aerial imagery and the Taos County GIS Map parcel data, the PPA contains 188 parcels that currently have homes developed on the property and 97 parcels that do not have homes developed on the property. Some existing developed parcels contain multiple homes, and review of these as well as the number of undeveloped parcels yields an estimate of 207 total potential connections within the PPA, serving an estimated population of 489 people, if the per household population noted previously is taken into consideration.

Review of available aerial imagery in conference with the Association board members' suggests that the future system could potentially serve 163 additional residential connections which adds approximately 385 people to the system. Therefore, the total connections served could potentially increase to 241 residential connections and one commercial connection, and the total population served could potentially increase to 569 over the 20-year planning period.

#### D. COMMUNITY ENGAGEMENT

The Association conducts monthly board meetings on the 3<sup>rd</sup> Tuesday of each month at #8 Old State Highway 3, Arroyo Hondo, NM at 6:00 pm. Monthly board meetings are advertised on the Lower Arroyo Hondo MDWCA website (lowerhondowater.com), and all members are welcome and encouraged to attend. Members can submit agenda items for the upcoming



meeting or request the meeting agenda on the website. The Association's website also provides copies of the bylaws, rules and regulations, consumer confidence reports, fee schedules, contacts, and how to become a volunteer board member.

During a series of coordination meetings between the Owner and SMA, the Association has indicated their priorities and considerations for water system improvements to be evaluated in this PER. The Association held a board meeting on February 18<sup>th</sup>, 2025 during which the alternatives evaluated and the recommendations outlined in the draft PER were presented to the board and attending members of the community. SMA incorporated review comments and input from the board meeting into this final draft of the PER.

There is high support for and awareness of the proposed water system improvements from the board members. The board plans to reach out to current and potential new members to once this PER is completed to determine the communities' support for the recommended system improvements and expansion.



### **III. EXISTING FACILITIES**

#### A. LOCATION MAP

The existing Lower Arroyo Hondo MDWCA system is depicted below in *Figure III-1* and in Figure A in Appendix A. The water system consists of one water supply well, a 35,000-gallon bolted steel water storage tank, and approximately 3,011 LF of 8-inch diameter DR17 HDPE, and 328 LF of 8 inch C900 PVC waterline, 5,465 LF of waterline of unknown size and material serving the community on the west side of NM 522.

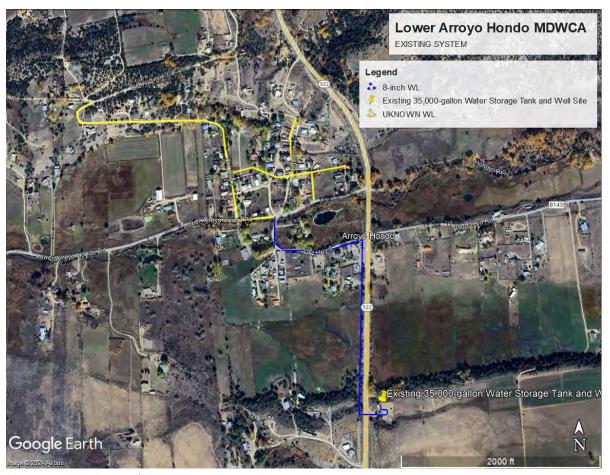


Figure III-1: Existing Facilities Map



#### **B.** HISTORY

The Association was incorporated as a domestic nonprofit in 1969 to provide drinking water to community members. According to the Lower Arroyo Hondo MDWCA website, the original distribution system of distribution line and appurtenances, a groundwater well, and 10,000-gallon tank were installed by community members and nearby locals starting in 1968 and into the early 1970s. The original water system did not include water service meters.

The groundwater well serving this system was completed in 1969 and registered with the NMOSE under permit number RG-16502. The well is 175 feet deep with 6-¾ inch steel casing, screened from 145 ft to 175 ft below ground surface and equipped with a two (2) hp submersible pump with a 15-gpm capacity that was replaced in June 2024 according to the system's water operator.

In 2010, SMA prepared a PER for the Association to assess water system improvements to address the system's aging infrastructure, lack of metering, lack of redundancy in water supply, and insufficient distribution system water pressure. The system had a 10,000 gallon above ground welded steel storage tank that was located on the same site as the pump house. The recommended project resulting from the 2010 PER included replacement of the water storage tank to include cathodic protection and increase storage capacity to 70,000 gallons. The recommended project included installing a booster pump system to provide adequate distribution system pressures as per the New Mexico Environment Department Construction Programs Bureau (NMED CPB) Recommended Standards for Water Facilities. The previous PER also recommended replacement of aging and leaking undersized waterline with 4,678 LF of new 8-inch diameter waterline, 5,312 LF of new 6-inch diameter waterline, and 400 LF new 4-inch diameter waterline including new water service laterals and meters, new valves, hydrants and other appurtenances.

The April 2024 Lower Arroyo Hondo MDWCA Water System Improvements Project Record Drawings comprised of Phase 1 of constructing the improvements recommended in the 2011 PER. This project included replacing the waterline from the tank along NM-522, service lateral west of NM-522, along Old Highway 3, and constructing a new well house. The construction took place in 2023 to install 440 LF of 8-inch C900 PVC waterline, 3,002 LF of 8-inch DR17 HDPE, 70-LF of 2-inch Sch 80 PVC waterline and 380-LF of 2-inch Sch 40 PVC waterline. The waterline construction included installation of a 6-inch gate valve, five (5) 8-inch gate valves, a 1-inch combination air valve, and three fire hydrants. A total of 14 water service meters and associated service line were installed, as well. Construction was delayed due to weather and due to encountered significant rock excavation that was not captured in



the geotechnical report. Therefore, trenchless installation methods of jack and bore and horizontal directional drilling were used to install 55 LF of 8-inch DR18 C900 PVC waterline and 506-LF of 8-inch DR17 HDPE waterline, respectively. The Association was able to clarify that the unexpected rock came from the import of rock materials during the construction of the highway because of the marshy conditions of the land so close to the river.

According to the 2010 PER, the wellhead and its discharge piping were originally located inside a pump house. The new pump house constructed in 2023 no longer encompasses the wellhead. The well was re-cased and provided with a well cap which provides an adequate sanitary seal and is vented. The well discharge piping is still housed within the newer pump house which is protected by security perimeter fencing. The wellhouse is equipped with heating and lighting.

The original 10,000-gallon water storage tank was a part of the original system. According to the 2006 Sanitary Survey, the old water storage tank overflow pipe was not 12 to 18 inches above the ground surface, lacking a splash pad, lacking cathodic protection, and storage capacity was inadequate. The original tank was demolished in 2010 and replaced with a new 35,000-gallon welded steel water storage tank just on the same tank site property. The new tank is equipped with a drain pond and cathodic protection.

#### C. CONDITION OF EXISTING FACILITIES

The following subsections describe the current conditions and capacities of the existing water system components and their suitability for continued use. Descriptions and condition assessments of existing facilities are based on record drawings, 2018 Sanitary Survey, NM DWW, NMOSE, and information provided by the Owner and water operator.

#### 1. Water Demand

Average daily demand (ADD) is the total annual water volume used system-wide divided by 365 days per year. SMA calculated an ADD for the system of 13,621 gpd, or 74 gallons per capita per day (gpcd), using master meter readings from 2021, 2022, and 2024. The master meter readings for 2023 were excluded as an outlier due to the three months without meter data due to the installation of the new well pump, and because the water operator reported to SMA that the readings from the old meter from the early 1970s were not reliable in its last year of operation. Maximum day demand (MDD) is the largest water volume demanded in a 24-hour period in a given year and peak hourly demand (PHD) is the maximum flow rate delivered by the distribution system during a single hour in a given year. It is not possible to calculate actual MDD and PHD for the Association because the customer meter readings are



not monitored, and the master meter readings are approximately monthly totals; the Association does not track daily and hourly usage trends. According to the American Water Works Association (AWWA) Manual M31, *Distribution System Requirements for Fire Protection* (2008):

When specific data on past consumption are not available, a good rule of thumb is that maximum daily demand may vary from 1.5 to three (3) times the average daily demand, while the peak hourly rate may vary from two to eight times the average daily rate. In small water systems, peaking factors may be significantly higher.

Guidance provided in *Water Quality* (1987) states that the peak hour demand may be estimated as 1.5 – 3.0 times the MDD. SMA assumed a conservative factor of 3.0 to estimate an MDD of 40,864 gpd and applied a peak factor of 6.3 to the ADD to estimate a PHD of 0.85 gallons per connection per minute (gpcm). This peak factor was obtained from the *Navajo Area Indian Health Service* (*IHS*) *Design Criteria* graph titled "Peak Factor vs. Number of Homes" as shown below in *Figure III-2* below.

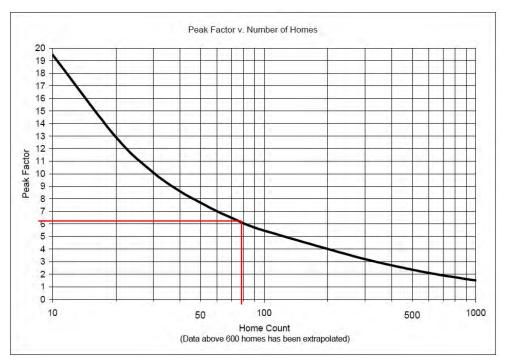


Figure III-2: Peak Factor vs. Number of Homes

The calculated system demands are summarized in *Table III-1* below. Table II-1: NRCS Custom Soil Source Report, Soil Types Summary Water usage records are included in Appendix C.



Table III-1: Current System Demands

Demand Type	Peaking Factor	Total volume over a 24-hour period (gallons)	Flow (gpcm)
ADD	n/a	13,621	0.12
MDD	3.0 x ADD	40,864	0.36
PHD	6.3 x ADD	85,300	0.75

#### 2. Water Source

The Lower Arroyo Hondo MDWCA system has a single active groundwater source designated in the NMED DWW system as Well #1 and registered in the NMOSE database as RG16502.

#### Well #1-NMOSE RG16502



Figure III-3: Photo of Existing Wellhouse

Well #1 was completed in 1969 and is 175 feet deep with 6-¾ inch diameter steel cased and screened from 145 to 175 feet below ground surface (bgs). The water supply well is registered with the NMOSE under permit number RG-16502. According to DWW, the well is 240-ft deep. The well is equipped with a 2 horsepower (hp) submersible pump with a 15-gpm capacity installed in June 2024. The original well house was demolished in 2023 and replaced with a 9 ft by 10ft well house with a new hypochlorite disinfecting system was constructed in 2023.



The 2018 Sanitary Survey reported deficiency of inadequate surface construction because the air relief valve was not screened. A lack of screening can cause contamination to enter or damages along the drinking water system. The deficiency has been corrected as of September 2020.

According to the *Recommended Standards for Water Works*, 2018 Edition (*Ten States Standards*), a water system should have a minimum of two sources of groundwater for redundancy. Additionally, the total developed groundwater source capacity shall equal or exceed the design MDD with the largest producing well out of service.

The daily production of Well #1 ranges from 1,800 gpd to 4,500 gpd. These numbers are based on the 15-gpm flow rate and average daily pumping time reported to SMA by the water operator. To meet current ADD, Well #1 must operate at least 15 hours per day. The groundwater well capacity, assuming a pumping rate of 24 hours per day is 21,600 gpd which is less than the current MDD. Therefore, the recommended Ten State Standards are not met due to the lack of groundwater source redundancy and capacity.

#### 3. Water Storage

The Lower Arroyo Hondo MDWCA has an active water storage tank designated as Storage Tank #2 in NMED DWW shown in *Figure III-4* below.



Storage Tank #2 (Active)

Figure III-4: Storage Tank #2 and Well House

Tank #2 is a 35,000-gallon bolted steel tank installed in 2011 to replace the system's original storage tank. The Lower Arroyo Hondo MDWCA Water



Storage Tank Project Record Drawings from 2011 show that the tank has 35,000-gallon capacity, diameter of 18'- 5½", height of 18'-1½", and base elevation of 6,871-ft aMSL. A 6 inch PVC overflow is located 8 inches below the top of the tank at an elevation of 7,016.5 ft aMSL. The tank is equipped with 6-inch PVC inlet and outlet lines. The water level within the tank is measured and controlled by a float via B/W High/Low Water Controller to monitor water levels. The existing tank can only provide 17-psi of water pressure to the highest point in the existing system (6,850 ft aMSL) when the tank is completely full (6,888 ft aMSL).

The 2018 Sanitary Survey reported significant deficiency at the tank site of inadequate overflow splash pad because the overflow pipe was not 12 to 18 inches above the ground. The low overflow clearance can cause erosion of the facility site resulting in the collapse of the storage tank. The deficiency was corrected as of December 2018.

According to the Ten States Standards,

"Storage facilities should have sufficient capacity, as determined from engineering studies, to meet domestic demands, and where fire protection is provided, fire flow demands", and "the minimum storage capacity (or equivalent capacity) for systems not providing fire protection shall be equal to the average daily consumption."

To provide fire flow in accordance with the Insurance Services Office (ISO) minimum requirements, which enables a public water system to receive a Public Protection Classification (PPC) of Class 8 or better, there must be a minimum available fire flow (AFF) of 250 gpm for a 2-hour duration. A total of 30,000 gallons is the resulting volume requirement in the case of a single hydrant employed for fire protection in this scenario. In accordance with both the *Ten States Standards* and the ISO minimum requirements, a minimum storage capacity of one day demand of 13,621-gallons plus 30,000 gallons are required. The current 35,000-gallons water storage tank does not have sufficient storage capacity to meet this standard and provide fire flow in accordance with the Insurance Services Office (ISO) minimum requirements and the *Ten States Standards*.

The Toas County Fire & Rescue Department provided a broad overview of the minimum recommended requirements for providing adequate fire protection. In regard to water storage, minimum water storage capacity after considering daily



usage and consumptions should be at least 40,000-gallons. Therefore, the water storage capacity should be the ADD of 13,621 gallons plus 40,000 gallons resulting in 43,621 gallons of water storage. The existing water storage tank does not meet the recommendation of the local fire department.

The water system does meet the recommended standard of providing at least one day's worth *of* average daily consumption for a system not providing fire flow. However, the existing system is equipped with fire hydrants and the current Association does want to provide fire flow.

#### 4. Water Distribution

The Lower Arroyo Hondo MDWCA distribution system consists of 3,002-LF of 8-inch DR17 HDPE, 440-LF 8-inch C900 PVC waterline, 78 residential connections, and one (1) commercial connection. Of these connections, only 14 are currently metered. The water system also has 5,465 LF of unknown waterline that may include 2-inch, 4-inch, and 6-inch PVC or other materials, according to the Owner. According to the water operator, the water system has had to fix at least one leak per year in the past five years along the unknown waterline. He noted that the waterline material was deteriorating ductile iron piping assumed to be a part of the original water system.

The waterline along NM-522 and Old Highway 3 that connects the existing system to the tank site was replaced in 2023. A total of 14 water service meters and associated service line were installed. The waterline is equipped with three (3) 1-inch combination air release valves (CAV), four (4) 8-inch gate valves, a 2-inch gate valve, three (3) 6-inch fire hydrant assemblies, and two (2) 2-inch flush hydrants.

The existing waterline and water system components in the system that were not replaced in 2023 are assumed to be at least 56 years old and a part of the original system that began construction in 1969. Aged waterline is more susceptible to corrosion and breaks that can cause water loss and risk of drinking water contamination. The Association could not definitively provide information regarding the occurrence of breaks in the aged waterline because of the lack of comprehensive system metering and explained that the marshy land near the river makes it hard to see signs of waterline leaks. The water operator reported to SMA that at least one leak per year in the past five years was repaired along the original waterline. He also noted that the leak repairs have revealed deteriorating ductile iron piping. In any case, waterline and appurtenances of this age are generally considered to be beyond serviceable condition and at the end of the typical expected useful life.



The 2018 Sanitary Survey reported a significant deficiency of no or inadequate system maps. According to the Sanitary Survey the concern of inadequate mapping comes from not being able to accurately respond to emergencies, easily locate problems, complete repairs, schedule maintenance, and identify required sampling points for compliance. The deficiency has been addressed since December 2019 with the submission of the 2023 Record Drawings to NMED-DWB. However, these record drawings do not encompass the entire water system.

#### Hydraulic Model

SMA created a hydraulic model of the existing water system using information provided by the Association, water operator, and record drawings. SMA spatially allocated demands through the model based on the representative location of residents and connections from aerial imagery.

SMA modeled various scenarios in Bentley WaterCAD to gain an understanding of the hydraulics of the existing system during the different demands put on the system. SMA evaluated the system's capabilities to meet existing ADD, PHD, and to determine the existing system's available fire flow capabilities. *Table III-2* below summarizes the hydraulic scenarios analyzed:

Table III-2 Hydraulic model scenarios and design parameters

SCENARIO	PARAMETERS		
Base Casmaria	- ADD		
Base Scenario	<ul> <li>Water Storage Tank Full</li> </ul>		
Minimum Dynamic	- PHD		
Willing Dynamic	<ul> <li>Water Storage Tank 50% Full</li> </ul>		
Maximum Static	<ul><li>Zero Demand</li></ul>		
Waxiiiuiii Static	<ul> <li>Water Storage Tank Full</li> </ul>		
	- MDD		
Fire Flow (Available)	<ul> <li>Water Storage Tank Full</li> </ul>		
The How (Available)	<ul> <li>Fire Flow Needed – 250 gpm</li> </ul>		
	<ul> <li>Minimum Residual Pressure – 20 psi</li> </ul>		

Per Ten States Standards, it is generally desirable for a distribution system to maintain working pressures in the range of 60 to 80 pounds per square inch (psi), and not less than 35 psi. Pressure reducing valves should be installed on distribution mains when static pressures exceed 80 psi. The base, minimum



dynamic, and maximum static scenarios provide results showing that the existing system is able to provide a sufficient range of pressures to homes throughout the system.

Minimum fire flow is 250 gpm for a 2-hour period. This minimum is based on the Insurance Services Office (ISO) minimum requirements to receive a Public Protection Classification (PPC) of Class 8 or better. Ten State Standards for potable water storage when fire flow is considered is one day of average demand plus fire flow (250 gpm for a 2-hour period, or 30,000 gallons). AWWA Standards is 500 gpm sustained for a 2-hour period.

Hydraulic modeling could not be accurately conducted on the existing system due to a lack of information regarding the actual existing waterline sizes throughout the system. Thus, the water system modelling was performed utilizing a series of alternatives to optimize the system, in order to determine minimum recommended waterline sizes throughout the unknown waterline size area.

SMA is able to calculate that the water storage tank is unable to provide at least 35psi throughout the entire existing system based on hydraulic grade in absence of utilizing the Bently WaterCAD software. As previously described in Section III.C.2, when the existing water storage tank is full, it can provide 17-psi of water pressure to the highest point in the existing system. Based on the elevation of the tank overflow elevation, water service connections with a lower elevation that 6807-ft aMSL are able to be provided with at least 35psi of water pressure. Approximately 56 percent of the existing water system, has a lower elevation than 6807-ft aMSL.

Furthermore, the Association is aware of multiple homes that experience low water pressure especially during the summer months.

#### 5. Treatment/Quality

The Environmental Protection Agency (EPA) establishes National Primary Drinking Water Regulations (NPDWR) Maximum Contaminant Levels (MCLs) for certain water system contaminants. NPDWRs are intended to protect public health and are legally enforceable. Public water systems are required to provide drinking water that meets NPDWR quality standards.



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Data from recent water quality testing reported in the 2023 Consumer Confidence Report indicates that the concentration of inorganic and radioactive contaminants in the water storage tank are all below the EPA's MCLs. A copy of the 2023 Consumer Confidence Report can be found in Appendix C. Further investigation into water quality issues and solutions is not included in this scope of this report.

#### 6. Water Loss

There is insufficient data available to complete a water loss analysis due to the Association not having water meters for all the homes in the system. Only 14 homes have water service meters that are not currently monitored.

#### D. FINANCIAL STATUS OF EXISTING FACILITIES

The following subsections describe the current financial status of the Association, including O&M expenditures for fiscal years 2020 through 2022.

#### 1. Current Rate Schedule

The Association's current rate schedule as posted on their website is summarized in *Table III-3* below and in Appendix D.

Table III-3. Lower Arroyo Hondo MDWCA rate schedule.

Fees & Rate Structure for Water Services Effective January 1, 2020									
New Membership Fees:									
Residential:	\$2,500.00 (Includes connection to meter/service line up to \$2,000)								
Commercial:	\$2,500.00 (Includes connection to meter/service line up to \$2,000)								
Other Fees:									
Disconnect/Reconnect:	\$25.00 (plus any related costs)								
Returned Check Fee:	\$25.00 (plus amount of check)								
Voluntary Deactivation/Reactivation:	\$25.00 (plus any related costs)								
Membership Transfer Fee:	\$100.00								
Rate	Structure as of January 1, 2020								
Active Residential Rate (unmetered):	\$52.00 per mo.								
Active Commercial Rate (metered):	\$185.64 per mo. up to 2,000 gallons \$0.002/gal up to 15,000/gals. \$0.003/gallon over 15,000 gallons								
Inactive Residential Rate:	\$17.00 per mo.								
Inactive Commercial Rate:	\$17.00 per mo.								



All residential members are charged a flat rate, monthly fee, referred to as "the Active Residential Rate (unmetered)" because only 14 service connections are metered in the existing system. The Association does not think it is fair to meter water usage for some, but not all, members. Installing water meters for all the connections in the water system is of high priority to the Association in order to fairly charge all members based on water usage. SMA discussed the rate schedule at the Lower Arroyo Hondo MDWCA February 22, 2025 board meeting, and the board expressed a need to determine a rate schedule that will apply once all members are metered.

## 2. Annual Operations & Maintenance

A summary of the Association's annual O&M expenditures for fiscal years 2020 through 2022 are shown in *Table III-4* below.



Table III-4: Lower Arroyo Hondo MDWCA's O&M expenditures.

OPERATING EXPENSES		FY 2022		FY 2023		FY 2024		AVERAGE	
Domain Networks	\$	289.00	\$	-	\$	-	\$	96.33	
State Engineer Admin Fees	\$	200.00	\$	-	\$	-	\$	66.67	
Miscellaneous	\$	-	\$	(38.45)	\$	-	\$	(12.82)	
Repairs & Maintenance Equipment	\$	2,189.25	\$	6,443.06	\$	4,165.09	\$	4,265.80	
Bookkeeping	\$	8,385.41	\$	7,411.11	\$	9,173.75	\$	8,323.42	
Operator Extras	\$	2,088.12	\$	543.38	\$	326.03	\$	985.84	
Water Operator	\$	5,960.92	\$	7,168.88	\$	5,216.40	\$	6,115.40	
Contract - Other Services	\$	-	\$	2,951.79	\$	-	\$	983.93	
Software & Website Expenses	\$	742.44	\$	281.48	\$	503.55	\$	509.16	
Supplies - General Office	\$	548.36	\$	344.31	\$	105.63	\$	332.77	
Supplies - Furn/Fixt/Equip	\$	222.47	\$	200.12	\$	-	\$	140.86	
Supplies - Other	\$	-	\$	249.12	\$	-	\$	83.04	
Insurance - General Liability/Property	\$	3,277.00	\$	-	\$	100.00	\$	1,125.67	
Postage	\$	429.00	\$	525.66	\$	396.73	\$	450.46	
NM Rural Water Association Dues	\$	157.00	\$	-	\$	314.00	\$	157.00	
Subscriptions & Dues - Other	\$	140.00	\$	98.00	\$	100.00	\$	112.67	
Electricity	\$	1,731.12	\$	1,324.80	-	1,211.05	\$	1,422.32	
Bank Charges	\$	328.93	\$	121.63	\$	9.83	\$	153.46	
Board Stipends	\$	2,819.25	\$	3,293.85	\$	1,801.80	\$	2,638.30	
Board Training	\$	289.20	\$		\$		\$	96.40	
Room Rental	\$	-	\$	50.00	\$	250.00	\$	100.00	
Water Conservation Fees	\$	50.92	\$	111.43	\$	29.64	\$	64.00	
Miscellaneous G&A	\$	-	\$	20.00	\$	-	\$	6.67	
Storage Unit	\$	814.00	\$	722.00	\$	420.00	\$	652.00	
Reconciliation Discrepancies	\$	(165.08)	\$	81.56	\$	2.52	\$	(27.00)	
Sales Tax Paid	\$	3,510.55	\$	3,071.41	\$	1,069.93	\$	2,550.63	
RIP Loan Interest	\$	2,530.99	\$	2,530.99	\$	2,530.99	\$	2,530.99	
Other Operating Expenses	\$	10.00	\$	-	\$	-	\$	3.33	
Other Expenses - Fixed Asset Acquisition	\$	-	\$	-	\$	2,998.34	\$	999.45	
Construction Expense - Other	\$	1,779.90	\$	584.76	\$	-	\$	788.22	
Other Expenses - Infrastructure	\$	-	\$	-	\$:	10,283.86	\$	3,427.95	
Project Contractor	\$	-	\$ 4	171,362.43	\$	_	\$	157,120.81	
Engineering & Insp. Fees	\$	-	\$	45,151.36	\$	-	\$	15,050.45	
TOTAL OPERATING EXPENSES	\$3	38,328.75	\$ 5	554,604.68	\$4	41,009.14	\$ :	211,314.19	



A summary of the Association's income for the same fiscal years is included in Table III-5 below.

Table III-5: Lower Arroyo Hondo MDWCA's operating income.

OPERATING INCOME	FY 2022		FY 2023	FY 2024		AVERAGE
Late Fees	\$	200.00	\$ 375.00	\$ 100.00	\$	225.00
Water Sales	\$	41,174.11	\$ 42,424.11	\$ 28,158.16	\$	37,252.13
Water Sales - Other	\$	115.00	\$ -	\$ -	\$	38.33
<b>Utilities Reconnect Fees</b>	\$	-	\$ -	\$ -	\$	-
Transfer Fee Income	\$	100.00	\$ 500.00	\$ -	\$	200.00
Bounced Check Fee			\$ 9.00			
Lien Fees Charged to Customers	\$	-	\$ -	\$ -	\$	-
Membership Fees	\$	-	\$ -	\$ -	\$	-
Other Fines and Forfeits - Other	\$	-	\$ -	\$ -	\$	-
Interest Income	\$	23.36	\$ 6.22	\$ 3.31	\$	10.96
Capital Outlay Income	\$	-	\$ 511,589.98	\$ 30,728.30	\$ :	180,772.76
TOTAL OPERATING INCOME	\$	41,612.47	\$ 554,904.31	\$ 58,989.77	\$ 2	218,499.18

#### 3. Financial Status

According to the financial data provided by the Owner, the Association's annual income generally exceeds expenses.

# **4. Required Reserve Accounts**

Multiple requests for information regarding the Association's reserve account(s) have been made by SMA, however the Association to date has not provided SMA with any statements or information regarding reserve accounts. Since the Association has stated that income has exceeded expenses, typically, it may be assumed that this difference comprises the Association's Reserve Account.



# IV.IV. NEED FOR PROJECT

# A. HEALTH, SANITATION AND SECURITY

There is a need for the Association to provide groundwater source redundancy for the system. According to the *Recommended Standards for Water Works*, 2018 Edition (*Ten States Standards*), a water system should have a minimum of two sources of groundwater for redundancy. Currently, the Association relies on one groundwater well.

#### **B.** AGING INFRASTRUCTURE

There is a need to replace the aged existing waterline infrastructure. In 2023, aged waterline was replaced along NM-522 and Old Highway 3. However, the remaining aged waterline and water system components have not been replaced since at least 1969. Aged waterlines are more susceptible to corrosion and breaks that can cause water loss and contamination, and the system has already been experiencing these leaks for at least the past five years. The Association needs to replace the aged waterline to reduce waterline breaks to prevent water loss and contamination.

The 2018 Sanitary Survey reported the significant deficiency of not having adequate mapping of the water system. The Association needs to replace the existing aged waterline and appurtenances in order to have up to date record drawings of the entire water system including the 2024 Record Drawings.

#### C. REASONABLE GROWTH

Section II.C. Population Trends identifies projections for Lower Arroyo Hondo, which suggest that there will be no significant growth in population over the planning period. However, SMA understands that the Association wishes to expand the water system to the current homes within the extents of the PPA shown in Figure B Appendix A. SMA estimates with aerial imagery that the expansion will include approximately 163 new residential water service connections, totaling 241 residential service connections and one (1) commercial; totaling 242 connections in the future water system. The water demands for the future water system are summarized in *Table IV-1* below.



Table IV-1 Summary of future water system ADD, MDD, and PHD.

		Total volume over a 24-	Flow
Demand Type	Peaking Factor	hour period (gallons)	(gpcm)
ADD	n/a	41,727	0.12
MDD	3.0 x ADD	125,180	0.36
PHD	3.4 x ADD	142,916	0.41

There is a need to increase the water storage capacity of the system. To provide the recommended standard of minimum one day's worth of ADD for the future system, the water storage capacity would need to increase by at least 6,727-gallons. Furthermore, the water storage capacity should be increased to provide fire flow storage for the future system. In accordance with both the *Ten States Standards*, ISO, and the Taos County Fire & Rescue Department, the water storage capacity would need to be increased by 46,727-gallons in order to meet fire flow storage needs for the future system.

Based on the input from the board during the board meeting described in Section II.D., the Association would prefer that a new water storage tank would be able to provide water storage redundancy in the case that the existing tank to ever go out of service rather than a new tank and the existing tank's storage capacities meet the standards combined. Furthermore, the Association prioritizes the need to supply at least 250-gpm of fire flow. Therefore, a new water storage tank to meet on days' worth of ADD and not provide fire flow would need to be at least 42,000-gallons, and a new tank to provide one days' worth of ADD plus fire flow storage would need to be at least 72,000-gallons.

There is a need to increase the total ground water source capacity of the system to meet the current and future needs. According to the *Recommended Standards for Water Works*, 2018 Edition (*Ten States Standards*), the total developed groundwater source capacity shall equal or exceed the design MDD with the largest producing well out of service. The groundwater source capacity would need to be increased by 103,580-gpd to meet this standard for future MDD.

### **D. OTHER NEEDS**

Drought is a significant and pervasive issue for communities throughout the southwest region of the United States. Extended periods of drought cause underground aquifers to deplete over time if there is insufficient recharge. Drought can strain underground or surface water resources, especially during summer months when demand is high. While precipitation accumulation can vary considerably from year to year in different parts of New Mexico, the climate in the southwest has trended demonstrably towards hotter and drier.



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Construction of an additional water source is one way that the Owner can prepare for inevitable periods of drought and build a more resilient and sustainable drinking water system.

There are 65 current water members do not have water meters to monitor water usage. Monitoring the water usage per home will benefit the Association when determining and implementing any rate changes, tracking demands in the system, and monitoring water loss.

The Association has long expressed an interest in constructing an emergency interconnection to Upper Arroyo Hondo MDWCA water system. The interconnection would provide an emergency water source to each water system in case of a groundwater well going dry, well pump failures, unforeseen fire flow demands, or other unforeseen water system facility failures. The motivation to seek interconnect also comes from neighboring efforts for regionalizing throughout Taos County. The Association and their water operator have been motivated to interconnect for the reasons noted above.

At this time, the two associations have not begun any discussions about the mutually beneficial option to pursue an interconnection.



# **V. ALTERNATIVES CONSIDERED**

SMA determined that the evaluation of comprehensive, feasible projects, rather than piecemeal improvements addressing individual alternatives would be the best approach for selection of a recommended project to address the Association's needs logistically and optimally. The following projects are collections of the discussed alternatives paired together to create a cohesive project. The projects are as follows:

Alternative Project 1 – No Construction

# Alternative Project 2

- Water Supply: Drill a New Southern Well
- Water Storage: New 42,000-Gallon Water Storage Tank at the Existing Tank Site
- Water Distribution: Replace and Extend Waterline to Provide Peak Demands and a New Booster Station

# Alternative Project 3

- Water Supply: Drill a New Southern Well
- Water Storage: New 72,000-gallon Water Storage Tank at the Existing Tank Site
- Water Distribution: Replace and Extend Waterline to Provide 250-gpm Fire Flow and a New Booster Station

# Alternative Project 4:

- Water Supply: Drill a New Northern Well
- Water Storage: New 42,000-Gallon Water Storage Tank at a Higher Elevation
- Water Distribution: Replace and Extent Waterline Meet Peak Demands

## Alternative Project 5

- Water Supply: Drill a New Northern Well
- Water Storage: New 72,000-Gallon Water Storage Tank at a Higher Elevation
   Water Distribution: Replace and Extent Waterline Provide 250-gpm Fire Flow



# A. ALTERNATIVE PROJECT 1: NO CONSTRUCTION

### 1. Description

Under Alternative Project 1, no improvements will be made, and no construction will take place.

# 2. Design Criteria

There are no design criteria for this alternative project because no improvements are being designed.

# 3. Map

The existing system is shown in Figure A in Appendix A.

# 4. Environmental Impacts

There are no environmental impacts associated with this alternative project because no construction will take place.

# 5. Land Requirements

There are no land requirements for this alternative project.

#### 6. Potential Construction Problems

No construction occurs under this alternative project.

# 7. Sustainability Consideration

# a. Water and Energy Efficiency

This alternative project does not address the aged distribution system infrastructure that currently contributed to water loss from waterline breaks. This alternative project does not address the lack of water metering necessary to track water usage and water losses.

# b. Green Infrastructure

Not applicable.

# c. Other

Not applicable.



#### 8. Cost Estimate

The total capital cost for Alternative Project 1 is \$0.00. The Association's O&M costs are expected to be around \$33,728, based on the average O&M budget from FY2022-FY2024 Capital and O&M costs are summarized in Appendix G.

#### B. ALTERNATIVE PROJECT 2

#### 1. Description

Alternative Project 2 includes the construction of a new shallow well, a new 42,000-gallon capacity water storage tank on the existing tank site, and the replacement and extension of waterline to meet peak demands.

#### 1.a. Water Source

Alternative Project 2 includes a new well that will be constructed to increase the total groundwater supply of the system. The new well will provide a second water source and increase system groundwater source capacity. There are two primary aquifers in the Arroyo Hondo area – a shallow, alluvial aquifer located within the Rio Hondo Valley, which is the aquifer utilized by the existing Well No. 1, and a deeper aquifer located within Tertiary-aged volcanics, which is more regional. This project evaluates the alluvial well because it is in closer proximity and elevation to the existing tank site.

A well installed within the shallow alluvial sediments would need to be completed in the southern portion of the PPA to ensure the well intercepts the saturated zone of the shallow aquifer. The well should be sited at least 500 feet south of the Rio Hondo to ensure it is out of the 100-year floodplain, at least 200 feet from any existing septic systems to minimize potential for contamination, and at least 1,000 feet from the existing Well No. 1 to minimize potential pumping interference. A well in this area would need to be completed to a depth of 200 feet with a 6-inch well casing and should be capable of producing between 25 and 40 gpm. Given the good water quality in the aquifer, and the water chemistry which suggests more corrosive water with very little scaling potential, a PVC well casing should provide ample production, longevity, and minimize cost.

Several proposed well locations are indicated in Figure V-1 below. The Owner identified the potential well location to the east of the existing tank as their preferred location and potentially the most feasible. Therefore, SMA



work with the Association to determine the best location for a new shallow alluvial well from the locations below. For cost estimate purposes, SMA evaluated this project using the potential well location to east of the existing tank site and well house. This location will require an easement for constructing a well, a minimum of 952-LF of 4-inch transmission line, and a new manifold in the existing well house. The transmission line diameter should be evaluated during design to reduce head loss once the well capacity and location are known and finalized.

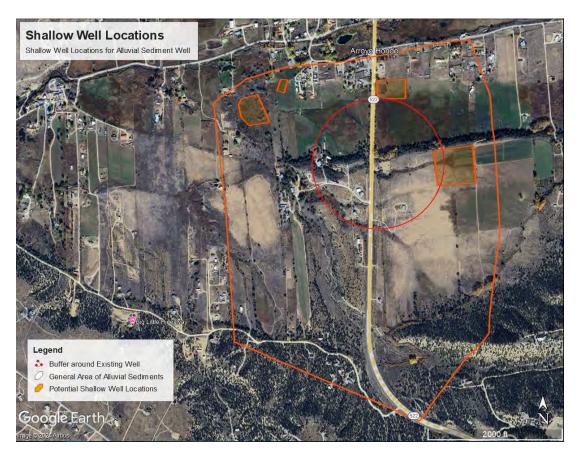


Figure V-1: Potential alluvial well locations.

#### 1.b. Water Storage

Alternative Project 2 includes the construction of a new 42,000-gallon capacity welded steel water storage tank to meet the *Ten States Standards* for providing at least one day's worth of ADD for the future system. This also satisfies the minimum storage requirements identified by Taos County Fire-Rescue. The new tank will float with the existing tank to provide a total



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capacity of 81,000-gallons. The Owner has expressed their priority to provide storage redundancy to the system in case the existing tank ever needed to be taken offline for events like rehabilitation. The new tank is sized to meet the future systems' demands when the existing tank is out of service. It is recommended that the new tank be constructed with a base elevation of 6,870.5-ft aMSL and overflow height of 17'6" to be able to float with the existing tank.

#### 1.c. Water Distribution

Alternative Project 2 includes replacing a total of 8,210-LF of existing aged waterline with 4-inch PVC and installing 15,513-LF of new 4-inch PVC waterline to extend the water system and connect the new booster station.. Approximately 100-LF of the new 4-inch PVC waterline and 248-LF of service line along Lower Arroyo Hondo Rd should be installed via horizontal directional drilling (HDD) to cross under the Rio Hondo so as not to impede the water level of the river. The new extents will serve 163 new connections and install 228 meters for the existing unmetered connections and the new members. Julian Cisneros has already offered to have the new booster station constructed on their property. The water system will be separated into two pressure zones. The north pressure zone consists of the homes served by the booster station, and the southern pressure zone consists of homes served by the water storage tanks. Two gate valves will be installed to separate the pressure zones. The water system will also include installing a total of twentythree (23) 4-inch gate valves along the main line and seven flush hydrants at the main line ends.

The booster station will be comprised of pumps designed for handling the range of demands of the system. There will be an estimated 82 homes that will be served by the booster system. The booster will need to provide an ADD of 11gpm and PHD of 66gpm for the northern homes. The demands for the northern pressure zone served by the booster are summarized in Table V-1 below. The northernmost home is at an elevation of 6,975-ft aMSL and the booster station will be at an elevation of 6,865-ft aMSL for an elevation difference of 110-ft. The pressure head needed to provide 35 psi is 80.85-ft. Therefore, the pressure head for the pump will need to be at least 191-ft. SMA recommends that there be a duplex booster system to have a smaller jockey pump to deliver the ADD flow and a larger pump to deliver the higher PHD flow.



SMA ran an available fire flow scenario for Alternative Project 2. Figure 4 in Appendix E shows that this alternative project would only provide

Table V-1: Summary of future water system demands for booster served homes.

Demand Type	Peaking Factor	Total volume over a 24-hour period (gallons)	Flow (gpcm)	Flow (gpm)
ADD	n/a	14,311	0.12	10
MDD	3.0 x ADD	42,934	0.36	30
PHD	3.5 x ADD	87,264	0.73	61

SMA ran a hydraulic model with the scenarios previously described in *Table III-2* to verify that Alternative Project 2 would provide sufficient pressures to the future extents of the water system.

SMA modeled the future system using a two-pump booster system with the design points described above for providing ADD and PHD. The base scenario shows that the proposed pump design and 4-inch waterline would be able to provide a minimum of 35-psi throughout the future system under ADD and with the tanks at full capacity of 42,000-gallons and 35,000-gallons. The minimum dynamic scenario results show that the proposed pump design and 4-inch waterline would be able to provide a minimum of 35-psi throughout the future system under PHD and with the tanks at half capacity of 22,000-gaalosn and 17,500-gallons. There approximately seventy-six (76) homes in the system that will experience pressures greater than 80-psi and will need individual pressure reducing valves (PRVs) installed at their service connections according to the maximum static scenario results.

The booster connection points will be finalized during design to optimize the pressures experienced by homes influenced by the booster directly upstream and downstream. Downstream homes are on the suction side of the booster and therefore their pressure will decrease, and upstream homes will experience elevated pressures because the booster design points are based on serving the northern most homes. Hydraulic model results for the Alternative Project 2 can be found in Appendix E.



# 2. Design Criteria

#### Water Source

- Design criteria for the new well would follow NMED Drinking Water Bureau and NMOSE standards, NM811 field verification of any existing utilities to minimize construction conflicts and modeling the water system to properly size the waterlines for pressure and flow to meet the system's demands. The new supply well must be located a minimum of 200 feet from potential contamination sources, including septic systems, and outside of 100-year floodplains when practical.
- The materials used in construction of this well will meet ANSI/NSF 61 and ANSI/NSF Standard 60. NMAC 20.7.10.400.
- Wells shall be constructed from using materials meeting AWWA, ASTM, or API Standards for Well Construction.
- New supply wells shall be completed with proper sanitary seals to prevent contamination from surface water.
- New supply wells shall be properly developed and test-pumped after installation to determine well yield.

# Water Storage

- The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption. (*Ten States Standards*)
- Excessive storage capacity should be avoided to prevent potential water quality deterioration problems. (*Ten States Standards*)
- Storage facilities should have sufficient storage capacity to meet domestic demands. (*Ten States Standards*)

#### Water Distribution

- All materials including pipe, fittings, valves and fire hydrants shall conform to ASTM, AWWA and ANSI/NSF standards where applicable. (*Ten States Standards*)
- The system shall be designed to maintain a minimum distribution system pressure of 20 psi for all flow conditions. (*Ten States Standards*)
- The minimum diameter of distribution system waterline where fire protection is not provided shall be 3 inches. (*Ten States Standards*)
- Valves shall be installed on water mains and shall be located at intervals of up to 800 feet. (Ten States Standards)



### 3. Map

A map depicting Alternative Project 2 can be found in Figure 1 Appendix F.

#### 4. Environmental Impacts

The new supply well is proposed to be located a minimum of 500 feet from any perennial stream or surface water features and over 200 feet from irrigation canals and existing housing/septic systems to minimize potential contamination sources. The proposed locations are outside of the 100-year floodplain at an elevation greater than 6,750 feet above mean sea level. The permanent well-head itself does not have a large footprint (less than 40 square feet) and temporary well drilling and waterline construction activities would disturb less than one acre.

#### 5. Land Requirements

The new well is proposed to be installed on privately owned property within the PPA. SMA and the Association will coordinate with the property Owners to determine the best location for a new well.

There are no land requirements for the new tank construction on property already owned by the Association.

SMA plans for some of the waterline to be installed within Taos County Right-of Way. Private easements for waterline on private property will need to be acquired by the Association from the respective members.

## 6. Potential Construction Problems

SMA recommends that the geotechnical investigation be completed as early as possible during the design phase or, if feasible, before the Owner obtains funding for the project. SMA included an estimate of 20% of the waterline would require rock excavation based on conversations with the Owner and water operator.

# 7. Sustainability Consideration

#### a. Water and Energy Efficiency

Installing water meters for the existing and future connections will allow the Association to track any water loss in the system and bill according to water usage which will drive water conservation.



# b. Green Infrastructure

Not applicable.

#### c. Other

Drilling a new groundwater supply well would increase the resiliency of the system by providing the groundwater supply redundancy and increasing groundwater supply capacity. The storage tank will also increase redundancy for the system water storage.

#### 8. Cost Estimate

The total capital cost for Alternative Project 2 is \$11,086,167. and the anticipated O&M costs are \$134,318. Capital and O&M costs are summarized in Appendix G.

### C. ALTERNATIVE PROJECT 3

### 1. Description

Alternative Project 3 includes the construction of a new southern, alluvial well, a new 72,000-gallon capacity water storage tank on the existing tank site, and the replacement and extension of waterline to provide 250-gpm fire flow.

#### 1.a. Water Source

Alternative Project 3 includes the construction of the new southern, alluvial sediment groundwater well described in Alternative Project 2.

#### 1.b. Water Storage

Alternative Project 3 includes the construction of a new 72,000-gallon capacity welded steel water storage tank to be able to provide one day's worth of future ADD plus storage for 2-hours' worth of sustained 250 gpm fire flow or 30,000-gallons. The new tank will work with the existing tank to provide a total water storage capacity of 107,000-gallons. The new tank will be constructed with a base elevation of 6,871-ft aMSL and overflow height of 17' 6" to be able to float with the existing tank.

The new tank is sized to meet the water storage requirements of ISO, *Ten States Standards*, and Toas County Fire & Rescue Department in the case that that the existing water storage tank were ever to be out of service.



#### 1.c. Water Distribution

Alternative Project 3 includes replacing 8,210-LF of existing waterline with 6-inch PVC waterline and installing 15,513-LF of new 6-inch PVC waterline to extend the water system and connect the new booster station. Approximately 100-LF of the new 6-inch PVC waterline and 248-LF of service line along Lower Arroyo Hondo Rd should be installed via horizontal directional drilling (HDD) to cross under the Rio Hondo so as not to impede the water level of the river. The new extents will serve 163 new connections and install 228 meters for the existing unmetered connections and the new members. The water system will also include installing a total of twenty-three (23) 6-inch gate valves along the main line, seven flush hydrants at the mainline ends, and 30 fire hydrants at every 600-ft along the main line.

Julian Cisneros, around 27 E. Vigil Road, has already offered to have the new booster station constructed on their property. The water system will be separated into two pressure zones with two 6-inch gate valves. The north pressure zone consists of the homes served by the booster station, and the southern pressure zone consists of homes served by the water storage tanks. Two gate valves will be installed to separate the pressure zones.

The booster station will be comprised of three pumps designed for handling the range of demands of the system. There will be an estimated 82 homes that will be served by the booster system. The booster will need to provide an ADD of 11 gpm and PHD of 66 gpm and 190-ft of pressure head as previously described in Alternative Project 2. Additionally, the booster pumps will need to supply 250-gpm of fire flow with at least 190-ft of pressure head. SMA recommends that there be a triplex booster system to have a smaller jockey pump to deliver the ADD flow and two larger pumps to deliver the higher PHD flow and fire flow together.

SMA ran a hydraulic model with the scenarios previously described in *Table III-2* to verify that Alternative Project 3 would provide sufficient pressure to the new waterline extensions in the system.

SMA modeled the future system using a triplex pump booster system. The smaller jockey pump had design points of 11gpm and 191-ft of head. The two larger pumps with design points of 114 gpm and 191ft of head to meet peak demands and provide a total of 250 gpm fire flow when all three pumps are active.



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The base scenario and minimum dynamic scenario results show that the proposed jockey pump design and 6-inch waterline are able to provide a minimum of 35psi throughout the system under ADD and PHD, respectively. There are approximately seventy-six (76) homes in the system that will experience pressures greater than 80-psi and will need individual pressure reducing valves (PRVs) installed at their service connections according to the maximum static scenario results. The fire flow scenario results show that the system can provide at least 250-gpm throughout the system with all three pumps active while maintaining a minimum residual pressure of 20-psi.

The booster connection points will be finalized during design to optimize the pressures experienced by homes influenced by the booster directly upstream and downstream. Downstream homes are on the suction side of the booster and therefore their pressure will decrease, and upstream homes will experience elevated pressures because the booster design points are based on serving the northernmost homes.

The Hydraulic model results for the Alternative Project 3 can be found in Appendix E.

# 2. Design Criteria

# Water Source

- Design criteria for the new well would follow NMED Drinking Water Bureau and NMOSE standards, NM811 field verification of any existing utilities to minimize construction conflicts and modeling the water system to properly size the waterlines for pressure and flow to meet the system's demands. The new supply well must be located a minimum of 200 feet from potential contamination sources, including septic systems, and outside of 100-year floodplains when practical.
- The materials used in construction of this well will meet ANSI/NSF 61 and ANSI/NSF Standard 60. NMAC 20.7.10.400.
- Wells shall be constructed from using materials meeting AWWA, ASTM, or API Standards for Well Construction.
- New supply wells shall be completed with proper sanitary seals to prevent contamination of surface water.
- New supply wells shall be properly developed and test-pumped after installation to determine well yield.



# Water Storage

- The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption. (*Ten States Standards*)
- Excessive storage capacity should be avoided to prevent potential water quality deterioration problems. (*Ten States Standards*)
- Storage facilities should have sufficient storage capacity to meet domestic demands, and where fire protection is provided, fire flow demands. (*Ten States Standards*)
- The minimum storage capacity for systems providing fire protection shall be equal to the daily consumption plus two hours of sustained fire flow at 250 gpm, in accordance with the Insurance Services Office (ISO) minimum requirements and the *Ten States Standards*.

#### Water Distribution

- All materials including pipe, fittings, valves and fire hydrants shall conform to ASTM, AWWA and ANSI/NSF standards where applicable. (*Ten States Standards*)
- The system shall be designed to maintain a minimum distribution system pressure of 20 psi for all flow conditions. (*Ten States Standards*)
- The minimum diameter of distribution system waterline where fire protection is not provided shall be 3 inches. (*Ten States Standards*)
- Waterlines shall be a minimum of 6-inch diameter when fire protection is provided, unless otherwise supported by a hydraulic model. (*Ten State Standards*)
- Valves shall be installed on water mains and shall be located at intervals of up to 800 feet. (*Ten States Standards*)
- Fire hydrants shall be placed at every intersection and intermediate points. Spacing shall be between 350 and 600 feet. (*Ten State Standards*)

#### 3. Map

A map depicting Alternative Project 3 can be found in Figure 2 Appendix F.

#### 4. Environmental Impacts

The environmental resources noted in the Environmental Resources section of this report are not expected to be permanently affected by the work because trenching for new waterline installation will remain within previously disturbed corridors within



NMDOT and County ROW and on private property. All new waterlines will be located adjacent to existing waterlines.

# 5. Land Requirements

The new well is proposed to be installed on privately owned property within the PPA. SMA and the Association will coordinate with the property Owners to determine the best location for a new well.

There are no land requirements for the new tank construction on property already owned by the Association.

SMA plans for some of the waterline to be installed within Taos County Right-of Way. Private easements for waterline on private property will need to be acquired by the Association from the respective members.

#### 6. Potential Construction Problems

SMA recommends that the geotechnical investigation be completed as early as possible during the design phase or, if feasible, before the Owner obtains funding for the project. SMA included an estimate of 20% of the waterline would require rock excavation based on conversations with the Owner and water operator.

# 7. Sustainability Consideration

# a. Water and Energy Efficiency

Installing water meters for the existing and future connections will allow the Association to track any water loss in the system and bill according to water usage which will drive water conservation.

## b. Green Infrastructure

Not applicable.

#### c. Other

Not applicable.

#### 8. Cost Estimate

The total capital cost for Alternative Project 3 is \$12,869,859. The anticipated O&M costs are \$163,307. Capital and O&M costs are summarized in Appendix G.



#### 1. Description

Alternative Project 4 includes the construction of a new deeper well, a new 42,00-gallon capacity water storage tank at a higher elevation, and the replacement and extension of waterline to meet peak demands.

#### 1.a. Water Source

Alternative Project 4 includes a new well that will be constructed to increase the total groundwater supply of the system. The new well will provide a second water source and increase system groundwater source capacity. There are two primary aquifers in the Arroyo Hondo area – a shallow, alluvial aquifer located within the Rio Hondo Valley, which is the aquifer utilized by the existing Well No. 1, and a deeper aquifer located within Tertiary-aged volcanics, which is more regional. This project evaluates the tertiary well because it is in closer proximity to the tank in this alternative project.

A well installed within the deeper tertiary volcanic aquifer would need to be completed in the northern portion of the PPA to ensure the well intercepts the saturated zone of the shallow aquifer. The well should be sited at least 500 feet north of the Rio Hondo to ensure it is out of the 100-year floodplain, and at least 200 feet from any septic systems or leach fields to minimize the potential for contamination. Several proposed well locations are indicated in Figure V-2, below. A well in this area would need to be completed to a depth of 620 feet with an 8-inch well casing and should be capable of producing between 25 and 30 gpm. As with the alluvial well above, the water within the tertiary aquifer does not appear to cause excessive scaling, and a PVC well casing should provide ample production, longevity, and minimize cost.

Several proposed well locations are indicated in Figure V-2 below. The Association should coordinate during design to determine the best location for a new deeper tertiary well from the locations below. For conservative cost estimate purposes, SMA evaluated this project using the potential well location farthest from the proposed tank site to estimate the well house and dedicated fill line cost estimate and layout. The farthest well location is on private property that would require easements and coordination with the property Owner and the Association. The 5,849-LF dedicated fill line would be constructed with 4-inch PVC waterline. The transmission line diameter should



be evaluated during design to reduce head loss once the well capacity and location are known and finalized.



Figure V-2: Potential Tertiary Well Locations

#### 1.b. Water Storage

Alternative Project 4 includes the construction of a new 42,000-gallon welded steel water storage tank on the Grace Community Church property in the northern area of Arroyo Hondo, NM to meet the *Ten States Standards* for providing at least one day's worth of ADD for the future system. The new tank will work with the existing tank to provide a total capacity of 77,000-gallons. The Owner has expressed their priority to provide storage redundancy to the system in case the existing tank ever needed to be taken offline for events like rehabilitation. The new tank is sized to meet the future systems demands when the existing tank is out of service.

A new tank will need to maintain a water level of at least 7,057-ft aMSL to provide 35-psi to the northernmost home in the future water system at an elevation 6,976-ft aMSL. That would require a tank with a minimum 39-ft



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overflow with the base elevation 7,018-ft aMSL, or a base elevation at least 7,037-ft aMSL with a 20-ft overflow to provide 35-psi when full. However, SMA understands that the Association would prefer that the new tank be similar to the existing tank height and located at the Grace Community Church property. Therefore, this project evaluates having a base elevation of the new tank will be 7,018-ft aMSL on the Grace Community church property and an overflow height of 20-ft. SMA recommends that the tank height, tank location and base elevation, and the necessary tank overflow elevation for providing 35-psi to the northernmost home be revisited during design once the Owner has confirmed the homes that will be joining the future system.

Private easements would need to be acquired for the construction of the higher elevation tank. The Owner plans to discuss the easement and tank construction with the Grace Community Church. SMA estimates a tank location just north of the church building within the Grace Community Church property boundary.

#### 1.c. Water Distribution

Alternative Project 4 includes replacing 8,210-LF of existing waterline with new 4-inch PVC waterline, and installing 12,434-LF of 4-inch PVC and 2,715-LF of PVC waterline to extend the water system and connect the new water storage tank. Approximately 100-LF of the new 4-inch PVC waterline and 248-LF of service line along Lower Arroyo Hondo Rd should be installed via horizontal directional drilling (HDD) to cross under the Rio Hondo so as not to impede the water level of the river. The new extents will serve 163 new connections and install 228 meters for the existing unmetered connections and the new members. The water system will also include installing a total of twenty-three (23) 4-inch gate valves along the main line and seven flush hydrants at the main line ends. The water system will be separated into three pressure zones by 4-inch PRVs set to the elevation of the existing water storage tank overflow elevation. The pressure zones will be comprised of the new connections north of the existing system, the existing system, and the new homes southwest of the existing system. The PRVs will allow the new storage tank to provide at least 35-psi to the system and still fill the existing tank. The locations and settings of the PRVs can be further identified during design.



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SMA ran a hydraulic model with the scenarios previously described in *Table III-2* to verify that Alternative Project 4 would provide sufficient pressures to the new waterline extensions in the system

The hydraulic model includes three (3) 4-inch PRVs to control the pressure zones. The base scenario and minimum dynamic scenario results show that a minimum of 35-psi can be provided to the proposed system minimum of 35-psi throughout the system under ADD and PHD, respectively. There are approximately one hundred (100) homes in the system that will experience pressures greater than 80-psi and will need individual pressure reducing valves (PRVs) installed at their service connections according to the maximum static scenario results. The location and settings of the system PRVs can be adjusted during design to reduce the number of homes that would experience elevated pressures.

The Hydraulic model results for the Alternative Project 4 can be found in Appendix E.

# 2. Design Criteria

#### Water Source

- Design criteria for the new well would follow NMED Drinking Water Bureau and NMOSE standards, NM811 field verification of any existing utilities to minimize construction conflicts and modeling the water system to properly size the waterlines for pressure and flow to meet the system's demands. The new supply well must be located a minimum of 200 feet from potential contamination sources, including septic systems, and outside of 100-year floodplains when practical.
- The materials used in construction of this well will meet ANSI/NSF 61 and ANSI/NSF Standard 60. NMAC 20.7.10.400.
- Wells shall be constructed from using materials meeting AWWA, ASTM, or API Standards for Well Construction.
- New supply wells shall be completed with proper sanitary seals to prevent contamination from surface water.
- New supply wells shall be properly developed and test-pumped after installation to determine well yield.



# Water Storage

- The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption. (*Ten States Standards*)
- Excessive storage capacity should be avoided to prevent potential water quality deterioration problems. (*Ten States Standards*)
- Storage facilities should have sufficient storage capacity to meet domestic demands, and where fire protection is provided, fire flow demands. (*Ten States Standards*)
- The minimum storage capacity for systems providing fire protection shall be
  equal to the daily consumption plus two hours of sustained fire flow at 250
  gpm, in accordance with the Insurance Services Office (ISO) minimum
  requirements and the *Ten States Standards*.

#### Water Distribution

- All materials including pipe, fittings, valves and fire hydrants shall conform to ASTM, AWWA and ANSI/NSF standards where applicable. (*Ten States Standards*)
- The system shall be designed to maintain a minimum distribution system pressure of 20 psi for all flow conditions. (*Ten States Standards*)
- The minimum diameter of distribution system waterline where fire protection is not provided shall be 3 inches. (*Ten States Standards*)
- Waterlines shall be a minimum of 6-inch diameter when fire protection is provided, unless otherwise supported by a hydraulic model. (*Ten State Standards*)
- Valves shall be installed on water mains and shall be located at intervals of up to 800 feet. (*Ten States Standards*)
- Fire hydrants shall be placed at every intersection and intermediate points. Spacing shall be between 350 and 600 feet. (*Ten State Standards*)

#### 3. Map

A map depicting Alternative Project 4 can be found in Figure 3 Appendix F.

#### 4. Environmental Impacts

The environmental resources noted in the Environmental Resources section of this report are not expected to be permanently affected by the work because trenching for new waterline installation will remain within previously disturbed corridors within



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NMDOT and County ROW and on private property. All new waterlines will be located adjacent to existing waterlines.

# 5. Land Requirements

The new well is proposed to be installed on privately owned property within the PPA. The Association will coordinate with the property owners to determine the best location for a new well.

The new water storage tank is proposed to be installed on property owned by the Grace Community Church. The Association will coordinate with the Grace Community Church to determine the feasibility of constructing a tank on the property.

SMA plans for some of the waterline to be installed within Taos County Right-of Way. If waterline crosses into private property, private easements for waterline on private property will need to be acquired by the Association from the respective members.

#### 6. Potential Construction Problems

SMA recommends that the geotechnical investigation be completed as early as possible during the design phase or, if feasible, before the Owner obtains funding for the project. SMA included an estimate of 20% of the waterline would require rock excavation based on conversations with the Owner and water operator.

## 7. Sustainability Consideration

## a. Water and Energy Efficiency

Installing water meters for the existing and future connections will allow the Association to track any water loss in the system and bill according to water usage which will drive water conservation.

This alternative project is more energy efficient because it does not require a booster station for water distribution.

### b. Green Infrastructure

Not applicable.

#### c. Other

Not applicable.



#### 8. Cost Estimate

The total capital cost for Alternative Project is \$12,002,104. The anticipated O&M costs are \$148,379. Capital and O&M costs are summarized in Appendix G.

## E. ALTERNATIVE PROJECT 5

### 1. Description

Alternative Project 5 includes the construction of a new deeper well, a new 72,000-gallon capacity water storage tank at a higher elevation, and the replacement and extension of waterline to meet peak demand.

#### 1.a. Water Source

Alternative Project 5 includes the construction of the new deep tertiary groundwater well described in Alternative Project 4.

# 1.b. Water Storage

Alternative Project 5 includes the construction of a new 72,000-gallon capacity welded steel water storage tank on the Grace Community Church property to be able to provide one day's worth of future ADD plus storage for 2-hours' worth of sustained 250gpm fire flow or 30,000-gallons. The new tank will work with the existing tank to provide a total water storage capacity of 107,000-gallons. The new tank is sized to meet the future systems ADD and fire flow demands if the existing tank is ever out of service. The new tank site is planned to be constructed near the Grace Community Church in the northern area of Arroyo Hondo, NM. The new tank will be constructed with a base elevation of 7,018-ft aMSL and overflow height of 20-ft.

A new tank will need to maintain a water level of at least 7,057-ft aMSL to provide 35-psi to the northernmost home in the future water system at an elevation 6,976-ft aMSL. That would require a tank with a minimum 39-ft overflow with the base elevation 7,018-ft aMSL, or a base elevation at least 7,037-ft aMSL with a 20-ft overflow to provide 35-psi when full. However, SMA understands that the Association would prefer that the new tank be similar to the existing tank height and located at the Grace Community Church property. Therefore, this project evaluates having a base elevation of the new tank will be 7,018-ft aMSL on the Grace Community church property and an overflow height of 20-ft. SMA recommends that the tank height, tank location



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and base elevation, and the necessary tank overflow elevation for providing 35-psi to the northernmost home be revisited during design once the Owner has confirmed the homes that will be joining the future system.

#### 1.c. Water Distribution

Alternative Project 5 includes replacing 8,210-LF of existing waterline with new 6-inch PVC waterline and installing 15,149-LF of 6-inch PVC waterline to extend the water system and connect the new water storage tank. Approximately 100-LF of the new 6-inch PVC waterline and 248-LF of service line along Lower Arroyo Hondo Rd should be installed via horizontal directional drilling (HDD) to cross under the Rio Hondo so as not to impede the water level of the river. The new extents will serve 163 new connections and install 228 meters for the existing unmetered connections and the new members. The water system will also include installing a total of twenty-three (23) 6-inch gate valves along the main line, seven flush hydrants for the main line ends, and 30 fire hydrants at every 600-ft along the main line. The water system will be separated into three pressure zones by 6-inch PRVs set to the elevation of the existing water storage tank overflow elevation. The pressure zones will be comprised of the new connections north of the existing system, the existing system, and the new homes southwest of the existing system. The PRVs will allow the new storage tank to provide at least 35-psi to the system and still fill the existing tank. The locations and settings of the PRVs can be further identified during design.

SMA ran a hydraulic model with the scenarios previously described in *Table III-2* to verify that Alternative Project 5 would provide sufficient pressures to the new waterline extensions in the system.

The hydraulic model includes three (3) 6-inch PRVs to control the pressure zones. The base scenario and minimum dynamic scenario results show that a minimum of 35 psi can be provided to the proposed system minimum of 35 psi throughout the system under ADD and PHD, respectively. There are approximately one hundred (100) homes in the system that will experience pressures greater than 80 psi and will need individual pressure reducing valves (PRVs) installed at their service connections according to the maximum static scenario results. The location and settings of the system PRVs can be adjusted during design to reduce the number of homes that would experience elevated pressures. The fire flow scenario results show that the system can



provide at least 250 gpm throughout the system with gravity flow while maintaining a minimum residual pressure of 20-psi.

The Hydraulic model results for the Alternative Project 5 can be found in Appendix E.

## 2. Design Criteria

#### Water Source

- Design criteria for the new well would follow NMED Drinking Water Bureau and NMOSE standards, NM811 field verification of any existing utilities to minimize construction conflicts and modeling the water system to properly size the waterlines for pressure and flow to meet the system's demands. The new supply well must be located a minimum of 200 feet from potential contamination sources, including septic systems, and outside of 100-year floodplains when practical.
- The materials used in construction of this well will meet ANSI/NSF 61 and ANSI/NSF Standard 60. NMAC 20.7.10.400.
- Wells shall be constructed from using materials meeting AWWA, ASTM, or API Standards for Well Construction.
- New supply wells shall be completed with proper sanitary seals to prevent contamination from surface water.
- New supply wells shall be properly developed and test-pumped after installation to determine well yield.

#### Water Storage

- The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption. (*Ten States Standards*)
- Excessive storage capacity should be avoided to prevent potential water quality deterioration problems. (*Ten States Standards*)
- Storage facilities should have sufficient storage capacity to meet domestic demands, and where fire protection is provided, fire flow demands. (*Ten States Standards*)
- The minimum storage capacity for systems providing fire protection shall be
  equal to the daily consumption plus two hours of sustained fire flow at 250
  gpm, in accordance with the Insurance Services Office (ISO) minimum
  requirements and the *Ten States Standards*.



#### Water Distribution

- All materials including pipe, fittings, valves and fire hydrants shall conform to ASTM, AWWA and ANSI/NSF standards where applicable. (*Ten States Standards*)
- The system shall be designed to maintain a minimum distribution system pressure of 20 psi for all flow conditions. (*Ten States Standards*)
- The minimum diameter of distribution system waterline where fire protection is not provided shall be 3 inches. (*Ten States Standards*)
- Waterlines shall be a minimum of 6-inch diameter when fire protection is provided, unless otherwise supported by a hydraulic model. (*Ten State Standards*)
- Valves shall be installed on water mains and shall be located at intervals of up to 800 feet. (*Ten States Standards*)
- Fire hydrants shall be placed at every intersection and intermediate points. Spacing shall be between 350 and 600 feet. (Ten State Standards)

## 3. Map

A map depicting Alternative Project 5 can be found in Figure 5 in Appendix F.

# 4. Environmental Impacts

The environmental resources noted in the Environmental Resources section of this report are not expected to be permanently affected by the work because trenching for new waterline installation will remain within previously disturbed corridors within NMDOT and County ROW and on private property. All new waterlines will be located adjacent to existing waterlines.

# 5. Land Requirements

The new well is proposed to be installed on privately owned property within the PPA. The Association will coordinate with the property owners to determine the best location for a new well.

The new water storage tank is proposed to be installed on property owned by the Grace Community Church. The Association will coordinate with the Grace Community Church to determine the feasibility of constructing a tank on the property.

SMA plans for some of the waterline to be installed within Taos County Right-of Way. If waterline crosses into private property, private easements for waterline on private property will need to be acquired by the Association from the respective members.



#### 6. Potential Construction Problems

SMA recommends that the geotechnical investigation be completed as early as possible during the design phase or, if feasible, before the Owner obtains funding for the project. SMA included an estimate of 20% of the waterline would require rock excavation based on conversations with the Owner and water operator.

# 7. Sustainability Consideration

# a. Water and Energy Efficiency

This alternative project is more energy efficient because it does not require a booster station for water distribution.

# b. Green Infrastructure

Not applicable.

c. Other

Not applicable.

### 8. Cost Estimate

The total capital cost for Alternative Project 5 is \$14,715,636. The anticipated O&M costs are \$130,328. Capital and O&M costs are summarized in Appendix G.



# **VI. SELECTION OF ALTERNATIVE**

Life cycle cost analyses and evaluation of non-monetary factors were performed to illustrate the rationale for selection of the optimal alternative project and recommendation of the proposed project. Typically, the alternative project with the least overall net present value assessed from the life cycle cost analysis are recommended; however, non-monetary factors are also considered herein to ensure the alternative project recommended meets the most qualitatively important needs and priorities of the Association.

## A. LIFE CYCLE COST ANALYSIS

The lifecycle analysis uses the projected present worth of construction and O&M costs of each alternative to help select the recommended alternative. This is coupled with the non-monetary factors evaluated for a final solution.

To determine the present value of a one-time cost, the following equation can be used:

$$PV = A_t \left( \frac{1}{(1+d)^t} \right)$$

Where:

PV = Present Value

 $A_t$  = Amount of one-time cost at time t

*d* = Real Discount Rate

t = Time (expressed in number of years)

To determine the present value of a recurring cost, such as the O&M costs, the following equation can be used:

$$PV = A_0 \left[ \frac{\left(1 + d\right)^t - 1}{d\left(1 + d\right)^t} \right]$$

Where:

PV = Present Value

 $A_0$  = Amount of recurring cost (Annual O&M)

d = Real Discount Rate

t = Time (expressed in number of years)

 $A_0$  was previously determined in Section V, Part 8 of each alternative considered.



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This Life Cycle Cost Analysis (LCCA) uses a real discount rate of 2.5 percent for a 20-year period (*t*). This real discount rate was taken from Appendix C of the Office of Management and Budget Circular A-94, which can be found on the web page: <a href="https://www.whitehouse.gov/omb/information-for-agencies/circulars/">https://www.whitehouse.gov/omb/information-for-agencies/circulars/</a>. See *Table VI-1* for further details on LCCA for all alternatives.

The Net Present Value (NPV) for each alternative is calculated in Appendix G, and is equal to the summation of the calculated capital costs and the PV of the annual O&M costs minus the salvage value of each alternative. The salvage values are also calculated in Appendix G and is equal to the future value of the construction cost of each alternative (assumed to have a useful life of 100 years) depreciated to 20 years in the future, added to the future value of any assets with a useful life over 20 years, depreciated to 20 years in the future.

Refer to *Table VI-1* for a summary of the total present value (PV) for each alternative. The analysis, which considers the financial costs of the project, is used to compare alternatives that will meet the required standard of service. In the absence of other factors, the facility with the least overall NPV as determined by cost should also be considered the best alternative; however, there are other factors that are just as important to the selection of the proposed project, such as Owner preference, increased health benefits, ease of operation and maintenance, and community support.

Table VI-1: Present worth cost comparison for Water System Improvement Projects based on a discount rate of 2.5% for a project planning period of 20 years.

Life-Cycle Cost Comparison											
Category	Alternative Project 1 No Action		Alternative Project 2		Alternative Project 3		Alternative Project 4		Alternative Project 5		
Total Capital Cost Construction & Non- Construction	\$	-	\$11	.,086,167	\$12	2,869,859	\$1	12,002,104	\$	14,715,636	
Annual O&M Costs	\$	33,728	\$	134,318	\$	163,307	\$	148,379	\$	130,328	
NPV of Annual O&M Costs	\$	525,794	\$ 2	,093,910	\$ 2	2,545,826	\$	2,313,110	\$	2,031,705	
NPV of Salvage Value (S)	\$	-	\$ 3	,367,322	\$ 3	3,857,860	\$	3,557,677	\$	4,364,152	
Net Present Value (NPV)	\$	525,794	\$ 9	,812,756	\$1:	1,557,825	\$	10,757,536	\$	12,383,190	



### **B. Non-Monetary Factors**

## 1. Suitability (Owner Preference)

Owner preference is the most important non-monetary, or qualitative, criterion for alternative selection. The likelihood of project success is paramount, as the Lower Arroyo Hondo MDWCA desires a solution that is both feasible and increases income for financial stability and resilience of the Association, while being acceptable to the water system users, Owner, and operators.

# 2. Health and Security

Bolstering health and safety is the second most important non-monetary selection criterion for alternative selection. Increasing water system supply redundancy and increasing water storage in order to promote health, security, and trust within the community is considered a priority..

## 3. Ease of Operation and Maintenance (O&M)

Ease and efficiency of O&M is the third most important non-monetary selection criterion for alternative selection. The Owner wishes to implement a solution that will resolve their water system issues without significantly increasing O&M time and expense, or requiring advanced technical skills, which can inhibit effective system operation.

### 4. Community Support

Community support is the fourth most important non-monetary selection criterion for alternative selection. The Owner does not wish to implement a solution that does not have buy-in from water system users.

## C. DECISION MATRIX

Table VI-2 includes a developed decision matrix used to assist in selecting the most favorable alternatives. Monetary and non-monetary factors are weighted (lowest=1; highest=3) depending upon their deemed impact upon the Association and water system. High scores indicate a more favorable alternative.



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Table VI-2: Decision matrix for Water System Improvements Projects.

	Criteria	Weight		ve Project 1 Action	Alternat	Alternative Project 2		ive Project 3	Alterna	tive Project 4	Alternative Project 5		
			Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	
_	Capital Cost	20	\$	-	\$	11,086,167	\$	12,869,859	\$	12,002,104	\$	14,715,636	
etar			5	100	4	80	2	40	3	60	1	20	
Monetary	Life-Cycle	20	\$	525,794	\$	9,812,756	\$	11,557,825	\$	10,757,536	\$	12,383,190	
_	Cost (NPV)		1	20	2	40	4	80	3	60	5	100	
V	Suitability	20	1	20	2	40	4	80	3	120	5	200	
Non-monetary	Health and Security	15	1	15	2	30	3	45	4	120	5	150	
n-m	Ease of O&M	15	1	15	3	45	2	30	4	180	4	180	
Noi	Community Support	10	5	50	2	20	4	40	3	60	5	100	
	Total Score 220		220	255		315			600	750			



# VII. RECOMMENDED ALTERNATIVE

Based on the life cycle cost analysis, an evaluation of non-monetary factors, and decision matrix scores, SMA recommends that the Association implement the following project:

- Alternative Project 5
  - o Phase 1: Replace Existing Aged Waterline and Install Water Service Meters
  - Phase 2: Construct New Water Storage Tank and Connecting Waterline, Construct New Groundwater Well, Install System PRVs, and Other Needs-Interconnection with the Upper Arroyo Hondo MDWCA water system
  - o Phase 3: Extend Water System to the North
  - o Phase 4: Extend Water System to the Southwest

### Water Supply

While each of the Alternatives (with the exception of NO ACTION) address minimum storage capacity, redundant water supply, and improved service and distribution conditions, the decision matrix ranked Alternative Project 5 the highest overall. Drilling a new well will help to increase the groundwater source capacity of the future expanded system to meet future demands. The well will also provide groundwater source redundancy to the water system. There are multiple locations with the potential of providing a viable supplemental well. SMA estimated the farthest area for conservative budget estimation at the planning level. During design, the exact location for the new well may be determined in coordination with the Association and property Owners. However, as in any geotechnical exploration, there is always a risk that the well will not provide the necessary estimated water production for the system.

### Water Storage

Alternative Project 1 ranked the lowest because it does not address the storage needs of the future system. Alternative Projects 2 and 3 do increase the water storage capacity, but each would require constructing a booster station to provide service to the northern extents of the future system because of the lower elevation of the tank site. The booster stations increase operation and maintenance costs significantly for the water operators, electricity costs, and replacing the pumps every 10 years. Alternative Projects 4 and 5 can provide water service via gravity, making them more reliable alternatives in the cases of electricity outages, booster pump damages and replacements, or if the existing tank is out of service. Therefore, Alternative Project 5 ranked highest overall in the decision matrix and addresses the need to increase water storage capacity for future demands and provide service to new members by



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gravity. The new 72,000-gallon welded steel water storage tank will be constructed at a base elevation of at least 7,018-ft aMSL to serve the future water system by gravity with the existing tank. The new tank site on the Grace Community Church property north of the Lower Arroyo Hondo MDWCA water system. The Association will coordinate with the Grace Community Church to determine the feasibility of constructing a tank on the property.

### Water Distribution

Alternative Project 1 ranked the lowest overall and did not address the Association's need to extend the water system to new homes or replace the existing waterline. Alternative Projects 2, 3, 4, and 5 meet the need to replace the existing waterline and expand the system to new homes. Alternative projects 2 and 4 evaluated installing waterline to meet peak demands. However, the Association prioritizes providing fire flow for the safety of the community. Alternative projects 3 and 5 scored higher because they can provide fire flow. Therefore, Alternative project 5 scored the highest because it replaces existing waterline, extends the system, provides fire flow, and because of the water storage tank in this project.

Alternative Project 5 includes replacing 8,210-LF of existing waterline with new 6-icnh PVC waterline and installing 15,149-LF of 6-inch PVC waterline to extend the water system and connect the new water storage tank. The new extents will serve 163 new connections and install 228 meters for the existing unmetered connections and the new members. The water system will be separated into three pressure zones by 6-inch PRVs set to the elevation of the existing water storage tank overflow elevation. The pressure zones will be comprised of the new connections north of the existing system, the existing system, and the new homes southwest of the existing system. The locations and settings of the PRVs can be further identified during design.

## Other Needs

The Association would like to interconnect with the Upper Arroyo Hondo MDWCA water system as an emergency water supply source. The connection would require the construction of approximately 800-LF of 4-inch PVC waterline to connect the systems, a 4-inch PRV to mediate the pressures from the Upper Arroyo Hondo water system, and a 4-inch gate valve to control the interconnection.

According to DWW, the Upper Arroyo Hondo MDWCA currently serves 65 homes, has two active wells, and two active water storage tanks. According to 2008 Upper Arroyo Hondo Design Memo produced by SMA, the water system is comprised of 2-inch, 3-inch, and 4-inch PVC pipe, and the mainline from the water storage tanks to the community is 4-inch PVC waterline.



Applying an average household water usage of 300 gallons per day according to the EPA, the Upper Arroyo Hondo MDWCA ADD is estimated to be 19,500 gpd. The water demands for Upper Arroyo Hondo MDWCA are summarized in Table VII-1 below.

Table VII-1: Upper Arroyo Hondo MDWCA water demands summary.

Demand Type	Peaking Factor	Total volume over a 24-hour period (gallons)	Flow (gpcm)
ADD	n/a	19,500	0.12
MDD	3.0 x ADD	58,500	0.63
PHD	6.96 x ADD	N/A	1.45

Well #1 is groundwater well 240-ft deep with an estimated production of 23 gpm, and Well #2 is groundwater well 220-ft deep with an estimated production of 20-gpm. The average daily production assuming a pumping rate of 12 hours per day per well is 16,560 gallons for Well #1 and 14,400 gallons for Well #2. Therefore, the Upper Arroyo Hondo MDWCA is not able to provide at least the MDD with the largest groundwater producing well out of service. The water system does have groundwater source redundancy. The interconnection to Lower Arroyo Hondo would provide further groundwater source redundancy and increase the daily groundwater source capacity with the existing well to 48,960 gallons and a further increase with the new shallow alluvial well.

According to DWW, Tank #2 is a 30,000-gallon welded steel tank. The design memo stated that Tank #1 is a 10,000-gallon welded steel tank. The water system is designed to provide 250-gpm of fire flow according to the design memo. The water storage capacity is not sufficient for providing a days' worth of maximum daily demand plus 250-gpm of sustained fire flow for 2-hours (30,000 gallons).

The interconnection requires a NMDOT roadway crossing permit to cross NM-522. The waterline layout to connect to Upper Arroyo Hondo is included in Figure 6 in Appendix F. The construction cost for the interconnection is \$281,929 and included in the Other Needs cost estimate in Appendix G.

Since the interconnection cannot be a source for groundwater redundancy to the northern system area, and the capacity of the existing well and the new well do not provide equal or exceed the design MDD with the largest producing well out of service, SMA recommends at minimum a third well to the north be constructed. A third well would provide the groundwater source redundancy to the northern service area. A third well will not meet the



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standard for providing the future MDD with the larging producing well out of service. However, the construction of any additional wells will need to be revaluated during design once the Association finalizes the number of homes to be included in the system expansion. SMA understands the Association's priority to provide redundancy for the existing system and therefore is in including the construction of a third well as an Other Need.

A third well would need to be constructed at least 500 feet north of the Rio Hondo to ensure it is out of the 100-year floodplain, at least 200 feet from any septic systems or leach fields to minimize the potential for contamination, and at least 1,000-ft away from the second well. For the cost estimation purposes of this PER, SMA recommends a location approximately 560 ft east of the second well site to include the construction of the well, well house, and 100-ft of 4-inch pipe to tie into the transmission line. The construction cost for the third well is \$505,625 and included in the Other Needs cost estimate in Appendix G.

Based on the Association's priorities, SMA recommends Phase 1, Phase 2, Phase 3, and Phase 4 described below. The phased recommended project is shown in Figure 9 in Appendix F.

#### Phase 1

Phase 1 prioritizes the Association need to replace the existing water system and provide water meters to all existing members. Phase 1 consists of replacing the existing aged waterline with 6,615-LF of 6-inch PVC. A total of 65 water service meters and service lines will be installed and 10 of which will have individual PRVs in anticipation of the elevated pressures from the new tank in Phase 2. However, the Association can decide if the individual PRVs can be installed in Phase 2 during design. This phase also includes seven (7) 6-inch gate valves, nine fire hydrants, and 5 flush hydrants at each mainline end.

#### Phase 2

Phase 2 addresses the Association's second priority to provide water storage and groundwater source redundancy, fire flow water storage, and interconnect to Upper Arroyo Hondo MDWCA. Phase 2 consists constructing the new northern well, 5,849-LF of 4-inch transmission line, three (3) 6-inch PRVs for the three pressure zones. This phase includes the construction of a 72,000-gallon welded steel water storage tank on the Grace Community Church property as described in Alternative Project 5. The capacity of the new water storage tank should be finalized during design based on the homes that the Association confirms will be a part of the new northern and southwestern system expansions. A total of 2,688-LF of new 6-inch PVC waterline will



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be installed to connect the new tank to the water system. A total of 26 water service meters and service lines will be installed, and 5 of which will have individual PRVs due to the anticipated elevated pressures. This phase also includes four (4) 6-inch gate valves and six fire hydrants.

Phase 2 includes the Other Need to construct an interconnection with Upper Arroyo Hondo MDWCA on the other side of the highway. SMA estimates that at a minimum this interconnection will include the installation of 800-LF of 6-inch PVC waterline, a 6-inch PRV, and a 6-inch gate valve. The Association will need to communicate with Upper Arroyo Hondo about the feasibility of and the water system facilities necessary for an interconnection. The construction of a third groundwater well, well house, appurtenances, and 100-LF transmission line tie in are included in this phase.

#### Phase 3

Phase 3 and 4 address the Association's last priority to expand the water system to new homes. SMA discussed with the Owner during their February 2025 board meeting, that the order and quantities of Phases 3 and 4 should be determined during design based on the outreach to homes who wish to connect in the new northern and southwestern extents.

Phase 3 addresses the Association's priority to provide water service to new homes north of the existing water system. Phase 3 includes the installation 6,496-LF of 6-inch PVC waterline. A total of 66 water service meters and service lines will be installed, and 10 of which will have individual PRVs due to anticipated elevated pressures. The exact number of new water service connections can be finalized during design once the Association confirms the number of homes that will connect to the water system in the northern expansion. This phase also includes eight (8) 6-inch gate valves, eleven fire hydrants, and a flush hydrant at the end of the mainline.

## Phase 4

Phase 4 addresses the Association's priority to providing water service to new homes not the southwest of the existing water system. Phase 4 includes the installation of 6,692-LF of 6-inch PVC waterline via open trench and 100-LF of 6-inch PVC waterline installed via HDD to cross under the Rio Hondo so as not to impede the water level of the river. A total of 71 water meters and service lines will be installed, and 32 of which will have individual PRVs due to anticipated elevated pressures. Furthermore, an estimated 248-LF of service line will need to be installed via HDD to cross under



the Rio Hondo so as not to impede the water level of the river. This phase also includes eight (8) 6-inch gate valves, 11 fire hydrants, and 3 flush hydrants.

## A. PRELIMINARY PROJECT DESIGN

Standard engineering and construction practices will be used in design of this project. State and federally recommended standards that the design engineer will adhere to include the Ten States Standards, the New Mexico Administrative Code (NMAC), RUS design guidelines (7 CFR 1780.57), American Water Works Association (AWWA) guidelines, the Uniform Building Code, and other local applicable code requirements.

## 1. Water Supply

- Design criteria for the new well would follow NMED Drinking Water Bureau and NMOSE standards, NM811 field verification of any existing utilities to minimize construction conflicts and modeling the water system to properly size the waterlines for pressure and flow to meet the system's demands. The new supply well must be located a minimum of 200 feet from potential contamination sources, including septic systems, and outside of 100-year floodplains when practical.
- The materials used in construction of this well will meet ANSI/NSF 61 and ANSI/NSF Standard 60. NMAC 20.7.10.400.
- Wells shall be constructed from using materials meeting AWWA, ASTM, or API Standards for Well Construction.
- New supply wells shall be completed with proper sanitary seals to prevent contamination from surface water.
- New supply wells shall be properly developed and test-pumped after installation to determine well yield.

## 2. Water Storage

- The minimum storage capacity for systems not providing fire protection shall be equal to the average daily consumption. (*Ten States Standards*)
- Excessive storage capacity should be avoided to prevent potential water quality deterioration problems. (*Ten States Standards*)
- Storage facilities should have sufficient storage capacity to meet domestic demands, and where fire protection is provided, fire flow demands. (*Ten States Standards*)



### 3. Water Distribution

- All materials including pipe, fittings, valves and fire hydrants shall conform to ASTM, AWWA and ANSI/NSF standards where applicable. (*Ten States Standards*)
- The system shall be designed to maintain a minimum distribution system pressure of 20 psi for all flow conditions. (*Ten States Standards*)
- The minimum diameter of distribution system waterline where fire protection is not provided shall be 3 inches. (*Ten States Standards*)
- Waterlines shall be a minimum of 6-inch diameter when fire protection is provided, unless otherwise supported by a hydraulic model. (*Ten State Standards*)
- Valves shall be installed on water mains and shall be located at intervals of up to 800 feet. (*Ten States Standards*)

## **B. PROJECT SCHEDULE**

Table VII-2,



## PRELIMINARY ENGINEERING REPORT LOWER ARROYO HONDO MDWCA Page 77 of 88

Table VII-3, *Table III-4*, and Table VII-5 below include a tentative schedule for the proposed project phases. Please note that many of these tasks, such as securing funding, are outside of SMA's control and may take longer than anticipated.

Table VII-2: Estimated Phase 1 project schedule.

Task	Date
Submit Preliminary PER to NMED and Owner	December 2024
Receive NMED and Owner Comments	January 2025
Submit Final PER to NMED and Owner	May 2025
Secure Project Funding	March 2026
Complete Preliminary Design	October 2026
Complete Final Design	January 2027
Bid Phase	April 2027
Begin Construction	May 2027
Complete Construction	October 2027



Table VII-3: Estimated Phase 2 project schedule.

Task	Date
Submit Preliminary PER to NMED and Owner	December 2024
Receive NMED and Owner Comments	January 2025
Submit Final PER to NMED and Owner	May 2025
Secure Project Funding	September 2028
Complete Preliminary Design	April 2029
Complete Final Design	July 2029
Bid Phase	October 2029
Begin Construction	November 2029
Complete Construction	June 2030

Table VII-4: Estimated Phase 3 project schedule.

Task	Date
Submit Preliminary PER to NMED and Owner	December 2024
Receive NMED and Owner Comments	January 2025
Submit Final PER to NMED and Owner	May 2025
Secure Project Funding	May 2031
Complete Preliminary Design	December 2031
Complete Final Design	March 2032
Bid Phase	June 2032
Begin Construction	July 2032
Complete Construction	December 2032

Table VII-5: Estimated Phase 4 project schedule.

Task	Date
Submit Preliminary PER to NMED and Owner	December 2024
Receive NMED and Owner Comments	January 2025
Submit Final PER to NMED and Owner	May 2025
Secure Project Funding	November 2033
Complete Preliminary Design	July 2034
Complete Final Design	October 2034
Bid Phase	January 2035
Begin Construction	February 2035
Complete Construction	July 2035



## **C. PERMIT REQUIREMENTS**

The new well is proposed to be installed on privately owned property within the PPA. SMA and the Association will coordinate with the property Owners to determine the best location for a new well.

The new water storage tank is proposed to be installed on property owned by the Grace Community Church. The Association will coordinate with the Grace Community Church to determine the feasibility of constructing a tank on the property.

SMA plans for the waterline to be installed within Taos County Right-of Way. Private easements for waterline on private property will need to be acquired by the Association from the respective members. NMDOT permitting will be required for construction of waterline that will be crossing the highway.

Permits for the Rio Arroyo river crossings are not needed because the HDD of waterline should be designed and constructed at a depth that does not interfere with the river and the highest water level of the river.

#### D. SUSTAINABILITY CONSIDERATIONS

## 1. Water and Energy Efficiency

The recommended project is more energy efficient because it does not require electricity for a booster station. The recommended project will improve the water usage efficiency of the system because installing water meters will allow the Association to track water losses and water usage.

#### 2. Green Infrastructure

Not applicable. However, the Association has expressed a desire to explore solar energy during the design of the recommended project for the well houses.

## 3. Other

Not applicable.

## E. TOTAL PROJECT COST ESTIMATE

*Table VII-6* provides a summary of phased estimated professional and construction costs for the recommended project.



Table VII-6: Recommended project cost estimate.

Item	ı	Phase 1	Phase 2	Phase 3	Phase 4		
Professional Services: Design Phase	\$	506,772	\$ 719,785	\$ 504,752	\$	535,582	
Professional Services: Design Phase	\$	796,490	\$ 1,340,926	\$ 795,383	\$	840,174	
<b>Construction Costs</b>	\$	2,468,367	\$ 4,646,878	\$ 2,463,215	\$	2,671,548	
<b>Total Project Costs</b>	\$	3,771,629	\$ 6,707,589	\$ 3,763,350	\$	4,047,304	

## F. ANNUAL OPERATING BUDGET

### 1. Income

SMA calculated the monthly and yearly income that the Association should receive from the 163 new members and 79 existing members, and the income is summarized in

Table VII-7, below. As described in Section III.D.1. Current Rate Schedule, the Association has not determined the water usage rate that will be applied once all members have meters. Therefore, SMA calculated the future income based on new membership fees and the base active residential rate fee that is currently charged. The anticipated future income should be recalculated once a rate schedule based on water usage for when all connections are metered is determined.

Table VII-7: Income from monthly base rates of the future system

Existing Members	
Number of Residential Members	78
Number of Commercial Members	1
Active Residential Rate (unmetered)	\$ 52.00
Active Commercial Rate (metered)	\$ 185.64
Total Base Monthly Income	\$ 4,242.64
Future Members	
Number of Residential Members	163
New Membership Fee - Residential	\$ 2,500.00
New Membership Fee - Commercial	\$ 2,500.00
Active Residential Rate (unmetered)	\$ 52.00
Total Base Monthly Income	\$ 415,976.00
Total Future Base Monthly Income	\$ 420,218.64



Total Future Base Yearly Income	\$	5,042,623.68
---------------------------------	----	--------------

The Association's income comes from the water rates above, water sales, reconnect fees, transfer fees, lien fees, late fees, membership fees, and interest income combined. The estimated income based on the average income from FY 2020 through FY 2022 is summarized in *Table VII-8* below.

Table VII-8: Lower Arroyo Hondo MDWCA's average income.

OPERATING INCOME	FY	AVERAGE 2020-FY2021
Water Sales	\$	38,624.63
Bad Debts	\$	-
Water Sales - Other	\$	102.06
Utilities Reconnect Fees	\$	793.89
Transfer Fee Income	\$	121.45
Lien Fees Charged to Customers	\$	8.33
Bounced Check Fee	\$	-
Late Fees	\$	209.66
Membership Fees	\$	792.71
Other Fines and Forfeits - Other	\$	(282.67)
Lend a Hand Donations	\$	-
Interest Income	\$	44.94
TOTAL OPERATING INCOME	\$	40,415.00

## 2. Annual Operations and Maintenance (O&M) Costs

The estimated annual O&M costs for the recommended project phases are shown in *Table VII-9 below.* 



Table VII-9: Recommended Project Phase 1 estimated O&M.

Description	Amount
Miscellaneous	\$ 2.17
Exempt Status - IRS Application	\$ 200.00
Repairs & Maintenance Equipment	\$ 1,514.01
Contract - Attorney Fees	\$ 475.59
Bookkeeping	\$ 6,729.07
Operator Extras	\$ 443.06
Water Operator - Other	\$ 11,440.29
Software	\$ 20.00
Supplies - General Office	\$ 397.23
Supplies - Furn/Fixt/Equip	\$ 10.61
Insurance - Gen Liability/Prop	\$ 66.67
Postage	\$ 465.43
Printing Publishing	\$ 12.67
NM Rural Water Association Dues	\$ 63.50
Subscriptions & Dues	\$ 171.22
Utilities - Electricity	\$ 2,197.35
Bank Charges	\$ 1.30
Board Stipends	\$ 3,575.81
Board Training	\$ 61.33
Room Rental	\$ 285.18
PRC Fees	\$ 10.65
Water Conservation Fees	\$ 101.64
Miscellaneous G&A	\$ 3.33
Storage Unit	\$ 650.33
Small Fees Paid to NM T&R	\$ 293.39
Sales Tax Adjustments	\$ 405.58
RIP Loan	\$ 4,040.79
Reconciliation Discrepancies	\$ 358.42
Debt Service- Interest payment	\$ 798.20
Tank Rehab	\$ 4,500.00
Short Lived Asset Reserve- Well Pump Replacements	\$ 2,400.00
Short lived Asset Reserve - Gate Valves	\$ 7,472.19
Short lived Asset Reserve - Pressure Reducing Valves	\$ 19,219.00
Short lived Asset Reserve - Master Meter	\$ 2,687.00
Short lived Asset Reserve - Water Meters	\$ 75,097.50
Short lived Asset Reserve - Hydrants	\$ 23,929.35
Short lived Asset Reserve - Disinfection Equipment	\$ 1,740.00
Total O&M	\$ 168,802.62



## 3. Debt Repayments

SMA calculated debt repayment for several grant/loan scenarios based on seeking Water Trust Board (WTB) or Capital Outlay funding, or a combination thereof, to finance the recommended project. These calculations assume that the total 241 residential and one commercial connection in the future water system pay repay the loan portion of any funding agreement. These calculations also estimate the monthly base rates per connection needed to pay back the loan under each scenario investigated. Grant/loan calculations are included in Appendix G and included in *Table VII-10*.

Table VII-10: Recommended Project debt repayment and monthly base rate estimates for Capital Outlay and WTB funding.

Lower Arroyo Hondo- Recommended Project												
Lower Arryo Hondo MDWCA Water System Improvements												
		Grant/Loan Amount										
		(20-year period)										
Water System		No Grant	C	apital				Water Ti	rust	Board		
Improvements		(3%)	C	utlay				(0.2	25%	)		
				(0%)								
		0/100	1	100/0		90/10		80/20		75/25		60/40
Loan Amount	\$	18,289,872	\$	-	\$	1,828,987	\$	4,572,468	\$	4,572,468	\$	7,315,949
Annual												
Payment	\$	1,229,367	\$	-	\$	93,869	\$	187,738	\$	234,672	\$	375,476
Expenses	\$	177,904	\$	177,904	\$	177,904	\$	177,904	\$	177,904	\$	177,904
Reserve	\$	122,937	\$	-	\$	9,387	\$	18,774	\$	23,467	\$	37,548
Projected												
Average												
<b>Monthly Base</b>												
Rate	\$	527	\$	61.26	\$	97	\$	132	\$	150	\$	203

## 4. Reserves

## a. Debt Service Reserve

A Debt Service Reserve will not be required unless the Association seeks USDA funding, which they do not presently intend to do.

### b. Short-Lived Asset Reserve

A short-lived asset reserve is a deposit reserved for items such as replacement or overhaul of paint, pumps/motors, and small equipment not covered under



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O&M; however, this does not include long-lived assets such as a water tank or treatment facility replacement that should be funded with long-term financing. The equipment and facilities provided in the proposed project such as gate valves, pressure reducing valves, and hydrants are expected to have a service life up to 20 years, with the exception of water service meters, master meters, disinfection equipment and pumps which have an estimated useful life of 10 years. The short-lived asset reserve needs are summarized in *Table VII-9* above and in the cost estimates in Appendix G.



## **VIII. CONCLUSIONS AND RECOMMENDATIONS**

SMA evaluated options in this PER to address several priorities that have been identified by the Association, namely:

## Health, Sanitation and Security

• There is a need for the Association to provide groundwater source redundancy for the system and increase groundwater source capacity because the Association currently relies on one well.

## Aging Infrastructure

 Aged waterline in the existing system needs to be replaced with new, diameter waterline.

## Reasonable Growth

- The Association wants to expand the system to serve approximately 163 new water service connections and a total 242 service connections in the future water system.
- Therefore, there is a need to increase the water storage capacity to meet the future demands.
- There is a need to increase the total ground water source capacity of the system to meet the future MDD with the largest producing well out of service.

## Other Needs

- Construction of an additional water source is one way that the Owner can prepare for inevitable periods of drought and build a more resilient and sustainable drinking water system.
- Constructing an interconnection with Upper Arroyo Hondo MDWCA to provide an emergency water source to each water system in case of a groundwater well going dry, well pump failures, unforeseen fire flow demands, or other unforeseen water system facility failures.
- The Association needs at least 65 new water meters water meters for the current members and water meters for the future members to bill according to water usage and be able to track water losses in the system.



Based on the analysis presented in this report, SMA recommends the following improvements to improve system resiliency, redundancy, and capacity.

#### Phase 1

- Replace the existing aged waterline with 6,615-LF of 6-inch PVC
- Install 55 water service meters, 10 water service meters with PRVs, and service line
- Install seven (7) 6-inch gate valves
- Install nine fire hydrants
- Install 5 flush hydrants at each mainline end

#### Phase 2

- Drill a second supplementary groundwater well in the tertiary aquifer and install 5,849-LF of 4-inch transmission line and construct a new well house
- Construct a new 72,000-gallon welded steel water storage tank
- Install three (3) 6-inch PRVs
- Install 2,688-LF of 6-inch PVC distribution waterline
- Install 21 water meters, 6 water service meters with PRVs, and service line
- Install four (4) 6-inch gate valves
- Install six fire hydrants
- Install 800-LF of 6-inch PVC waterline for interconnection
- Install a 6-inch gate valve for interconnection
- Install a 6-inch PRV for interconnection
- Drill a third supplementary groundwater well in the tertiary aquifer and install 100-LF of 4-inch transmission line and construct a new well house

## Phase 3

- Install 6,496-LF of 6-inch PVC waterline
- Install 56 water service meters, 10 water service meters with PRVs, and service line
- Install eight (8) 6-inch gate valves
- Install eleven fire hydrants
- Install a flush hydrant at the end of the mainline

### Phase 4

- Install -LF of 6-inch PVC waterline
- Install 56 water service meters, 10 water service meters with PRVs, and service line
- Install eight (8) 6-inch gate valves
- Install eleven fire hydrants
- Install three flush hydrants at the ends of the mainline



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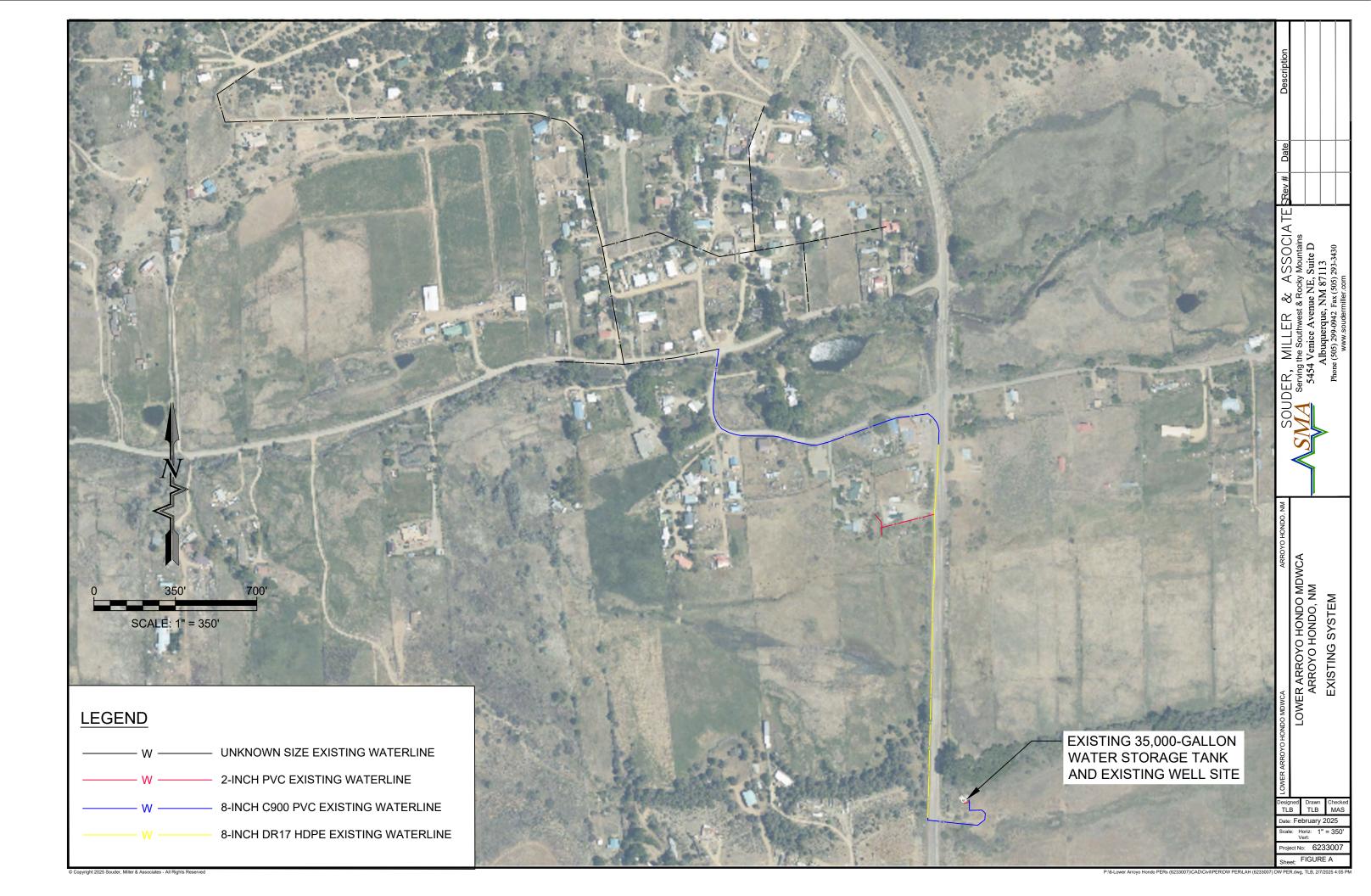
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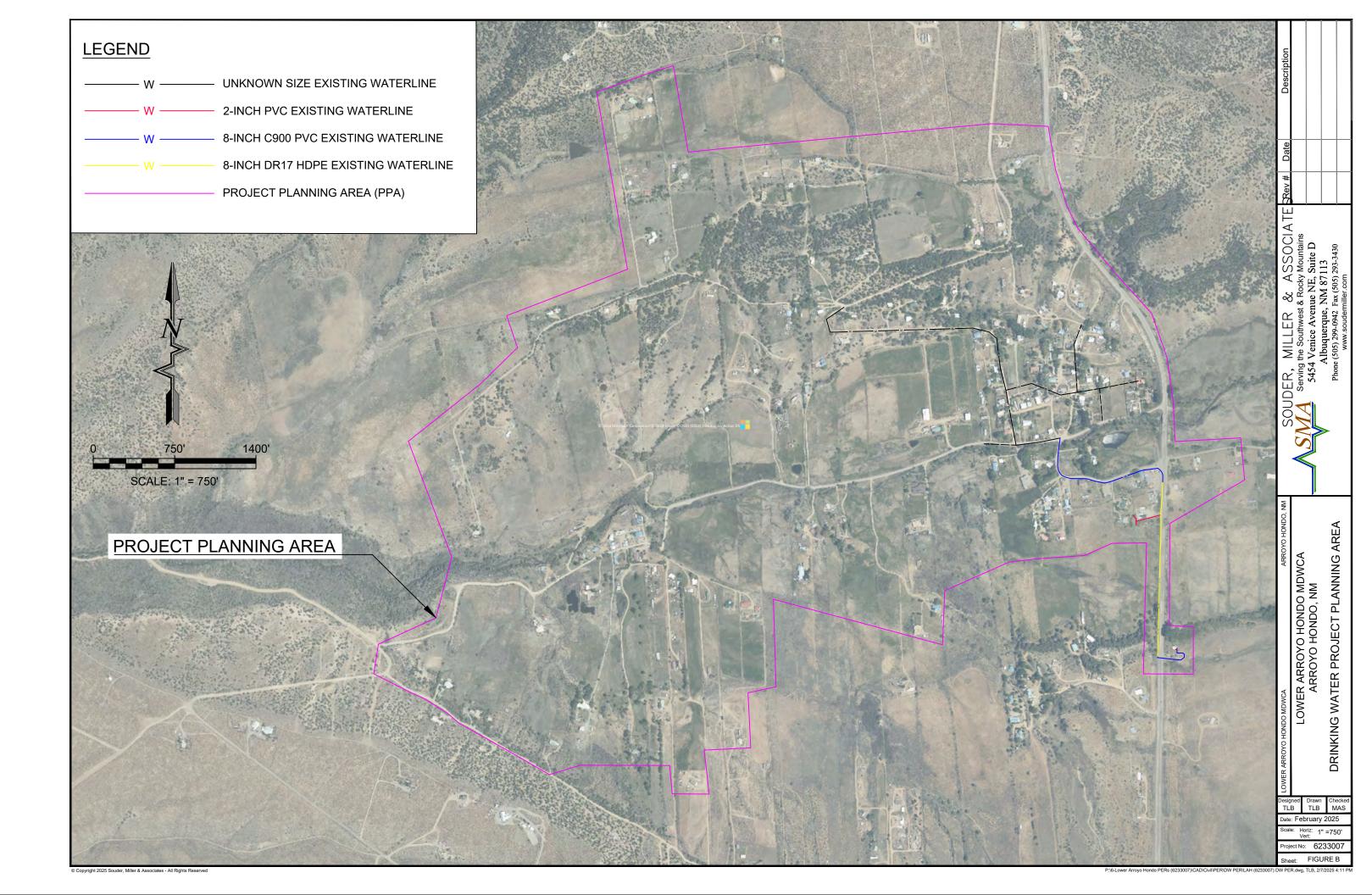
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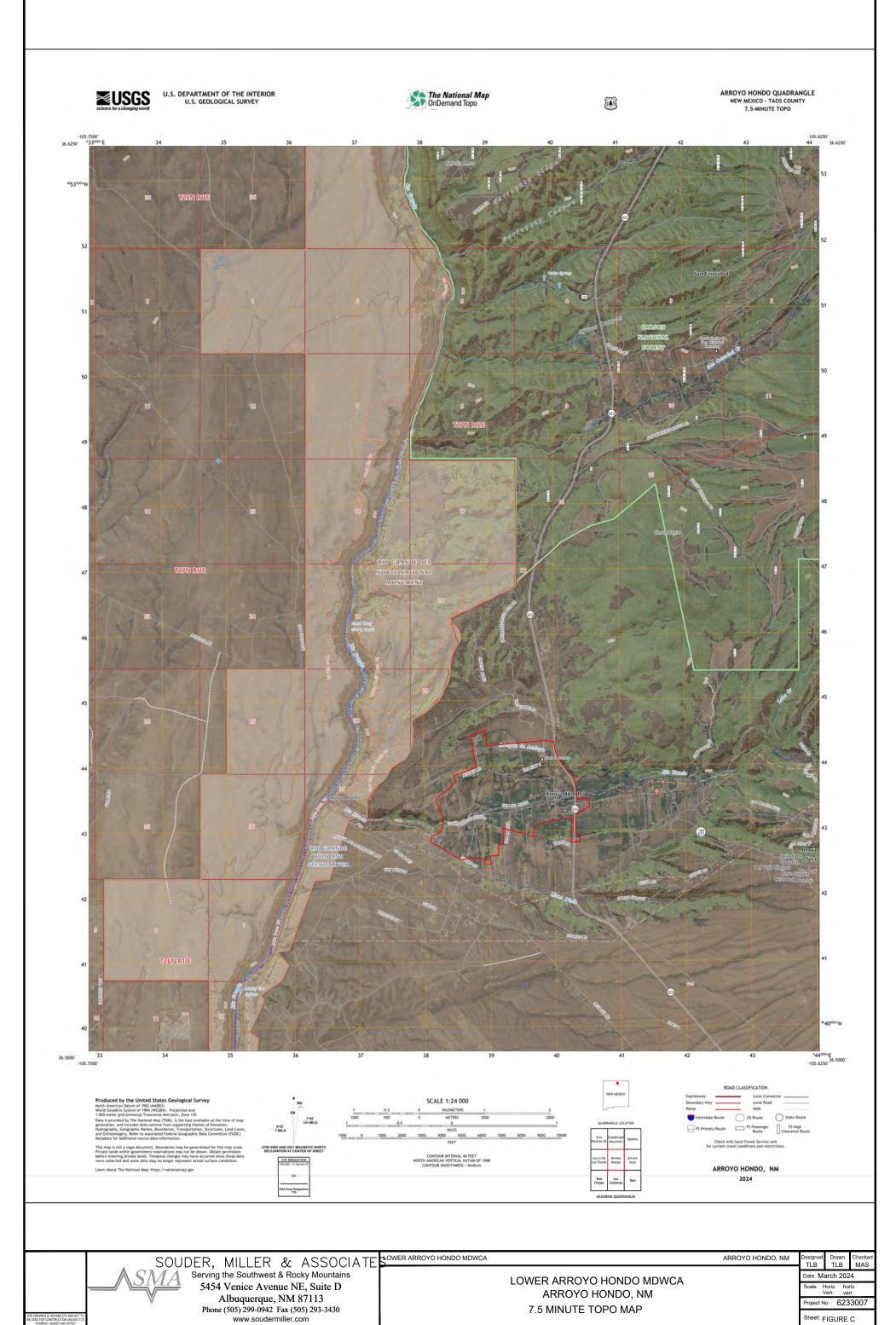
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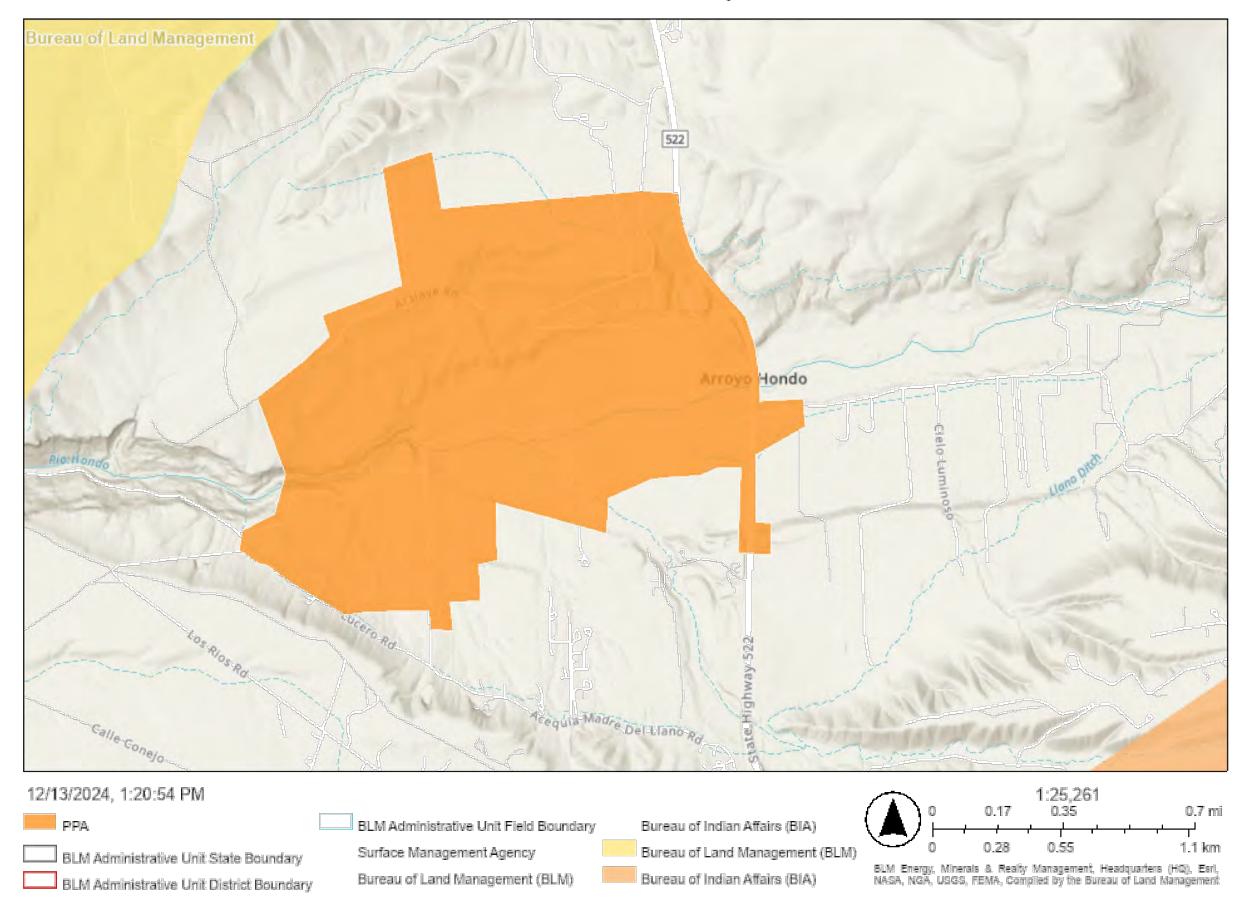








# ArcGIS Web Map



BUREUA OF LAND MANAGEMENT MAP

6-Lower Arroyo Hondo PERs (6233007)\CAD\Civil\PER\DW PER\LAH Appendix A.dwg, TLB, 12/13/2024 1:2



**VRCS** 

Natural Resources Conservation Service A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants Custom Soil Resource Report for Taos County and Parts of Rio Arriba and Mora Counties, New Mexico



## **Preface**

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2 053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# **How Soil Surveys Are Made**

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

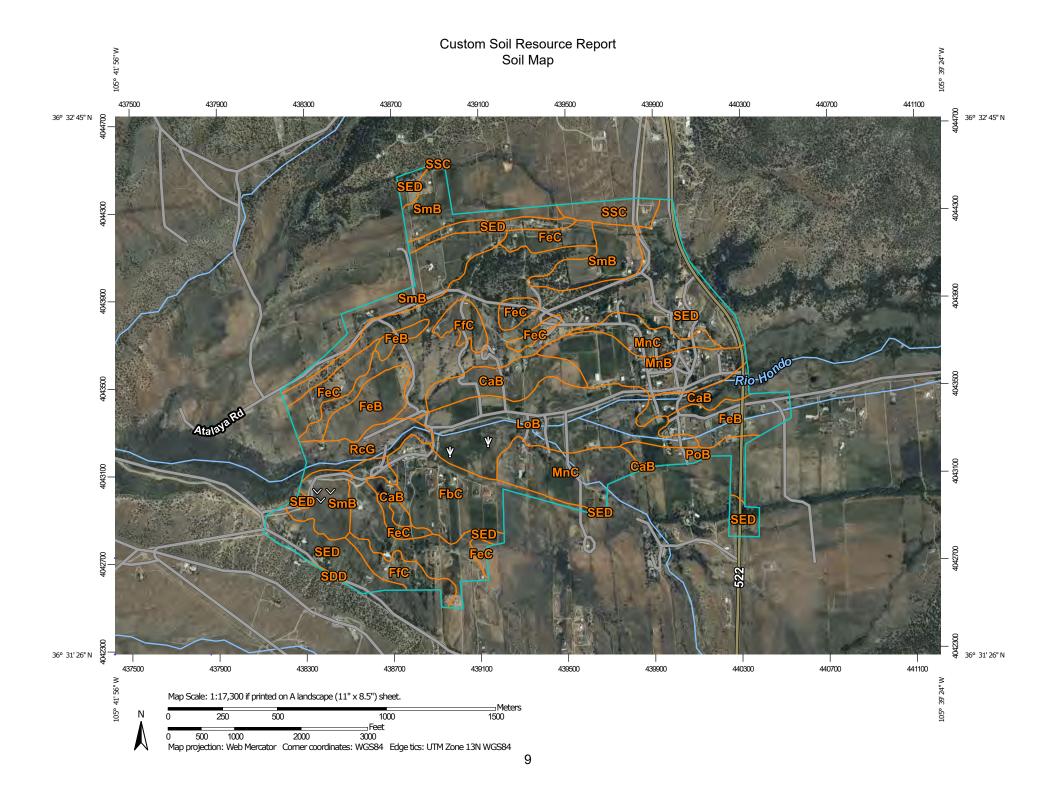
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



#### MAP LEGEND

#### Area of Interest (AOI)

Area of Interest (AOI)

#### Soils

Soil Map Unit Polygons

-

Soil Map Unit Lines

Soil Map Unit Points

#### **Special Point Features**

(0)

Blowout

 $\boxtimes$ 

Borrow Pit

36

Clay Spot

 $\Diamond$ 

Closed Depression

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Gravel Pit

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**Gravelly Spot** 

0

Landfill Lava Flow

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Marsh or swamp

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Mine or Quarry

0

Miscellaneous Water
Perennial Water

0

Rock Outcrop

4

Saline Spot Sandy Spot

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Severely Eroded Spot

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Sinkhole

3⊳

Slide or Slip

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Sodic Spot

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Spoil Area Stony Spot

Δħ

Very Stony Spot

8

Wet Spot Other

Δ.

Special Line Features

#### Water Features

~

Streams and Canals

#### Transportation

Rails

~

Interstate Highways

US Routes

~

Major Roads

~

Local Roads

#### Background

Marie Contract

Aerial Photography

#### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24.000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Taos County and Parts of Rio Arriba and Mora

Counties, New Mexico Survey Area Data: Version 18, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 17, 2020—May 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
СаВ	Caruso variant silty clay loam, 0 to 3 percent slopes	39.6	5.8%
FbC	Fernando silt loam, 0 to 7 percent slopes	41.6	6.0%
FeB	Fernando clay loam, 1 to 3 percent slopes	44.3	6.4%
FeC	Fernando clay loam, 3 to 5 percent slopes	37.2	5.4%
FfC	Fernando clay loam, 5 to 7 percent slopes	20.1	2.9%
LoB	Loveland clay loam, 0 to 3 percent slopes	73.9	10.7%
MnB	Manzano clay loam, 1 to 3 percent slopes	38.4	5.6%
MnC	Manzano clay loam, 3 to 5 percent slopes	47.0	6.8%
РоВ	Poganeab silty clay loam, nearly level	13.9	2.0%
RcG	Rock outcrop, very steep	18.4	2.7%
SDD	Sedillo-Orthents association, 9 to 45 percent slopes	0.2	0.0%
SED	Sedillo-Silva association, 0 to 25 percent slopes	217.5	31.6%
SmB	Silva loam, 0 to 2 percent slopes	85.4	12.4%
SSC	Silva-Sedillo association, 1 to 15 percent slopes	11.2	1.6%
Totals for Area of Interest		688.8	100.0%

# **Map Unit Descriptions**

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without

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including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

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An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Taos County and Parts of Rio Arriba and Mora Counties, New Mexico

# CaB—Caruso variant silty clay loam, 0 to 3 percent slopes

# **Map Unit Setting**

National map unit symbol: k1dw Elevation: 6,500 to 8,500 feet

Mean annual precipitation: 12 to 14 inches Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 115 to 135 days

Farmland classification: Prime farmland if irrigated

# **Map Unit Composition**

Caruso variant and similar soils: 85 percent

Minor components: 2 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Caruso Variant**

# Setting

Landform: Stream terraces, channels

Landform position (three-dimensional): Tread, dip

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from igneous and metamorphic rock

# **Typical profile**

H1 - 0 to 14 inches: silty clay loam H2 - 14 to 36 inches: clay loam

H3 - 36 to 60 inches: stratified very fine sandy loam to clay loam

#### **Properties and qualities**

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat poorly drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: About 24 to 72 inches

Frequency of flooding: Occasional Frequency of ponding: None

Calcium carbonate, maximum content: 7 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: High (about 11.5 inches)

# Interpretive groups

Land capability classification (irrigated): 2w Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C

Ecological site: R036XB008NM - Meadow

Hydric soil rating: No

#### **Minor Components**

#### **Poganeab**

Percent of map unit: 1 percent Landform: Stream terraces Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Yes

#### Loveland

Percent of map unit: 1 percent Landform: Stream terraces Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Yes

#### Manzano

Percent of map unit:

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

#### **Tenorio**

Percent of map unit:

Ecological site: R051XA001NM - Loamy

Hydric soil rating: No

# FbC—Fernando silt loam, 0 to 7 percent slopes

# Map Unit Setting

National map unit symbol: k1f5 Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 11 to 14 inches
Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Not prime farmland

# **Map Unit Composition**

Fernando and similar soils: 75 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

#### **Description of Fernando**

#### Setting

Landform: Alluvial fans

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Slope alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 2 inches: silt loam
Bw - 2 to 8 inches: silt loam
Btk1 - 8 to 13 inches: clay loam
Btk2 - 13 to 24 inches: clay loam
Btk3 - 24 to 36 inches: clay loam
Bk1 - 36 to 42 inches: clay loam
Bk2 - 42 to 60 inches: loam

# **Properties and qualities**

Slope: 0 to 7 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 25 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: High (about 10.0 inches)

# Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

#### **Minor Components**

#### **Petaca**

Percent of map unit: 5 percent

# Prieta

Percent of map unit: 5 percent

#### Servilleta

Percent of map unit: 5 percent

#### **Orthents**

Percent of map unit: 5 percent

# Sedillo

Percent of map unit: 5 percent

# FeB—Fernando clay loam, 1 to 3 percent slopes

# **Map Unit Setting**

National map unit symbol: k1f6 Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 11 to 14 inches Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Prime farmland if irrigated

# **Map Unit Composition**

Fernando and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Fernando**

# Setting

Landform: Alluvial fans, mountain valleys Landform position (three-dimensional): Rise

Down-slope shape: Linear, convex Across-slope shape: Linear, convex

Parent material: Slope alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 6 inches: clay loam

Bt - 6 to 29 inches: silty clay loam

Bk - 29 to 60 inches: silt loam

# **Properties and qualities**

Slope: 1 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 25 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 10.0

Available water supply, 0 to 60 inches: High (about 9.9 inches)

#### Interpretive groups

Land capability classification (irrigated): 3e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

#### **Minor Components**

Silva

Percent of map unit: 10 percent

**Tenorio** 

Percent of map unit: 5 percent

Gullied land, arroyos

Percent of map unit: 5 percent

Hydric soil rating: No

# FeC—Fernando clay loam, 3 to 5 percent slopes

# **Map Unit Setting**

National map unit symbol: k1f7 Elevation: 6,500 to 8,000 feet

Mean annual precipitation: 12 to 14 inches Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 115 to 135 days

Farmland classification: Prime farmland if irrigated

# **Map Unit Composition**

Fernando and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Fernando**

#### Setting

Landform: Alluvial fans

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from igneous and metamorphic rock

#### Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 25 inches: silty clay loam
H3 - 25 to 60 inches: silt loam

# **Properties and qualities**

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 11.6 inches)

# Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# **Minor Components**

# Silva

Percent of map unit:

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

#### Hernandez

Percent of map unit:

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# FfC—Fernando clay loam, 5 to 7 percent slopes

#### **Map Unit Setting**

National map unit symbol: k1f8 Elevation: 6,500 to 8,000 feet

Mean annual precipitation: 12 to 14 inches Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 115 to 135 days

Farmland classification: Farmland of statewide importance

#### **Map Unit Composition**

Fernando and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Fernando**

# Setting

Landform: Alluvial fans

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from igneous and metamorphic rock

# Typical profile

H1 - 0 to 5 inches: clay loam H2 - 5 to 19 inches: silty clay loam H3 - 19 to 60 inches: silt loam

# **Properties and qualities**

Slope: 5 to 7 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 25 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 11.6 inches)

# Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# **Minor Components**

#### Silva

Percent of map unit:

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# Hernandez

Percent of map unit:

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# LoB—Loveland clay loam, 0 to 3 percent slopes

# Map Unit Setting

National map unit symbol: k1fl Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 110 to 135 days

Farmland classification: Farmland of statewide importance

#### **Map Unit Composition**

Loveland and similar soils: 85 percent

Minor components: 1 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Loveland**

# Setting

Landform: Alluvial flats

Landform position (three-dimensional): Dip

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from igneous and metamorphic rock

# Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 21 inches: sandy clay loam
H3 - 21 to 60 inches: very gravelly sand

# Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20

to 0.60 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: Frequent Frequency of ponding: None

Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.9 inches)

# Interpretive groups

Land capability classification (irrigated): 3w Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: C/D

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Yes

# **Minor Components**

# Inclusion

Percent of map unit: 1 percent

Landform: Depressions

Landform position (three-dimensional): Dip

Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Yes

# **Caruso variant**

Percent of map unit:

Ecological site: R036XB008NM - Meadow

Hydric soil rating: No

#### Manzano

Percent of map unit:

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# MnB—Manzano clay loam, 1 to 3 percent slopes

# **Map Unit Setting**

National map unit symbol: k1g0 Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Prime farmland if irrigated

# **Map Unit Composition**

Manzano and similar soils: 85 percent Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Manzano**

# Setting

Landform: Arroyos, valley floors

Landform position (three-dimensional): Dip, talf

Down-slope shape: Linear, concave

Across-slope shape: Linear

Parent material: Slope alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 10 inches: clay loam
Bw1 - 10 to 30 inches: clay loam
Bw2 - 30 to 43 inches: clay loam
C - 43 to 60 inches: clay loam

# **Properties and qualities**

Slope: 1 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Gypsum, maximum content: 1 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

#### Interpretive groups

Land capability classification (irrigated): 2e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# **Minor Components**

#### Caruso

Percent of map unit: 4 percent

#### Loveland

Percent of map unit: 4 percent

#### **Tenorio**

Percent of map unit: 4 percent

# **Gravelly soils**

Percent of map unit: 3 percent

# MnC—Manzano clay loam, 3 to 5 percent slopes

# **Map Unit Setting**

National map unit symbol: k1g1 Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Prime farmland if irrigated

# **Map Unit Composition**

Manzano and similar soils: 85 percent Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Manzano**

#### Setting

Landform: Arroyos

Landform position (three-dimensional): Dip

Down-slope shape: Concave Across-slope shape: Linear

Parent material: Alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 10 inches: clay loam Bw1 - 10 to 30 inches: clay loam Bw2 - 30 to 43 inches: clay loam C - 43 to 60 inches: clay loam

# **Properties and qualities**

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Rare Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Gypsum, maximum content: 1 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

# Interpretive groups

Land capability classification (irrigated): 3e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# **Minor Components**

#### Caruso

Percent of map unit: 5 percent

#### **Tenorio**

Percent of map unit: 5 percent

# **Gravelly soils**

Percent of map unit: 5 percent

# PoB—Poganeab silty clay loam, nearly level

# **Map Unit Setting**

National map unit symbol: k1gx Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 12 to 14 inches
Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 115 to 135 days

Farmland classification: Farmland of statewide importance

# **Map Unit Composition**

Poganeab and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Poganeab**

#### Setting

Landform: Stream terraces, valley floors

Landform position (three-dimensional): Tread, talf

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from igneous and metamorphic rock

# **Typical profile**

H1 - 0 to 17 inches: silty clay loam H2 - 17 to 50 inches: silty clay loam

# **Properties and qualities**

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to

moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: Rare Frequency of ponding: None

Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm) Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

# Interpretive groups

Land capability classification (irrigated): 5w Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: C/D

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Yes

# **Minor Components**

#### Caruso variant

Percent of map unit: 5 percent

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Unranked

#### Loveland

Percent of map unit: 5 percent Landform: Alluvial flats Down-slope shape: Linear Across-slope shape: Linear

Ecological site: R036XB008NM - Meadow

Hydric soil rating: Yes

# RcG—Rock outcrop, very steep

#### **Map Unit Composition**

Rock outcrop, basalt: 85 percent Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Rock Outcrop, Basalt**

# Setting

Landform: Escarpments

Down-slope shape: Concave Across-slope shape: Concave

# Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

# **Minor Components**

#### Rubble land

Percent of map unit: 10 percent

Hydric soil rating: No

# Shallow soils, lithic

Percent of map unit: 3 percent

# Water

Percent of map unit: 2 percent Hydric soil rating: Unranked

# SDD—Sedillo-Orthents association, 9 to 45 percent slopes

# Map Unit Setting

National map unit symbol: k1hc Elevation: 6,800 to 8,000 feet

Mean annual precipitation: 11 to 13 inches Mean annual air temperature: 47 to 51 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Sedillo and similar soils: 45 percent Orthents and similar soils: 35 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

#### **Description of Sedillo**

#### Setting

Landform: Ridges, drainageways

Landform position (three-dimensional): Side slope, dip

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Slope alluvium derived from igneous and metamorphic rock

#### Typical profile

A - 0 to 3 inches: gravelly loam

Bt - 3 to 11 inches: very gravelly clay loam Bk - 11 to 60 inches: very gravelly sandy loam

# **Properties and qualities**

Slope: 9 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 8.0

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

# Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: R036XA004NM - Gravelly Slopes

Hydric soil rating: No

# **Description of Orthents**

# Setting

Landform: Ridges, fan piedmonts

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear Across-slope shape: Convex, linear

Parent material: Slope alluvium derived from igneous and metamorphic rock

# Typical profile

A - 0 to 10 inches: very gravelly loam C - 10 to 60 inches: very gravelly loam

#### **Properties and qualities**

Slope: 30 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high

(0.71 to 2.13 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 5.0

Available water supply, 0 to 60 inches: Low (about 5.6 inches)

# Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: R036XB001NM - Breaks

Hydric soil rating: No

#### **Minor Components**

Silva

Percent of map unit: 5 percent

Manzano

Percent of map unit: 5 percent

**Fernando** 

Percent of map unit: 5 percent

Hernandez

Percent of map unit: 5 percent

# SED—Sedillo-Silva association, 0 to 25 percent slopes

# **Map Unit Setting**

National map unit symbol: k1hd Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 11 to 13 inches Mean annual air temperature: 45 to 49 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Sedillo and similar soils: 55 percent Silva and similar soils: 25 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

#### **Description of Sedillo**

#### Setting

Landform: Ridges

Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Slope alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 3 inches: very gravelly loam

Bt - 3 to 11 inches: very gravelly clay loam

Bk - 11 to 60 inches: very gravelly sandy loam

#### **Properties and qualities**

Slope: 10 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 8.0

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

# Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: R036XA004NM - Gravelly Slopes

Hydric soil rating: No

# **Description of Silva**

# Setting

Landform: Ridges

Landform position (three-dimensional): Crest

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Eolian deposits derived from sandstone and shale and/or slope

alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 3 inches: loam
Bt - 3 to 29 inches: clay loam
Bk - 29 to 60 inches: clay loam

#### **Properties and qualities**

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 20 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 5.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

# Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

#### **Minor Components**

#### **Orthents**

Percent of map unit: 5 percent

#### Manzano

Percent of map unit: 5 percent

# **Fernando**

Percent of map unit: 5 percent

#### Hernandez

Percent of map unit: 5 percent

# SmB—Silva loam, 0 to 2 percent slopes

# **Map Unit Setting**

National map unit symbol: k1hn Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 11 to 13 inches Mean annual air temperature: 47 to 51 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Prime farmland if irrigated

# **Map Unit Composition**

Silva and similar soils: 90 percent Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Silva**

#### Setting

Landform: Alluvial fans, ridges

Landform position (three-dimensional): Crest, rise

Down-slope shape: Linear, convex Across-slope shape: Linear, convex

Parent material: Eolian deposits derived from sandstone and shale and/or alluvium

derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 5 inches: loam

Bt - 5 to 30 inches: clay loam

Bk - 30 to 60 inches: clay loam

#### **Properties and qualities**

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 20 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 5.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

# Interpretive groups

Land capability classification (irrigated): 3e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# **Minor Components**

#### Fernando

Percent of map unit: 5 percent

#### Sedillo

Percent of map unit: 5 percent

# SSC—Silva-Sedillo association, 1 to 15 percent slopes

#### Map Unit Setting

National map unit symbol: k1hf Elevation: 6,500 to 7,500 feet

Mean annual precipitation: 11 to 13 inches Mean annual air temperature: 47 to 51 degrees F

Frost-free period: 125 to 135 days

Farmland classification: Not prime farmland

# **Map Unit Composition**

Silva and similar soils: 65 percent Sedillo and similar soils: 20 percent Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

# **Description of Silva**

#### Setting

Landform: Ridges, divides

Landform position (three-dimensional): Crest

Down-slope shape: Convex, linear Across-slope shape: Convex, linear

Parent material: Eolian deposits derived from sandstone and shale and/or slope

alluvium derived from igneous and metamorphic rock

# Typical profile

A - 0 to 3 inches: loam

Bt - 3 to 31 inches: clay loam

Bk - 31 to 60 inches: clay loam

# Properties and qualities

Slope: 1 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 20 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 5.0

Available water supply, 0 to 60 inches: High (about 10.2 inches)

# Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R036XB006NM - Loamy

Hydric soil rating: No

# **Description of Sedillo**

# Setting

Landform: Divides

Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Slope alluvium derived from igneous and metamorphic rock

# **Typical profile**

A - 0 to 3 inches: gravelly loam

Bt - 3 to 11 inches: very gravelly clay loam Bk - 11 to 60 inches: very gravelly sandy loam

#### **Properties and qualities**

Slope: 5 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21

to 0.71 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent Maximum salinity: Nonsaline (0.0 to 0.5 mmhos/cm)

Sodium adsorption ratio, maximum: 8.0

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

# Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: R036XA004NM - Gravelly Slopes

Hydric soil rating: No

# **Minor Components**

# Fernando

Percent of map unit: 8 percent

# Manzano

Percent of map unit: 7 percent

# Soil Information for All Uses

# Suitabilities and Limitations for Use

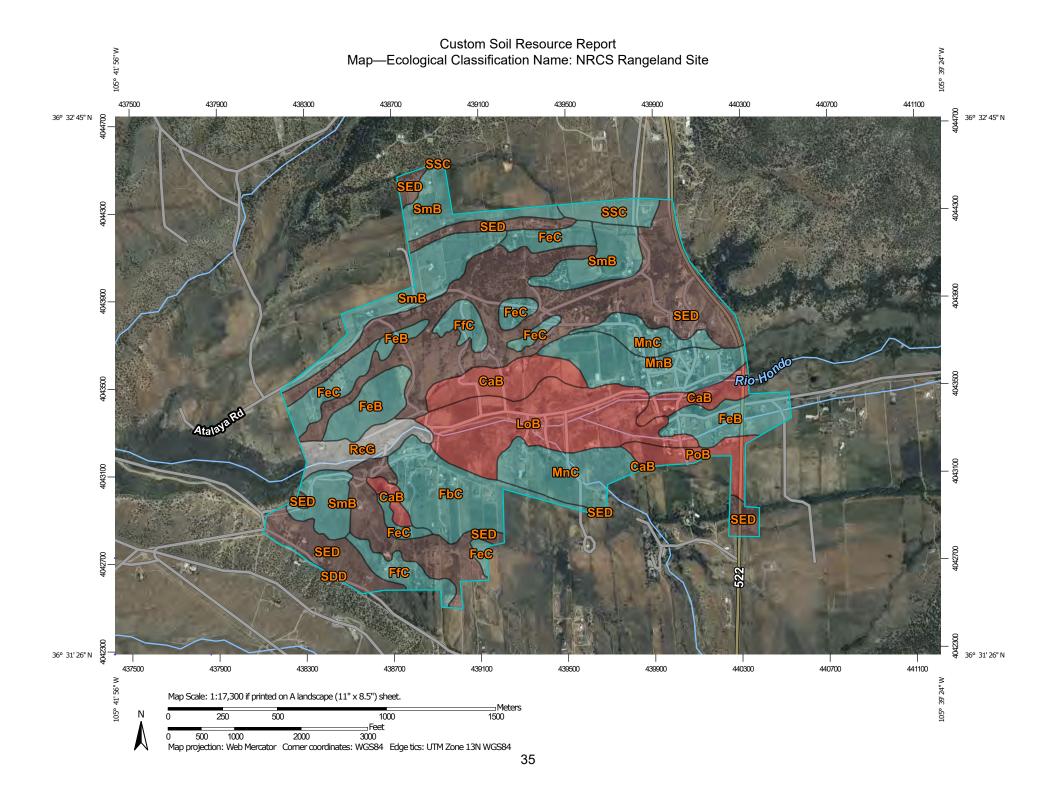
The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

# **Land Classifications**

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

# **Ecological Classification Name: NRCS Rangeland Site**

Ecological classifications consist of a series of vegetative classification systems developed by various partners in the National Cooperative Soil Survey. The classifications include, but are not limited to, systematic vegetative groupings. Examples include NRCS ecological sites, United States Forest Service plant associations, and forage suitability groups. The classifications systems are identified by the Ecological Classification Type Name field, which is in the Component Ecological Classification table.



#### MAP LEGEND MAP INFORMATION Area of Interest (AOI) The soil surveys that comprise your AOI were mapped at Background 1:24.000. Area of Interest (AOI) Aerial Photography Soils Please rely on the bar scale on each map sheet for map Soil Rating Polygons measurements. **Gravelly Slopes** Source of Map: Natural Resources Conservation Service Loamy Web Soil Survey URL: Meadow Coordinate System: Web Mercator (EPSG:3857) Not rated or not available Maps from the Web Soil Survey are based on the Web Mercator Soil Rating Lines projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the **Gravelly Slopes** Albers equal-area conic projection, should be used if more Loamy accurate calculations of distance or area are required. Meadow This product is generated from the USDA-NRCS certified data as Not rated or not available of the version date(s) listed below. Soil Rating Points Soil Survey Area: Taos County and Parts of Rio Arriba and Mora **Gravelly Slopes** Counties, New Mexico Loamy Survey Area Data: Version 18, Sep 7, 2023 Meadow Soil map units are labeled (as space allows) for map scales Not rated or not available 1:50,000 or larger. **Water Features** Date(s) aerial images were photographed: May 17, 2020—May Streams and Canals 20, 2020 Transportation Rails The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background Interstate Highways imagery displayed on these maps. As a result, some minor **US Routes** shifting of map unit boundaries may be evident. Major Roads Local Roads

Table—Ecological Classification Name: NRCS Rangeland Site

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
СаВ	Caruso variant silty clay loam, 0 to 3 percent slopes	Meadow	39.6	5.8%
FbC	Fernando silt loam, 0 to 7 percent slopes	Loamy	41.6	6.0%
FeB	Fernando clay loam, 1 to 3 percent slopes	Loamy	44.3	6.4%
FeC	Fernando clay loam, 3 to 5 percent slopes	Loamy	37.2	5.4%
FfC	Fernando clay loam, 5 to 7 percent slopes	Loamy	20.1	2.9%
LoB	Loveland clay loam, 0 to 3 percent slopes	Meadow	73.9	10.7%
MnB	Manzano clay loam, 1 to 3 percent slopes	Loamy	38.4	5.6%
MnC	Manzano clay loam, 3 to 5 percent slopes	Loamy	47.0	6.8%
РоВ	Poganeab silty clay loam, nearly level	Meadow	13.9	2.0%
RcG	Rock outcrop, very steep		18.4	2.7%
SDD	Sedillo-Orthents association, 9 to 45 percent slopes	Gravelly Slopes	0.2	0.0%
SED	Sedillo-Silva association, 0 to 25 percent slopes	Gravelly Slopes	217.5	31.6%
SmB	Silva loam, 0 to 2 percent slopes	Loamy	85.4	12.4%
SSC	Silva-Sedillo association, 1 to 15 percent slopes	Loamy	11.2	1.6%
Totals for Area of Inter	est	688.8	100.0%	

# Rating Options—Ecological Classification Name: NRCS Rangeland Site

Class: NRCS Rangeland Site

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the

map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

#### Component Percent Cutoff: None Specified

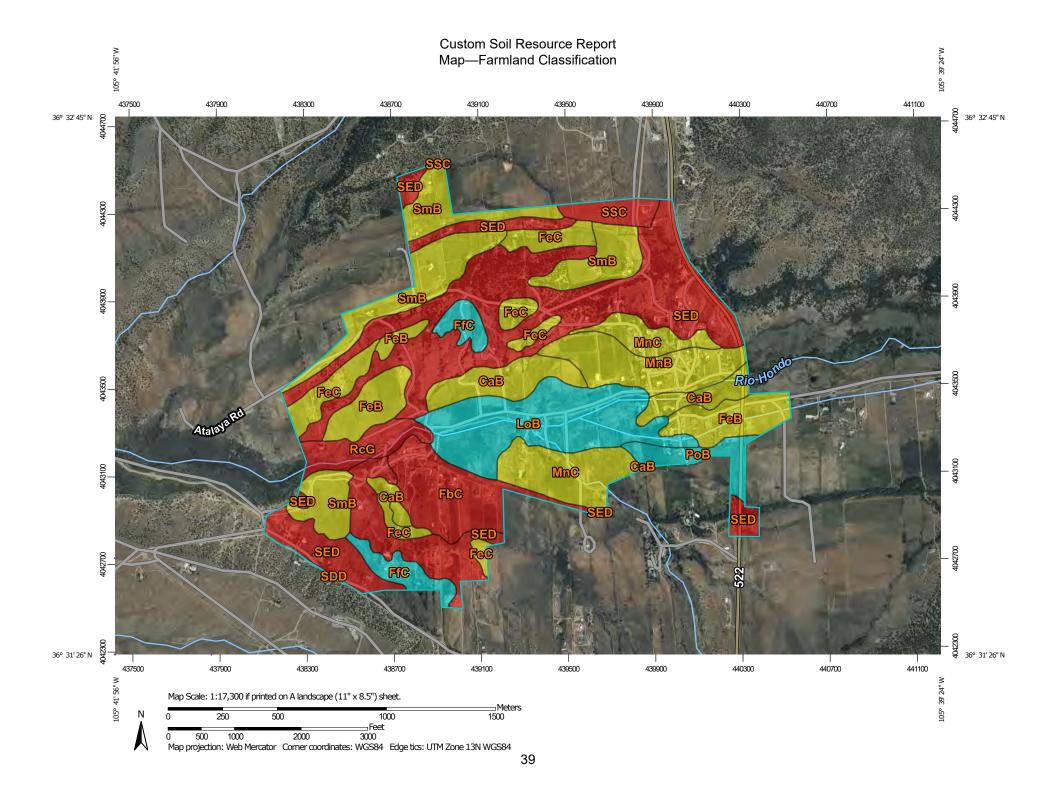
Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

# **Farmland Classification**

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.



		MAP LEGEND		
Area of Interest (AOI)  Area of Interest (AOI)  Boils  Soil Rating Polygons  Not prime farmland  All areas are prime farmland  Prime farmland if drained  Prime farmland if protected from flooding or not frequently flooded during the growing season  Prime farmland if irrigated  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season  Prime farmland if irrigated and drained  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season	Prime farmland if subsoiled, completely removing the root inhibiting soil layer Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60 Prime farmland if irrigated and reclaimed of excess salts and sodium Farmland of statewide importance Farmland of statewide importance, if drained Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season Farmland of statewide importance, if irrigated	Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if irrigated and drained  Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer  Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60	Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium  Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season  Farmland of statewide importance, if warm enough Farmland of statewide importance, if warm enough  Farmland of local importance Farmland of local importance, if irrigated	Farmland of unique importance  Not rated or not available  Soil Rating Lines  Not prime farmland  All areas are prime farmland  Prime farmland if drained  Prime farmland if protected from flooding or not frequently flooded during the growing season  Prime farmland if irrigated  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season  Prime farmland if irrigated and rained  Prime farmland if irrigated and drained  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

***	Prime farmland if subsoiled, completely removing the root inhibiting soil layer	~	Farmland of statewide importance, if drained and either protected from flooding or not frequently	~	Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium	~	Farmland of unique importance Not rated or not available		Prime farmland if subsoiled, completely removing the root inhibiting soil layer
~	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60	~	flooded during the growing season Farmland of statewide importance, if irrigated and drained	~	Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the	Soil Rat	ting Points  Not prime farmland  All areas are prime farmland	ir c ((	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
~	Prime farmland if irrigated and reclaimed of excess salts and sodium Farmland of statewide	~	Farmland of statewide importance, if irrigated and either protected from flooding or not frequently	~	growing season Farmland of statewide importance, if warm enough, and either	•	Prime farmland if drained Prime farmland if protected from flooding or not frequently flooded		Prime farmland if irrigated and reclaimed of excess salts and sodium
~	importance Farmland of statewide importance, if drained Farmland of statewide	es e	flooded during the growing season Farmland of statewide importance, if subsoiled,		drained or either protected from flooding or not frequently flooded during the growing season		during the growing season Prime farmland if irrigated	•	Farmland of statewide importance Farmland of statewide importance, if drained
~	importance, if protected from flooding or not frequently flooded during the growing season	~	completely removing the root inhibiting soil layer Farmland of statewide importance, if irrigated	~	Farmland of statewide importance, if warm enough		Prime farmland if drained and either protected from flooding or not frequently flooded during the		Farmland of statewide importance, if protected from flooding or not frequently flooded during
~	Farmland of statewide importance, if irrigated		and the product of I (soil erodibility) x C (climate factor) does not exceed 60				growing season Prime farmland if irrigated and drained	•	the growing season Farmland of statewide importance, if irrigated
				~	Farmland of local importance, if irrigated		Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season		
							growing season		

The soil surveys that comprise your AOI were mapped at Farmland of statewide Farmland of statewide Farmland of unique importance, if drained and importance, if irrigated importance 1:24.000. either protected from and reclaimed of excess Not rated or not available flooding or not frequently salts and sodium Please rely on the bar scale on each map sheet for map flooded during the **Water Features** Farmland of statewide measurements. growing season importance, if drained or Streams and Canals Farmland of statewide either protected from importance, if irrigated flooding or not frequently Source of Map: Natural Resources Conservation Service Transportation and drained flooded during the Web Soil Survey URL: Rails growing season Coordinate System: Web Mercator (EPSG:3857) Farmland of statewide Interstate Highways importance, if irrigated Farmland of statewide and either protected from importance, if warm Maps from the Web Soil Survey are based on the Web Mercator **US Routes** flooding or not frequently enough, and either projection, which preserves direction and shape but distorts flooded during the drained or either Major Roads ~ distance and area. A projection that preserves area, such as the protected from flooding or growing season not frequently flooded Albers equal-area conic projection, should be used if more Farmland of statewide Local Roads  $\sim$ during the growing accurate calculations of distance or area are required. importance, if subsoiled. season Background completely removing the root inhibiting soil layer Farmland of statewide Aerial Photography This product is generated from the USDA-NRCS certified data importance, if warm Farmland of statewide as of the version date(s) listed below. enough importance, if irrigated and the product of I (soil Farmland of statewide Soil Survey Area: Taos County and Parts of Rio Arriba and erodibility) x C (climate importance, if thawed Mora Counties. New Mexico factor) does not exceed Farmland of local Survey Area Data: Version 18, Sep 7, 2023 importance Farmland of local Soil map units are labeled (as space allows) for map scales importance, if irrigated 1:50,000 or larger. Date(s) aerial images were photographed: May 17, 2020— May 20, 2020 The orthophoto or other base map on which the soil lines were

compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor

shifting of map unit boundaries may be evident.

# Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
СаВ	Caruso variant silty clay loam, 0 to 3 percent slopes	Prime farmland if irrigated	39.6	5.8%
FbC	Fernando silt loam, 0 to 7 percent slopes	Not prime farmland	41.6	6.0%
FeB	Fernando clay loam, 1 to 3 percent slopes	Prime farmland if irrigated	44.3	6.4%
FeC	Fernando clay loam, 3 to 5 percent slopes	Prime farmland if irrigated	37.2	5.4%
FfC	Fernando clay loam, 5 to 7 percent slopes	Farmland of statewide importance	20.1	2.9%
LoB	Loveland clay loam, 0 to 3 percent slopes	Farmland of statewide importance	73.9	10.7%
MnB	Manzano clay loam, 1 to 3 percent slopes	Prime farmland if irrigated	38.4	5.6%
MnC	Manzano clay loam, 3 to 5 percent slopes	Prime farmland if irrigated	47.0	6.8%
РоВ	Poganeab silty clay loam, nearly level	Farmland of statewide importance	13.9	2.0%
RcG	Rock outcrop, very steep	Not prime farmland	18.4	2.7%
SDD	Sedillo-Orthents association, 9 to 45 percent slopes	Not prime farmland	0.2	0.0%
SED	Sedillo-Silva association, 0 to 25 percent slopes	Not prime farmland	217.5	31.6%
SmB	Silva loam, 0 to 2 percent slopes	Prime farmland if irrigated	85.4	12.4%
SSC	Silva-Sedillo association, 1 to 15 percent slopes	Not prime farmland	11.2	1.6%
Totals for Area of Inter	est		688.8	100.0%

# **Rating Options—Farmland Classification**

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic

map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

# **Ecological Sites**

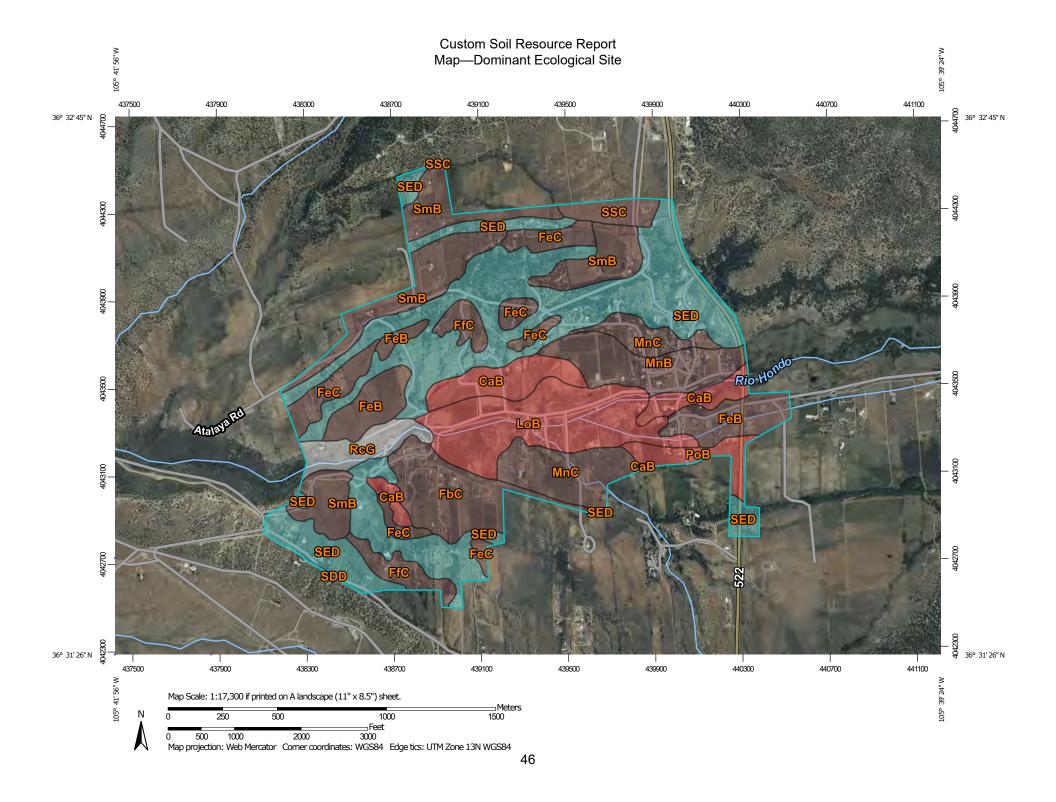
Individual soil map unit components can be correlated to a particular ecological site. The Ecological Site Assessment section includes ecological site descriptions, plant growth curves, state and transition models, and selected National Plants database information.

# All Ecological Sites —

An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site ID" is the symbol assigned to a particular ecological site.

The map identifies the dominant ecological site for each map unit, aggregated by dominant condition. Other ecological sites may occur within each map unit. Each map unit typically consists of one or more components (soils and/or miscellaneous areas). Each soil component is associated with an ecological site. Miscellaneous areas, such as rock outcrop, sand dunes, and badlands, have little or no soil material and support little or no vegetation and therefore are not linked to an ecological site. The table below the map lists all of the ecological sites for each map unit component in your area of interest.



#### MAP LEGEND MAP INFORMATION Area of Interest (AOI) The soil surveys that comprise your AOI were mapped at Background 1:24.000. Area of Interest (AOI) Aerial Photography Soils Please rely on the bar scale on each map sheet for map Soil Rating Polygons measurements. R036XA004NM Source of Map: Natural Resources Conservation Service R036XB006NM Web Soil Survey URL: R036XB008NM Coordinate System: Web Mercator (EPSG:3857) Not rated or not available Maps from the Web Soil Survey are based on the Web Mercator Soil Rating Lines projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the R036XA004NM Albers equal-area conic projection, should be used if more R036XB006NM accurate calculations of distance or area are required. R036XB008NM This product is generated from the USDA-NRCS certified data as Not rated or not available of the version date(s) listed below. Soil Rating Points Soil Survey Area: Taos County and Parts of Rio Arriba and Mora R036XA004NM Counties, New Mexico R036XB006NM Survey Area Data: Version 18, Sep 7, 2023 R036XB008NM Soil map units are labeled (as space allows) for map scales Not rated or not available 1:50,000 or larger. **Water Features** Date(s) aerial images were photographed: May 17, 2020—May Streams and Canals 20, 2020 Transportation Rails The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background Interstate Highways imagery displayed on these maps. As a result, some minor **US Routes** shifting of map unit boundaries may be evident. Major Roads Local Roads

# **Table—Ecological Sites by Map Unit Component**

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
CaB	Caruso variant silty clay loam, 0 to 3 percent slopes	Caruso variant (85%)	R036XB008NM — Meadow	39.6	5.8%
		Loveland (1%)	R036XB008NM — Meadow		
		Poganeab (1%)	R036XB008NM — Meadow		
		Manzano	R036XB006NM — Loamy		
		Tenorio	R051XA001NM — Loamy		
FbC	Fernando silt loam, 0 to 7 percent	Fernando (75%)	R036XB006NM — Loamy	41.6	6.0%
	slopes	Orthents (5%)			
		Petaca (5%)			
		Prieta (5%)			
		Sedillo (5%)			
		Servilleta (5%)			
FeB	Fernando clay loam, 1 to 3 percent slopes	Fernando (80%)	R036XB006NM — Loamy	44.3	6.4%
		Silva (10%)			
		Gullied land, arroyos (5%)			
		Tenorio (5%)			
FeC	Fernando clay loam, 3 to 5 percent slopes	Fernando (85%)	R036XB006NM — Loamy	37.2	5.4%
		Hernandez	R036XB006NM — Loamy		
		Silva	R036XB006NM — Loamy		
FfC	Fernando clay loam, 5 to 7 percent slopes	Fernando (85%)	R036XB006NM — Loamy	20.1	2.9%
		Hernandez	R036XB006NM — Loamy		
		Silva	R036XB006NM — Loamy		
LoB	Loveland clay loam, 0 to 3 percent slopes	Loveland (85%)	R036XB008NM — Meadow	73.9	10.7%
		Inclusion (1%)	R036XB008NM — Meadow		
		Caruso variant	R036XB008NM — Meadow		
		Manzano	R036XB006NM — Loamy		

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
MnB	Manzano clay loam, 1 to 3 percent	Manzano (85%)	R036XB006NM — Loamy	38.4	5.6%
	slopes	Caruso (4%)			
		Loveland (4%)			
		Tenorio (4%)			
		gravelly soils (3%)			
MnC	Manzano clay loam, 3 to 5 percent	Manzano (85%)	R036XB006NM — Loamy	47.0	6.8%
	slopes	Caruso (5%)			
		gravelly soils (5%)			
		Tenorio (5%)			
РоВ	Poganeab silty clay loam, nearly level	Poganeab (90%)	R036XB008NM — Meadow	13.9	2.0%
		Caruso variant (5%)	R036XB008NM — Meadow		
		Loveland (5%)	R036XB008NM — Meadow		
RcG	Rock outcrop, very steep	Rock outcrop, basalt (85%)		18.4	2.7%
		Rubble land (10%)			
		shallow soils, lithic (3%)			
		Water (2%)			
SDD	Sedillo-Orthents association, 9 to 45 percent slopes	Sedillo (45%)	R036XA004NM — Gravelly Slopes	0.2	0.0%
		Orthents (35%)	R036XB001NM — Breaks		
		Fernando (5%)			
		Hernandez (5%)			
		Manzano (5%)			
		Silva (5%)			
SED	Sedillo-Silva association, 0 to 25 percent slopes	Sedillo (55%)	R036XA004NM — Gravelly Slopes	217.5	31.6%
		Silva (25%)	R036XB006NM — Loamy		
		Fernando (5%)			
		Hernandez (5%)			
		Manzano (5%)			
		Orthents (5%)			
SmB	Silva loam, 0 to 2 percent slopes	Silva (90%)	R036XB006NM — Loamy	85.4	12.4%
		Fernando (5%)			
		Sedillo (5%)			

### Custom Soil Resource Report

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
SSC	Silva-Sedillo association, 1 to	Silva (65%)	R036XB006NM — Loamy	11.2	1.6%
	15 percent slopes	Sedillo (20%)	R036XA004NM — Gravelly Slopes		
		Fernando (8%)			
		Manzano (7%)			
Totals for Area of In	terest			688.8	100.0%

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#### Custom Soil Resource Report

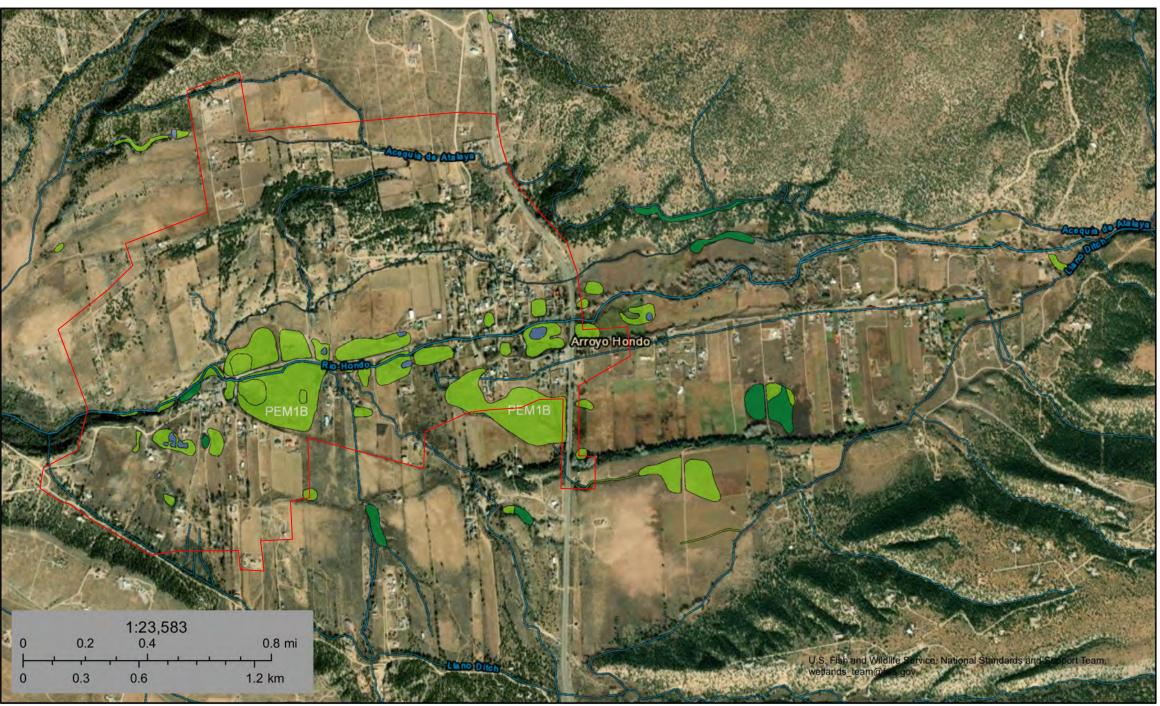
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# U.S. Fish and Wildlife Service National Wetlands Inventory

# Wetlands



February 25, 2024

### Wetlands

**Estuarine and Marine Deepwater** 

**Estuarine and Marine Wetland** 

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Other

Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

This page was produced by the NWI mapper

LOWER ARROYO HONDO ARROYO HONDO, NM USFWS WETLANDS MAP Date: March 2024 National Wetlands Inventory (NWI) heet: FIGURE E

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

### Location

Taos County, New Mexico



### Local office

New Mexico Ecological Services Field Office

**(**505) 346-2525

**(505)** 346-2542



# Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Draw the project location and click CONTINUE.
- 2. Click DEFINE PROJECT.
- 3. Log in (if directed to do so).
- 4. Provide a name and description for your project.
- 5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA Fisheries</u> for <u>species under their jurisdiction</u>.

1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

### **Mammals**

NAME STATUS

New Mexico Meadow Jumping Mouse Zapus hudsonius

Endangered

luteus

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/7965

### Birds

NAME STATUS

Mexican Spotted Owl Strix occidentalis lucida

Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/8196

Southwestern Willow Flycatcher Empidonax traillii extimus

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/6749

Endangered

Yellow-billed Cuckoo Coccyzus americanus

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

https://ecos.fws.gov/ecp/species/3911

Threatened

### **Fishes**

NAME STATUS

Rio Grande Cutthroat Trout Oncorhynchus clarkii virginalis

Wherever found

Candidate

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/920

### Insects

NAME STATUS

Monarch Butterfly Danaus plexippus

Candidate

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/9743

Silverspot Speyeria nokomis nokomis

**Proposed Threatened** 

Wherever found

No critical habitat has been designated for this species.

https://ecos.fws.gov/ecp/species/2813

### Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

# Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act<sup>1</sup> and the Migratory Bird Treaty Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats<sup>3</sup>, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management <a href="https://www.fws.gov/program/eagle-management">https://www.fws.gov/program/eagle-management</a>
- Measures for avoiding and minimizing impacts to birds
   <a href="https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds">https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds</a>

- Nationwide conservation measures for birds <a href="https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf">https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf</a>
- Supplemental Information for Migratory Birds and Eagles in IPaC <a href="https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action">https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action</a>

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to <u>Bald Eagle Nesting and Sensitivity to Human Activity</u>

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME BREEDING SEASON

### Bald Eagle Haliaeetus leucocephalus

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Breeds Dec 1 to Aug 31

### Golden Eagle Aquila chrysaetos

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1680">https://ecos.fws.gov/ecp/species/1680</a>

Breeds Dec 1 to Aug 31

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey

effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (1)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (–)

A week is marked as having no data if there were no survey events for that week.

### **Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



# What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the <u>Avian Knowledge Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply). To see a list of all birds potentially present in your project area, please visit the <u>Rapid Avian Information Locator (RAIL) Tool</u>.

# What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the <u>Eagle Act</u> should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats<sup>3</sup> should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

- 1. The Migratory Birds Treaty Act of 1918.
- 2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management <a href="https://www.fws.gov/program/eagle-management">https://www.fws.gov/program/eagle-management</a>
- Measures for avoiding and minimizing impacts to birds
   <a href="https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds">https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds</a>
- Nationwide conservation measures for birds <a href="https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf">https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf</a>
- Supplemental Information for Migratory Birds and Eagles in IPaC <u>https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action</u>

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME BREEDING SEASON

**Bald Eagle** Haliaeetus leucocephalus

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Breeds Dec 1 to Aug 31

Cassin's Finch Carpodacus cassinii Breeds May 15 to Jul 15 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462 Clark's Nutcracker Nucifraga columbiana Breeds Jan 15 to Jul 15 This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA **Evening Grosbeak** Coccothraustes vespertinus Breeds May 15 to Aug 10 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. Breeds Dec 1 to Aug 3 Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680 Grace's Warbler Dendroica graciae Breeds May 20 to Jul 20 This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA Lewis's Woodpecker Melanerpes lewis Breeds Apr 20 to Sep 30 This is a Bird of Conservation Concern (BCC) throughout its

range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408

Olive-sided Flycatcher Contopus cooperi Breeds May 20 to Aug 31 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914

Pinyon Jay Gymnorhinus cyanocephalus Breeds Feb 15 to Jul 15 This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420

### **Probability of Presence Summary**

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (1)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

#### No Data (-)

A week is marked as having no data if there were no survey events for that week.

### **Survey Timeframe**

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

# What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>Rapid Avian Information Locator (RAIL) Tool</u>.

# What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

#### How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

#### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

#### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.</u>

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam Loring</u>.

#### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

#### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAO "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

### **Facilities**

## National Wildlife Refuge lands

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of Engineers District</u>.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

```
FRESHWATER EMERGENT WETLAND

PEM1B
PEM1C

FRESHWATER FORESTED/SHRUB WETLAND
PSS1C

FRESHWATER POND
PUBHx
```

<u>PUBFh</u>

**RIVERINE** 

R3RBH

R4SBC

R4SBCx

**R5UBFx** 

R4SBAx

R4SBJ

R5UBH

A full description for each wetland code can be found at the <u>National Wetlands Inventory</u> website

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

#### **Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

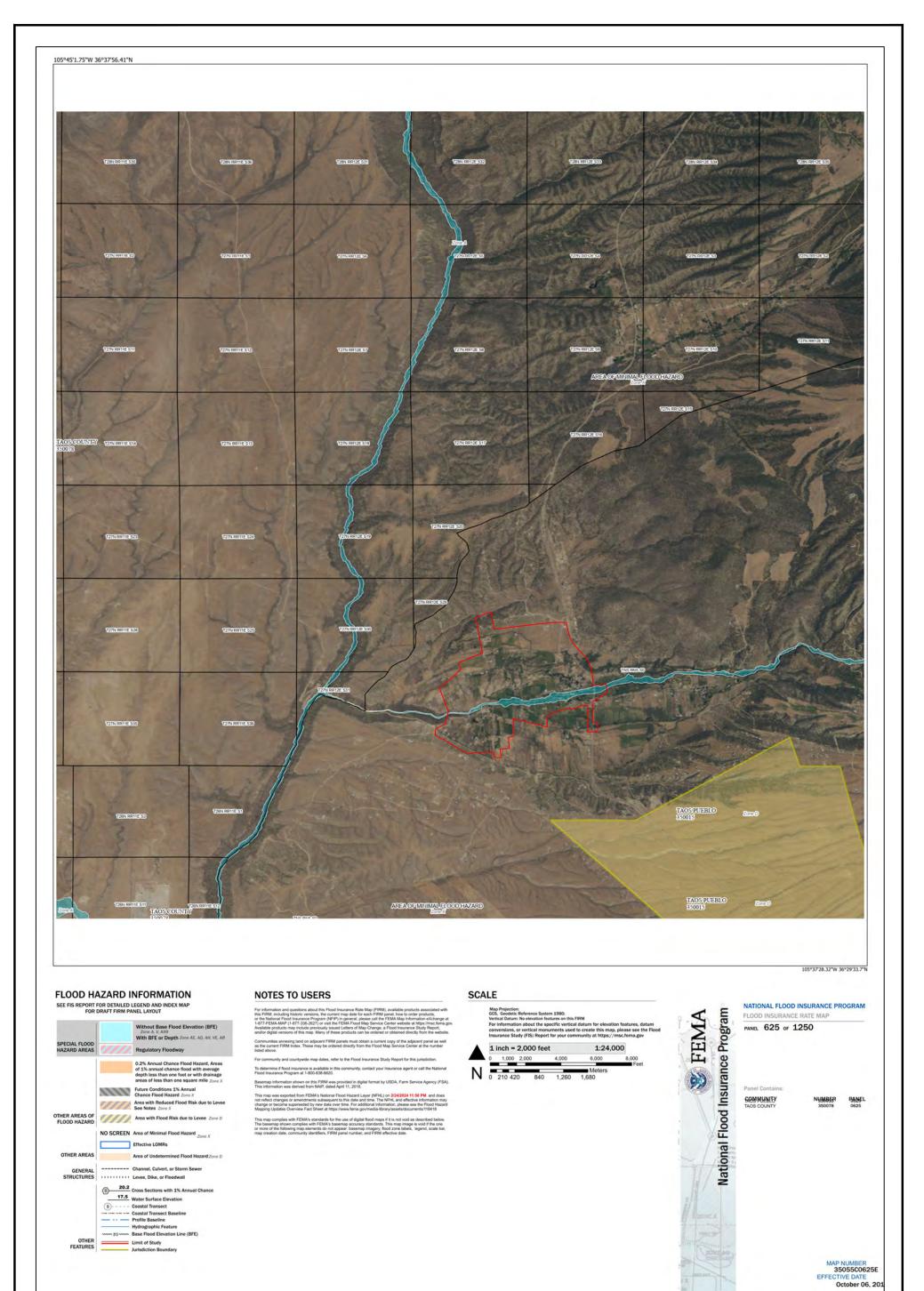
#### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

#### **Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies.

Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities. TFOR CONSULTATIO



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LOWER ARROYO HONDO MDWCA ARROYO HONDO, NM FEMA FLOODPLAIN MAP

Project No: 6233007

G Sheet: FIGURE F



# DEPARTMENT OF CULTURAL AFFAIRS HISTORIC PRESERVATION DIVISION

BATAAN MEMORIAL BUILDING 407 GALISTEO STREET, SUITE 236 SANTA FE, NEW MEXICO 87501 PHONE (505) 827-6320 · NM.SHPO@DCA.NM.GOV

May 16, 2024

Taylor Lillian Busch
Water Resources—Staff I Engineer
Souder Miller
taylor.busch@soudermiller.com

RE: Arroyo Hondo MDWCA, Arroyo Hondo, New Mexico – Historical Sites (HPD Log #122342)

Dear Ms. Busch,

Thank you for submitting your request for information pertaining to historic sites in the proposed rights-of-way (ROW) to the New Mexico State Historic Preservation Office (SHPO). We received your request on April 17<sup>th</sup>, 2024. Based on the information provided in your email, we reviewed the proposed project area.

A review of our cultural resource information system (NMCRIS) indicates some portions of the proposed project area have been surveyed. Three archaeological sites that are eligible or potentially eligible to the State Register of Cultural Properties (SR) and/or the National Register of Historic Places (NRHP) are within or adjacent to the proposed ROW. An additional site, whose eligibility to the SR and/or NRHP has not yet been assessed, is also within the proposed ROW. You will need to consult with an archaeologist on the SHPO directory of approved archaeologists

(https://nmhistoricpreservation.org/documents/shpo-directory.html) to conduct a Class I survey.

If you have any questions or concerns, please contact me at <a href="mailto:cortney.wands@dca.nm.gov">cortney.wands@dca.nm.gov</a> or (505) 476-1341.

Sincerely,

**Cortney Wands** 

Costney A Wands

Archaeologist, Archaeological Reviewer





### All Species Taos

<u>Taxonomic Group</u>	#Species	<u>Taxonomic Group</u>	#Species
Amphibians	7	Birds	217
Coleoptera; beetles	5	Crustaceans	4
Ephemeroptera; mayfiles	25	Fish	20
Lepidoptera; moths and butterflies	179	Mammals	75
Misc. Arachnids	4	Molluscs	24
Odonata; dragonflies	39	Orthoptera; grasshoppers & crickets	53
Reptiles	17	Spiders	12
Tricoptera; caddisflies	3		

#### TOTAL SPECIES: 684

Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Yucca Giant-Skipper	Megathymus yuccae					No Photo
Rocky Mountain Parnassian	Parnassius smintheus					No Photo
Old World Swallowtail	Papilio machaon					No Photo
Margined White	Pieris marginalis					No Photo
Southwestern Orangetip	Anthocharis thoosa					No Photo
<u>Dryope Hairstreak</u>	Satyrium dryope putnami					No Photo
Western Azure	Celastrina echo					No Photo
Northern Spring Azure	Celastrina lucia					No Photo
<u>Lupine Blue</u>	Plebejus lupini					No Photo
Northern Crescent	Phyciodes cocyta					No Photo
Mylitta Crescent	Phyciodes mylitta mylitta					No Photo
Mead's Wood-Nymph	Cercyonis meadii alamosa					No Photo
<u>Chryxus Arctic</u>	Oeneis chryxus alticordillera					No Photo
Snowshoe Hare	Lepus americanus					<u>View</u>
Black-tailed Jackrabbit	Lepus californicus					<u>View</u>
White-tailed Jackrabbit	Lepus townsendii					No Photo
Desert Cottontail Rabbit	Sylvilagus audubonii					<u>View</u>
Mountain Cottontail Rabbit	Sylvilagus nuttallii					<u>View</u>
American Pika	Ochotona princeps incana; saxatilis	5			Υ	<u>View</u>
<u>Masked Shrew</u>	Sorex cinereus					No Photo
Merriam's Shrew	Sorex merriami					No Photo



Common Name	<u>Scientific Name</u>	NIVIGE	<u>USFWS</u>	Critical <u>Habitat</u>	SGCN	<u>Photo</u>
<u>Dusky Shrew</u>	Sorex monticola					No Photo
Western Water Shrew	Sorex navigator					No Photo
<u>Hoary Bat</u>	Aeorestes cinereus					No Photo
Pale Townsend's Big-eared Bat	Corynorhinus townsendii				Υ	<u>View</u>
Big Brown Bat	Eptesicus fuscus					No Photo
Silver-haired Bat	Lasionycteris noctivagans					No Photo
<u>California Myotis</u>	Myotis californicus					No Photo
Western Small-footed Myotis	Myotis ciliolabrum					<u>View</u>
Long-eared Myotis	Myotis evotis					No Photo
Southwestern Little Brown Myotis	Myotis occultus					No Photo
Fringed Myotis	Myotis thysanodes					<u>View</u>
Long-legged Myotis	Myotis volans					<u>View</u>
Yuma Myotis	Myotis yumanensis					<u>View</u>
<u>Canyon Bat</u>	Parastrellus hesperus					<u>View</u>
<u>Coyote</u>	Canis latrans					<u>View</u>
Common Gray Fox	Urocyon cinereoargenteus					<u>View</u>
Red Fox	Vulpes vulpes					<u>View</u>
Canada Lynx	Lynx canadensis		T			No Photo
<u>Bobcat</u>	Lynx rufus					<u>View</u>
Mountain Lion	Puma concolor					<u>View</u>
Striped Skunk	Mephitis mephitis					<u>View</u>
North American River Otter	Lontra canadensis				Υ	<u>View</u>
Pacific Marten	Martes caurina	T			Υ	<u>View</u>
Ermine Weasel	Mustela richardsonii					No Photo
Long-tailed Weasel	Neogale frenata					<u>View</u>
American Badger	Taxidea taxus					<u>View</u>
Ringtail	Bassariscus astutus					<u>View</u>
Common Raccoon	Procyon lotor					<u>View</u>
Black Bear	Ursus americanus					<u>View</u>
<u>Pronghorn</u>	Antilocapra americana americana					<u>View</u>
Rocky Mtn. Bighorn Sheep	Ovis canadensis canadensis					<u>View</u>



<u>Common Name</u>	<u>Scientific Name</u>	<u>NMGF</u>	<u>USFWS</u>	Critical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
Moose	Alces alces					<u>View</u>
<u>Elk</u>	Cervus canadensis nelsoni					<u>View</u>
Mule Deer	Odocoileus hemionus					<u>View</u>
American Beaver	Castor canadensis					<u>View</u>
Long-tailed Vole	Microtus longicaudus longicaudus; alticola; baileyi; mordax					No Photo
<u>Meadow Vole</u>	Microtus pennsylvanicus					No Photo
Southern Red-backed Vole	Myodes gapperi					No Photo
Bushy-tailed Woodrat	Neotoma cinerea					No Photo
White-toothed woodrat	Neotoma leucodon					<u>View</u>
Mexican Woodrat	Neotoma mexicana mexicana; inopinata; pinetorum; scopulorum					No Photo
Common Muskrat	Ondatra zibethicus pallidus; osoyooensis; cinnamominus					<u>View</u>
Northern Grasshopper Mouse	Onychomys leucogaster					No Photo
Brush Mouse	Peromyscus boylii					No Photo
Deer Mouse	Peromyscus maniculatus					No Photo
Northern Rock Mouse	Peromyscus nasutus					No Photo
<u>Pinyon Mouse</u>	Peromyscus truei					No Photo
Heather Vole	Phenacomys intermedius					No Photo
Western Harvest Mouse	Reithrodontomys megalotis megalotis; aztecus					No Photo
Meadow Jumping Mouse	Zapus luteus luteus	E	Е	Υ	Υ	<u>View</u>
Western Jumping Mouse	Zapus princeps					No Photo
Common Porcupine	Erethizon dorsatum					<u>View</u>
Botta's Pocket Gopher	Thomomys bottae					No Photo
Northern Pocket Gopher	Thomomys talpoides fossor; kaibabensis					<u>View</u>
Ord's Kangaroo Rat	Dipodomys ordii					<u>View</u>
Plains Pocket Mouse	Perognathus flavescens					No Photo
Silky Pocket Mouse	Perognathus flavus flavus; hopiensis					No Photo
Golden-mantled Ground Squirrel	Callospermophilus lateralis					<u>View</u>
Gunnison's prairie dog	Cynomys gunnisoni				Υ	<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Thirteen-lined Ground Squirrel	Ictidomys tridecemlineatus arenicola; blanca; hollisteri					<u>View</u>
Yellow-bellied Marmot	Marmota flaviventris					<u>View</u>
Rock Squirrel	Otospermophilus variegatus grammurus					<u>View</u>
Abert's Squirrel	Sciurus aberti aberti; chuscensis; ferreus					<u>View</u>
<u>Least Chipmunk</u>	Neotamias minimus atristriatus; operarius; chuskaensis					<u>View</u>
<u>Colorado Chipmunk</u>	Neotamias quadrivittatus quadrivittatus; australis; oscuraensis					<u>View</u>
Red Squirrel	Tamiasciurus fremonti					No Photo
Red Squirrel	Tamiasciurus hudsonicus lychnuchus; mogollonensis					<u>View</u>
Canada Goose	Branta canadensis					<u>View</u>
Northern Shoveler Duck	Spatula dypeata					<u>View</u>
Cinnamon Teal Duck	Spatula cyanoptera					<u>View</u>
Blue-winged Teal Duck	Spatula discors					<u>View</u>
American Wigeon Duck	Mareca americana					<u>View</u>
Gadwall Duck	Mareca strepera					<u>View</u>
Mallard Duck	Anas platyrhynchos					<u>View</u>
Mexican Duck	Anas diazi					No Photo
Northern Pintail	Anas acuta					<u>View</u>
Green-winged Teal Duck	Anas crecca					<u>View</u>
Redhead Duck	Aythya americana					<u>View</u>
Common Goldeneye Duck	Bucephala dangula					<u>View</u>
Common Merganser Duck	Mergus merganser					<u>View</u>
Ruddy Duck	Oxyura jamaicensis					<u>View</u>
Scaled Quail	Callipepla squamata					<u>View</u>
Wild Turkey	Meleagris gallopavo merriami; intermedia; silvestris					<u>View</u>
White-tailed Ptarmigan	Lagopus leucura	E			Υ	<u>View</u>
<u>Dusky Grouse</u>	Dendragapus obscurus					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIMGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
Ring-necked Pheasant	Phasianus colchicus					<u>View</u>
Rock Pigeon	Columba livia					<u>View</u>
Band-tailed Pigeon	Patagioenas fasciata					<u>View</u>
Mourning Dove	Zenaida macroura					<u>View</u>
Yellow-billed Cuckoo (western pop)	Coccyzus americanus occidentalis		T	Υ	Υ	<u>View</u>
Common Nighthawk	Chordeiles minor				Υ	<u>View</u>
Common Poorwill	Phalaenoptilus nuttalli					No Photo
Black Swift	Cypseloides niger				Υ	<u>View</u>
White-throated Swift	Aeronautes saxatalis					<u>View</u>
Black-chinned Hummingbird	Archilochus alexandri					<u>View</u>
Calliope Hummingbird	Selasphorus calliope					<u>View</u>
Rufous Hummingbird	Selasphorus rufus					<u>View</u>
Broad-tailed Hummingbird	Selasphorus platycercus					<u>View</u>
White-eared Hummingbird	Basilinna leucotis	T				<u>View</u>
American Coot	Fulica americana					<u>View</u>
Sandhill Crane	Antigone canadensis					<u>View</u>
American Avocet	Recurvirostra americana					<u>View</u>
<u>Killdeer</u>	Charadrius vociferus					<u>View</u>
Mountain Plover	Charadrius montanus				Υ	<u>View</u>
Long-billed Curlew	Numenius americanus				Υ	<u>View</u>
Wilson's Snipe	Gallinago delicata					<u>View</u>
Spotted Sandpiper	Actitis macularius					<u>View</u>
Wilson's Phalarope	Phalaropus tricolor					<u>View</u>
White-faced Ibis	Plegadis chihi					<u>View</u>
<u>Turkey Vulture</u>	Cathartes aura					<u>View</u>
<u>Osprey</u>	Pandion haliaetus					<u>View</u>
Golden Eagle	Aquila chrysaetos					<u>View</u>
Northern Harrier	Circus hudsonius					<u>View</u>
Sharp-shinned Hawk	Accipiter striatus					<u>View</u>
Cooper's Hawk	Accipiter cooperii					<u>View</u>
American Goshawk	Accipiter atricapillus					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIMGF</u>	<u>USFWS</u>	Critical <u>Habitat</u>	SGCN	<u>Photo</u>
Bald Eagle	Haliaeetus leucocephalus	Т			Υ	<u>View</u>
Common Black Hawk	Buteogallus anthracinus	Т			Υ	<u>View</u>
<u>Swainson's Hawk</u>	Buteo swainsoni					<u>View</u>
Red-tailed Hawk	Buteo jamaicensis					<u>View</u>
Rough-legged Hawk	Buteo lagopus					<u>View</u>
<u>Ferruginous Hawk</u>	Buteo regalis					<u>View</u>
Flammulated Owl	Psiloscops flammeolus				Υ	<u>View</u>
Western Screech-OW	Megascops kennicottii					<u>View</u>
Great Horned Owl	Bubo virginianus					<u>View</u>
Northern Pygmy Owl	Glaucidium gnoma					<u>View</u>
Burrowing Owl	Athene cunicularia				Υ	<u>View</u>
Mexican Spotted Owl	Strix occidentalis lucida		T	Υ	Υ	<u>View</u>
Long-eared Owl	Asio otus					<u>View</u>
Boreal Owl	Aegolius funereus	T			Υ	<u>View</u>
Northern Saw-whet Owl	Aegolius acadicus					<u>View</u>
Belted Kingfisher	Megaceryle alcyon					<u>View</u>
<u>Lewis's Woodpecker</u>	Melanerpes lewis				Υ	<u>View</u>
Red-headed Woodpecker	Melanerpes erythrocephalus				Υ	<u>View</u>
Acorn Woodpecker	Melanerpes formicivorus					<u>View</u>
Williamson's Sapsucker	Sphyrapicus thyroideus				Υ	<u>View</u>
Yellow-bellied Sapsucker	Sphyrapicus varius					<u>View</u>
Red-naped Sapsucker	Sphyrapicus nuchalis					<u>View</u>
American Three-toed Woodpecker	Picoides dorsalis					No Photo
Downy Woodpecker	Dryobates pubescens					<u>View</u>
Ladder-backed Woodpecker	Dryobates scalaris					<u>View</u>
Hairy Woodpecker	Dryobates villosus					<u>View</u>
Northern Flicker	Colaptes auratus					<u>View</u>
American Kestrel	Falco sparverius					<u>View</u>
<u>Merlin</u>	Falco columbarius					<u>View</u>
Peregrine Falcon	Falco peregrinus	T			Υ	<u>View</u>
Arctic Peregrine Falcon	Falco peregrinus tundrius					No Photo



Common Name	<u>Scientific Name</u>	NMGF	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
<u>Prairie Falcon</u>	Falco mexicanus					<u>View</u>
Ash-throated Flycatcher	Myiarchus cinerascens					<u>View</u>
Cassin's Kingbird	Tyrannus vociferans					<u>View</u>
Western Kingbird	Tyrannus verticalis					<u>View</u>
Eastern Kingbird	Tyrannus tyrannus					<u>View</u>
Olive-sided Flycatcher	Contopus cooperi				Υ	<u>View</u>
Western Wood Pewee	Contopus sordidulus					<u>View</u>
<u>Willow Flycatcher</u>	Empidonax traillii brewsteri; adastus					<u>View</u>
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	Е	Υ	Υ	<u>View</u>
Hammond's Flycatcher	Empidonax hammondii					<u>View</u>
Gray Flycatcher	Empidonax wrightii					<u>View</u>
<u>Dusky Flycatcher</u>	Empidonax oberholseri					<u>View</u>
Western Flycatcher	Empidonax dificilis					<u>View</u>
Say's Phoebe	Sayornis saya					<u>View</u>
Loggerhead Shrike	Lanius Iudovicianus				Υ	<u>View</u>
Northern Shrike	Lanius borealis					No Photo
Gray Vireo	Vireo vicinior	T			Υ	<u>View</u>
<u>Cassin's Vireo</u>	Vireo cassinii					<u>View</u>
Blue-headed Vireo	Vireo solitarius					<u>View</u>
<u>Plumbeous Vireo</u>	Vireo plumbeus					<u>View</u>
Warbling Vireo	Vireo gilvus					<u>View</u>
<u>Canada Jay</u>	Perisoreus canadensis					<u>View</u>
Pinyon Jay	Gymnorhinus cyanocephalus				Υ	<u>View</u>
Steller's Jay	Cyanocitta stelleri					<u>View</u>
Blue Jay	Cyanocitta cristata					<u>View</u>
Woodhouse's Scrub Jay	Aphelocoma woodhouseii					<u>View</u>
<u>Clark's Nutcracker</u>	Nucifraga columbiana				Υ	<u>View</u>
Black-billed Magpie	Pica hudsonia					<u>View</u>
American Crow	Corvus brachyrhynchos					<u>View</u>
Common Raven	Corvus corax					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
Horned Lark	Eremophila alpestris					<u>View</u>
Bank Swallow	Riparia riparia				Υ	<u>View</u>
Tree Swallow	Tachycineta bicolor					<u>View</u>
<u>Violet-green Swallow</u>	Tachycineta thalassina					<u>View</u>
Northern Rough-winged Swallow	Stelgidopteryx serripennis					<u>View</u>
Barn Swallow	Hirundo rustica					<u>View</u>
<u>Cliff Swallow</u>	Petrochelidon pyrrhonota					<u>View</u>
Black-capped Chickadee	Poecile atricapillus					<u>View</u>
Mountain Chickadee	Poedile gambeli					<u>View</u>
<u>Juniper Titmouse</u>	Baeolophus ridgwayi				Υ	<u>View</u>
<u>Bushtit</u>	Psaltriparus minimus					<u>View</u>
Red-breasted Nuthatch	Sitta canadensis					<u>View</u>
White-breasted Nuthatch	Sitta carolinensis					<u>View</u>
Pygmy Nuthatch	Sitta pygmaea				Υ	<u>View</u>
Brown Creeper	Certhia americana					<u>View</u>
Rock Wren	Salpinctes obsoletus					<u>View</u>
Canyon Wren	Catherpes mexicanus					<u>View</u>
House Wren	Troglodytes aedon					<u>View</u>
Winter Wren	Troglodytes hiemalis					No Photo
Bewick's Wren	Thryomanes bewickii					<u>View</u>
Blue-gray Gnatcatcher	Polioptila caerulea					<u>View</u>
American Dipper	Cinclus mexicanus					<u>View</u>
Golden-crowned Kinglet	Regulus satrapa					No Photo
Ruby-crowned Kinglet	Regulus calendula					<u>View</u>
Western Bluebird	Sialia mexicana				Υ	<u>View</u>
Mountain Bluebird	Sialia currucoides				Υ	<u>View</u>
Townsend's Solitaire	Myadestes townsendi					<u>View</u>
<u>Veery</u>	Catharus fuscescens					No Photo
Swainson's Thrush	Catharus ustulatus					<u>View</u>
<u>Hermit Thrush</u>	Catharus guttatus					<u>View</u>
American Robin	Turdus migratorius					<u>View</u>



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Gray Catbird	Dumetella carolinensis					<u>View</u>
Brown Thrasher	Toxostoma rufum					<u>View</u>
Sage Thrasher	Oreoscoptes montanus					<u>View</u>
Northern Mockingbird	Mimus polyglottos					<u>View</u>
European Starling	Sturnus vulgaris					<u>View</u>
Bohemian Waxwing	Bombycilla garrulus					No Photo
Cedar Waxwing	Bombycilla cedrorum					<u>View</u>
House Sparrow	Passer domesticus					<u>View</u>
American Pipit	Anthus rubescens					<u>View</u>
Evening Grosbeak	Coccothraustes vespertinus				Υ	<u>View</u>
Pine Grosbeak	Pinicola enudeator					No Photo
Black Rosy-Finch	Leucosticte atrata					<u>View</u>
Brown-capped Rosy-Finch	Leucosticte australis				Υ	<u>View</u>
House Finch	Haemorhous mexicanus					<u>View</u>
Cassin's Finch	Haemorhous cassinii				Υ	<u>View</u>
Red Crossbill	Loxia curvirostra					<u>View</u>
White-winged Crossbill	Loxia leucoptera					No Photo
<u>Pine Siskin</u>	Spinus pinus					<u>View</u>
Lesser Goldfinch	Spinus psaltria					<u>View</u>
American Goldfinch	Spinus tristis					<u>View</u>
Chestnut-collared Longspur	Calcarius ornatus				Υ	<u>View</u>
Black-throated Sparrow	Amphispiza bilineata					<u>View</u>
Lark Sparrow	Chondestes grammacus					<u>View</u>
Lark Bunting	Calamospiza melanocorys					<u>View</u>
<u>Chipping Sparrow</u>	Spizella passerina					<u>View</u>
Clay-colored Sparrow	Spizella pallida					<u>View</u>
Brewer's Sparrow	Spizella breweri					<u>View</u>
Fox Sparrow	Passerella iliaca					<u>View</u>
American Tree Sparrow	Spizelloides arborea					No Photo
<u>Dark-eyed Junco</u>	Junco hyemalis					<u>View</u>
White-crowned Sparrow	Zonotrichia leucophrys					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
White-throated Sparrow	Zonotrichia albicollis					<u>View</u>
Sagebrush Sparrow	Artemisiospiza nevadensis				Υ	<u>View</u>
Vesper Sparrow	Pooecetes gramineus				Υ	<u>View</u>
Baird's Sparrow	Centronyx bairdii	T			Υ	<u>View</u>
Savannah Sparrow	Passerculus sandwichensis nevadensis; anthinus					<u>View</u>
Song Sparrow	Melospiza melodia					<u>View</u>
<u>Lincoln's Sparrow</u>	Melospiza lincolnii					<u>View</u>
Canyon Towhee	Melozone fusca					<u>View</u>
Green-tailed Towhee	Pipilo chlorurus					<u>View</u>
Spotted Towhee	Pipilo maculatus					<u>View</u>
Yellow-breasted Chat	Icteria virens					<u>View</u>
Yellow-headed Blackbird	Xanthocephalus xanthocephalus					<u>View</u>
<u>Bobolink</u>	Dolichonyx oryzivorus					No Photo
<u>Chihuahuan Meadowlark</u>	Sturnella lilianae					<u>View</u>
Western Meadowlark	Sturnella neglecta					<u>View</u>
Bullock's Oriole	lcterus bullockii					<u>View</u>
Baltimore Oriole	lcterus galbula					<u>View</u>
Red-winged Blackbird	Agelaius phoeniceus					<u>View</u>
Brown-headed Cowbird	Molothrusater					<u>View</u>
Brewer's Blackbird	Euphagus cyanocephalus					<u>View</u>
Common Grackle	Quiscalus quiscula					<u>View</u>
<u>Ovenbird</u>	Seiurus aurocapilla					No Photo
Northern Waterthrush	Parkesia noveboracensis					<u>View</u>
Orange-crowned Warbler	Leiothlypis celata					<u>View</u>
Nashville Warbler	Leiothlypis ruficapilla					<u>View</u>
<u>Virginia's Warbler</u>	Leiothlypis virginiae				Υ	<u>View</u>
Macgillivray's Warbler	Geothlypis tolmiei					<u>View</u>
Common Yellowthroat	Geothlypis trichas					<u>View</u>
American Redstart	Setophaga ruticilla					<u>View</u>
<u>Yellow Warbler</u>	Setophaga petechia					<u>View</u>



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Palm Warbler	Setophaga palmarum					<u>View</u>
Yellow-rumped Warbler	Setophaga coronata					<u>View</u>
<u>Grace's Warbler</u>	Setophaga graciae				Υ	<u>View</u>
Black-throated Gray Warbler	Setophaga nigrescens				Υ	<u>View</u>
Townsend's Warbler	Setophaga townsendi					<u>View</u>
Black-throated Green Warbler	Setophaga virens					<u>View</u>
Wilson's Warbler	Cardellina pusilla					<u>View</u>
Painted Redstart	Myioborus pictus				Υ	<u>View</u>
<u>Hepatic Tanager</u>	Piranga flava					<u>View</u>
Western Tanager	Piranga ludoviciana					<u>View</u>
Rose-breasted Grosbeak	Pheucticus Iudovicianus					<u>View</u>
Black-headed Grosbeak	Pheucticus melanocephalus					<u>View</u>
Blue Grosbeak	Passerina caerulea					<u>View</u>
<u>Lazuli Bunting</u>	Passerina amoena					<u>View</u>
Indigo Bunting	Passerina cyanea					<u>View</u>
Western Painted Turtle	Chrysemys picta					<u>View</u>
Eastern Collared Lizard	Crotaphytus collaris					<u>View</u>
Hernandez's Short-horned Lizard	Phrynosoma hernandesi					<u>View</u>
Plateau Fence Lizard	Sceloporus tristichus					<u>View</u>
Chihuahuan Spotted Whiptail	Aspidoscelis exsanguis					<u>View</u>
Plateau Striped Whiptail	Aspidoscelis velox					<u>View</u>
Many-lined Skink	Plestiodon multivirgatus					<u>View</u>
Great Plains Skink	Plestiodon obsoletus					<u>View</u>
Desert Striped Whipsnake	Coluber taeniatus					<u>View</u>
<u>Chihuahuan Nightsnake</u>	Hypsiglena jani					<u>View</u>
Smooth Greensnake	Opheodrys vernalis					<u>View</u>
<u>Great Plains Rat Snake</u>	Pantherophis emoryi					<u>View</u>
<u>Gophersnake</u>	Pituophis catenifer					<u>View</u>
Mountain Patchnose Snake	Salvadora grahamiae					<u>View</u>
Black-necked Gartersnake	Thamnophis cyrtopsis					<u>View</u>
Wandering Gartersnake	Thamnophis elegans					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
<u>Prairie Rattlesnake</u>	Crotalus viridis					<u>View</u>
<u>Tiger Salamander</u>	Ambystoma mavortium mavortium; nebulosum					<u>View</u>
New Mexico Spadefoot	Spea multiplicata					<u>View</u>
Woodhouse's Toad	Anaxyrus woodhousii					<u>View</u>
Canyon Treefrog	Hyla arenicolor					<u>View</u>
Boreal Chorus Frog	Pseudacris maculata				Υ	<u>View</u>
Bullfrog	Lithobates catesbeianus					<u>View</u>
Northern Leopard Frog	Lithobates pipiens				Υ	<u>View</u>
Grass Carp	Ctenopharyngodon idella					No Photo
Red Shiner	Cyprinella lutrensis					<u>View</u>
Common Carp	Cyprinus carpio					<u>View</u>
Rio Grande Chub	Gila pandora				Υ	<u>View</u>
<u>Fathead Minnow</u>	Pimephales promelas					<u>View</u>
Flathead Chub	Platygobio gracilis					<u>View</u>
Longnose Dace	Rhinichthys cataractae					<u>View</u>
River Carpsucker	Carpiodes carpio					<u>View</u>
White Sucker	Catostomus commersoni					<u>View</u>
Rio Grande Sucker	Catostomus plebeius				Υ	<u>View</u>
Black Bullhead	Ameiurus melas					<u>View</u>
<u>Cutthroat Trout</u>	Oncorhynchus darkii					No Photo
Rio Grande Cutthroat Trout	Oncorhynchus darkii virginalis		С			<u>View</u>
<u>Rainbow Trout</u>	Oncorhynchus mykiss					<u>View</u>
Brown Trout	Salmo trutta					<u>View</u>
Brook Trout	Salvelinus fontinalis					<u>View</u>
Northern Pike	Esox lucius					<u>View</u>
Western mosquitofish	Gambusia affinis					No Photo
Green Sunfish	Lepomis cyanellus					<u>View</u>
Largemouth Bass	Micropterus salmoides					<u>View</u>
Cockerell's Striate Disc Snail	Discus shimeki cockerelli					No Photo
Striate Disc Snail	Discus shimeki shimeki					No Photo



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Forest Disc Snail	Discus whitneyi					No Photo
Rocky Mountainsnail	Oreohelix strigosa					<u>View</u>
Montane Snaggletooth Snail	Gastrocopta pilsbryana					No Photo
Cross Snaggletooth Snail	Gastrocopta quadridens					No Photo
High-spire Column	Columella simplex					No Photo
Rocky Mtn. Column Snail	Pupilla blandi					No Photo
Three-Toothed Column Snail	Pupilla sonorana					No Photo
Vertigo Snail	Vertigo arizonensis					No Photo
<u>Vertigo Snail</u>	Vertigo concinnula					No Photo
Glossy Pillar Snail	Cionella lubrica					No Photo
Silky Vallonia Snail	Vallonia cyclophorella					No Photo
Multirib Vallonia Snail	Vallonia gracilicosta					No Photo
Meadow Slug Snail	Deroceras laeve					No Photo
Western Glass Snail	Vitrina pellucida					No Photo
Carved Glyph Snail	Glyphyalina indentata					No Photo
Amber Glass Snail	Nesovitrea hammonis					No Photo
Quick Gloss Snail	Zoni toides arboreus					No Photo
Brown Hive Snail	Euconulus fulvus					No Photo
Spruce Snail	Microphysula ingersolli					No Photo
Wrinkled Marshsnail	Stagnicola caperata	E			Υ	<u>View</u>
Colorado Fairy Shrimp	Branchinecta coloradensis				Υ	<u>View</u>
Versatile Fairy Shrimp	Branchinecta lindahli				Υ	<u>View</u>
Knobblip Fairy Shrimp	Eubranchipus bundyi				Υ	<u>View</u>
<u>Tiger Beetle</u>	Cicindela lengi lengi; jordai					No Photo
<u>Tiger Beetle</u>	Cicindela longilabris laurentii					No Photo
<u>Tiger Beetle</u>	Cicindela oregona					No Photo
<u>Tiger Beetle</u>	Cicindela sedecimpunctata					No Photo
Variable Tiger Beetle	Cicindela terricola					No Photo
Magnificent Sheepmoth	Hemileuca hera magnifica					No Photo
<u>Columbia Silkmoth</u>	Hyalophora gloveri					<u>View</u>
Five Spotted Hawk Moth	Manduca quinquemaculata					<u>View</u>



Common Name	<u>Scientific Name</u>	NIMGF	<u>USFWS</u>	Oritical <u>Habitat</u>	SGON	<u>Photo</u>
One-eyed Sphinx Moth	Smerinthus cerisyi				<del></del>	View
<u>Moth</u>	Sphinx libocedrus					No Photo
White-lined Sphinx Moth	Hyles lineata					<u>View</u>
Silver-Spotted Skipper	Epargyreus darus darus					<u>View</u>
Afranius Duskywing Skipper	Erynnis afranius					No Photo
Sleepy Duskywing Skipper	Erynnis brizo					<u>View</u>
Funereal Duskywing Skipper	Erynnis funeralis					<u>View</u>
Horace's Duskywing Skipper	Erynnis horatius					No Photo
<u>Dreamy Duskywing Skipper</u>	Erynnis iœlus					<u>View</u>
Meridian Duskywing Skipper	Erynnis meridianus					No Photo
Pacuvius Duskywing Skipper	Erynnis pacuvius					No Photo
Persius Duskywing Skipper	Erynnis persius					No Photo
Rocky Mtn Duskywing Skipper	Erynnis telemachus					<u>View</u>
Common Sootywing Skipper	Pholisora catullus					<u>View</u>
Mexican Sootywing Skipper	Pholisora mejicana					No Photo
Loki Grizzled Skipper	Pyrgus centaureae					No Photo
Common Checkered-Skipper	Burnsius communis					<u>View</u>
Small Checkered Skipper	Pyrgus scriptura					<u>View</u>
Mountain Checkered-Skipper	Pyrgus xanthus					No Photo
Mexican Cloudywing Skipper	Thorybes mexicanus					No Photo
Northern Cloudywing Skipper	Thorybes pylades					<u>View</u>
Short-Tailed Skipper	Zestusa dorus					No Photo
Russet Skipperling Skipper	Piruna pirus					<u>View</u>
Bronze Roadside Skipper	Amblyscirtes aenus					No Photo
Oslar's Roadside Skipper	Amblyscirtes oslari					No Photo
Roadside Skipper	Amblyscirtes vialis					No Photo
<u>Kiowa Dun Skipper</u>	Euphyes vestris					<u>View</u>
Western Branded Skipper	Hesperia colorado colorado					No Photo
Nevada Skipper	Hesperia nevada					No Photo
Pahaska Skipper	Hesperia pahaska pahaska					No Photo
<u>Uncas Skipper</u>	Hesperia uncas uncas					No Photo
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Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
<u>Green Skipper</u>	Hesperia viridis					<u>View</u>
Apache Skipper	Hesperia woodgatei					No Photo
Edwards' Skipperling	Copaeodes edwardsii					No Photo
Garita Skipperling Skipper	Oarisma garita					<u>View</u>
Yuma Skipper	Ochlodes yuma anasazi					No Photo
Snow's Skipper	Paratrytone snowi					No Photo
<u>Taxiles Skipper</u>	Poanes taxiles					<u>View</u>
<u>Draco Skipper</u>	Polites draco					<u>View</u>
Sandhill Skipper	Polites sabuleti					No Photo
Tawny-Edged Skipper	Polites themistodes					<u>View</u>
Morrison's Skipper	Stinga morrisoni					No Photo
Colorado Giant Skipper	Megathymus coloradensis coloradensis					No Photo
Strecker's Giant Skipper	Megathymus streckeri streckeri					<u>View</u>
Roger's False Parnassian Butterfly	Parnassius phoebus					<u>View</u>
Rhesus Skipper	Polites rhesus					No Photo
Pipevine Swallowtail Butterfly	Battus philenor					<u>View</u>
Baird's Swallowtail Butterfly	Papilio bairdii					No Photo
Minor's Swallowtail Butterfly	Papilio indra					No Photo
Black Swallowtail Butterfly	Papilio polyxenes asterius					<u>View</u>
Anise Swallowtail Butterfly	Papilio zelicaon zelicaon					<u>View</u>
Western Tiger Swallowtail Butterfly	Pterourus rutulus rutulus					<u>View</u>
Ingham's Orangetip Butterfly	Anthocharis sara					<u>View</u>
Two-Tailed Swallowtail Butterfly	Pterourus multicaudatus					<u>View</u>
Colorado Marble Butterfly	Euchloe ausonides					No Photo
Desert Marble	Euchloe lotta					No Photo
Pine White Butterfly	Neophasia menapia					<u>View</u>
McDunnough's White Butterfly	Pieris napi mcdunnoughi					No Photo
Cabbage White Butterfly	Pieris rapae					<u>View</u>
Western White Butterfly	Pontia occidentalis					<u>View</u>
Checkered White Butterfly	Pontia protodice					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NMGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
Spring White Butterfly	Pontia sisymbrii elivata					No Photo
Queen Alexandra's Sulphur Butterfly	Colias alexandra alexandra					<u>View</u>
Orange Sulphur Butterfly	Colias eurytheme					<u>View</u>
Mead's Sulphur Butterfly	Colias meadii					No Photo
Western Common Sulphur Butterfly	Colias eriphyle					<u>View</u>
Scudder's Willow Sulphur Butterfly	Colias scudderii					No Photo
Mexican Yellow Butterfly	Eurema mexicanum					No Photo
Sleepy Orange Butterfly	Eurema nicippe					<u>View</u>
<u>Lyside Sulphur Butterfly</u>	Kricogonia lyside					<u>View</u>
Dainty Sulphur Butterfly	Nathalisiole					<u>View</u>
Cloudless Sulphur Butterfly	Phoebis sennae					<u>View</u>
Southern Dogface Butterfly	Zerene cesonia					<u>View</u>
Snow's Copper Butterfly	Lycaena cuprea					No Photo
Colorado Hairstreak Butterfly	Hypaurotis crysalus					<u>View</u>
Great Purple Hairstreak Butterfly	Atlides halesus					<u>View</u>
Rocky Mountain Green Hairstreak Butterfly	Callophrys affinis homoperplexa					No Photo
Western Pine Elfin Butterfly	Callophrys eryphon					No Photo
Obscure Elfin Butterfly	Callophrys polios					No Photo
Juniper Hairstreak Butterfly	Callophrys gryneus					<u>View</u>
Thicket Hairstreak Butterfly	Callophrys spinetorum					<u>View</u>
Cross's Hairstreak Butterfly	Satyrium behrii					No Photo
Godart's Hairstreak Butterfly	Satyrium calanus					No Photo
<u>Itys Hairstreak Butterfly</u>	Satyrium dryope					No Photo
Coral Hairstreak Butterfly	Satyrium titus carrizozo					<u>View</u>
Immaculate Hairstreak Butterfly	Satyrium titus immaculosus					No Photo
Frank's Common Hairstreak Butterfly	Strymon melinus					<u>View</u>
Rustic Blue Butterfly	Agriades rusticus					<u>View</u>
<u>Arizona Blue Butterfly</u>	Celastrina ladon cinerea					No Photo
Square-spotted Blue Butterfly	Euphilotes battoides centralis					<u>View</u>
Spalding's Blue Butterfly	Euphilotes spaldingi					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Western Tailed Blue Butterfly	Cupido amyntula					<u>View</u>
Eastern Tailed Blue Butterfly	Cupido comyntas					<u>View</u>
Silvery Blue Butterfly	Glaucopsyche lygdamus oro					<u>View</u>
<u>Ceraunus Blue Butterfly</u>	Hemiargus ceraunus					No Photo
Reakirt's Blue Butterfly	Echinargus isola					<u>View</u>
Marine Blue Butterfly	Leptotes marina					<u>View</u>
Melissa Blue Butterfly	Plebejus melissa					<u>View</u>
<u>Texas Blue Butterfly</u>	Plebejus acmon					<u>View</u>
Lycea Blue Butterfly	Plebejus icarioides lycea					<u>View</u>
Boisduval's Blue Butterfly	Plebejus icarioides sacre					<u>View</u>
Gertsch's Blue Butterfly	Plebejus saepiolus gertschi					No Photo
Whitmer's Blue Butterfly	Plebejus saepiolus whitmeri					<u>View</u>
Sirius Copper Butterfly	Tharsalea rubidus					No Photo
Mexican Metalmark Butterfly	Apodemia mejicanus mejicanus					No Photo
Blue Copper Butterfly	Tharsalea heteronea					No Photo
Mormon Metalmark Butterfly	Apodemia mormo mormo					No Photo
Purplish Copper Butterfly	Tharsalea helloides					<u>View</u>
Mormon Metalmark Butterfly	Apodemia mormo ssp.					No Photo
Shellbach's Copper Butterfly	Tharsalea arota					<u>View</u>
Nais Metalmark Butterfly	Apodemia nais					No Photo
Western Pygmy-Blue Butterfly	Brephidium exilis					<u>View</u>
American Snout	Libytheana bachmanii					No Photo
Milbert's Tortoise Shell Butterfly	Aglais milberti					<u>View</u>
<u>Dark Buckeye Butterfly</u>	Junonia nigrosuffusa					<u>View</u>
Mourning Cloak Butterfly	Nymphalis antiopa					<u>View</u>
Green Comma Butterfly	Polygonia faunus					<u>View</u>
Hoary Comma Butterfly	Polygonia gracilis					<u>View</u>
<u>Question Mark Butterfly</u>	Polygonia interrogationis					<u>View</u>
Satyr Anglewing Butterfly	Polygonia satyrus					No Photo
West Coast Lady Butterfly	Vanessa annabella					<u>View</u>
Red Admiral Butterfly	Vanessa atalanta					<u>View</u>



<u>Common Name</u>	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
Painted Lady Butterfly	Vanessa cardui					<u>View</u>
American Lady Butterfly	Vanessa virginiensis					<u>View</u>
Variegated Fritillary Butterfly	Euptoieta daudia					<u>View</u>
New Mexican Silverspot Butterfly	Argynnis aphrodite					<u>View</u>
Great Spangled Fritillary Butterfly	Argynnis cybele					No Photo
Edwards' Fritillary Butterfly	Argynnis edwardsii					No Photo
Electa Fritillary Butterfly	Speyeria hesperis electa					<u>View</u>
Eurynome Silverspot Butterfly	Argynnis bischoffii					<u>View</u>
Nokomis Fritillary Butterfly	Speyeria nokomis nokomis		Р			No Photo
Carlota Checkerspot Butterfly	Chlosyne gorgone					<u>View</u>
Mylitta Crescent Butterfly	Phyciodes mylitta					<u>View</u>
Painted Crescent Butterfly	Phyciodes picta					<u>View</u>
Camillus Crescent Butterfly	Phyciodes pulchella					<u>View</u>
Montane Penstemon Checkerspot Butterfly	Poladryas minuta arachne					No Photo
Fulvia Checkerspot Butterfly	Chlosyne fulvia					<u>View</u>
<u>Arizona Sister Butterfly</u>	Adelpha eulalia					<u>View</u>
Goatweed Butterfly	Anaea andria					No Photo
Chermock's Satyr Butterfly	Cercyonis meadii mexicana					No Photo
Charon Satyr Butterfly	Cercyonis oetus					<u>View</u>
Common Wood-Nymph Butterfly	Cercyonis pegala					<u>View</u>
Ochre Ringlet Butterfly	Coenonympha california ochracea					<u>View</u>
Canyonland Satyr Butterfly	Cyllopsis pertepida dorothea					<u>View</u>
Common Alpine Butterfly	Erebia epipsodea					<u>View</u>
Magdalena Alpine Butterfly	Erebia magdalena					No Photo
Ridings' Arctic	Oeneis ridingsii ridingsii					No Photo
<u>Chryxus Arctic Butterfly</u>	Oeneis chryxus chryxus					<u>View</u>
CO Melissa Arctic Butterfly	Oeneis melissa					No Photo
Bruce's Arctic Butterfly	Oeneis polixenes					No Photo
<u>Uhler's Arctic Butterfly</u>	Oeneis uhleri					No Photo
Striated Queen	Danaus gilippus					<u>View</u>



<u>Common Name</u>	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGON</u>	<u>Photo</u>
Monarch Butterfly	Danaus plexippus		С			<u>View</u>
Western Gulf Fritillary	Dione incarnata					<u>View</u>
Brown's Fritillary Butterfly	Boloria freija					No Photo
<u>Arctic Fritillary</u>	Boloria chariclea					<u>View</u>
<u>Drusius Checkerspot Butterfly</u>	Charidryas nycteis					<u>View</u>
Pearly Checkerspot Butterfly	Chlosyne acastus acastus					No Photo
SW Pearly Checkerspot Butterfly	Chlosyne acastus sabina					No Photo
Alena Checkerspot Butterfly	Occidryas anicia alena					No Photo
Mead's Checkerspot Butterfly	Occidryas anicia eurytion					No Photo
Viceroy Butterfly	Limenitis archippus archippus					No Photo
Weidemeyer's Admiral Butterfly	Limenitis weidemeyerii weidemeyerii					<u>View</u>
Great Spreadwing	Archilestes grandis					<u>View</u>
Plateau Spreadwing	Lestes alacer					<u>View</u>
Southern Spreadwing	Lestes australis					No Photo
Spotted Spreadwing	Lestes congener					<u>View</u>
Northern Spreadwing	Lestes disjunctus					No Photo
Emerald Spreadwing	Lestes dryas					No Photo
American Rubyspot	Hetaerina americana					<u>View</u>
Western Red Damsel	Amphiagrion abbreviatum					<u>View</u>
Blue-fronted Dancer	Argia apicalis					<u>View</u>
Sooty Dancer	Argia lugens					<u>View</u>
<u>Aztec Dancer</u>	Argia nahuana					<u>View</u>
Springwater Dancer	Argia plana					<u>View</u>
<u>Vivid Dancer</u>	Argia vivida					<u>View</u>
Northern Bluet	Enallagma annexum					<u>View</u>
Boreal Bluet	Enallagma boreale					No Photo
<u>Familiar Bluet</u>	Enallagma civile					<u>View</u>
<u>Arroyo Bluet</u>	Enallagma praevarum					No Photo
Desert Forktail	Ischnura barberi					No Photo
<u>Plains Forktail</u>	Ischnura damula					<u>View</u>



Common Name	<u>Scientific Name</u>	<u>NIMGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Mexican Forktail	Ischnura demorsa					<u>View</u>
Sedge Darner	Aeshna juncea					No Photo
Paddle-tailed Darner	Aeshna palmata					<u>View</u>
Blue-eyed Darner	Rhionaeschna multicolor					<u>View</u>
Pale Snaketail	Ophiogomphus severus					<u>View</u>
Pacific Spiketail	Cordulegaster dorsalis					No Photo
<u>Dot-winged Baskettail</u>	Epitheca petechialis					No Photo
Mountain Emerald	Somatochlora semicircularis					No Photo
Western Pondhawk	Erythemis collocata					No Photo
Dot-tailed Whiteface	Leucorrhinia intacta					No Photo
Eight-spotted Skimmer	Libellula forensis					<u>View</u>
<u>Widow skimmer</u>	Libellula luctuosa					<u>View</u>
Twelve-spotted Skimmer	Libellula pulchella					<u>View</u>
Four-spotted Skimmer	Libellula quadrimaculata					<u>View</u>
Flame Skimmer	Libellula saturata					<u>View</u>
Common Whitetail	Plathemis lydia					<u>View</u>
Variegated meadowhawk	Sympetrum corruptum					<u>View</u>
Black Meadowhawk	Sympetrum danae					<u>View</u>
Striped Meadowhawk	Sympetrum pallipes					<u>View</u>
Band-winged Meadowhawk	Sympetrum semicinctum					<u>View</u>
Chihuahua Toad Hopper Grasshopper	Phrynotettix tsivavensis					No Photo
Club-Horned Grasshopper	Aeropedellus davatus					No Photo
White Whiskers Grasshopper	Ageneotettix deorum					No Photo
Striped Slant-Faced Grasshopper	Amphitornus coloradus					No Photo
Elliott Grasshopper	Aulocara elliotti					No Photo
White Cross Grasshopper	Aulocara femoratum					No Photo
Marsh Meadow Grasshopper	Chorthippus curtipennis					No Photo
Crenulated Grasshopper	Cordillacris crenulata					No Photo
Spotted Wing Grasshopper	Cordillacris occipitalis					No Photo
Velvet-Striped Grasshopper	Eritettix simplex					No Photo
Rufous Grasshopper	Heliaula rufa					No Photo



Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Obscure Grasshopper	Opeia obscura					No Photo
Brown Spotted Range Grasshopper	Psoloessa delicatula					No Photo
Grasshopper	Psoloessa texana					No Photo
Speckled Rangeland Grasshopper	Arphia conspera					No Photo
Red-Winged Grasshopper	Arphia pseudonietana					No Photo
Clear-Winged Grasshopper	Camnula pellucida					No Photo
Northern Green-Striped Locust Grasshopper	Chortophaga viridifasciata					No Photo
Wrangler Grasshopper	Circotettix rabula					<u>View</u>
Pronotal Range Grasshopper	Cratypedes neglectus					No Photo
Carolina Grasshopper	Dissosteira carolina					No Photo
<u>Dusky Grasshopper</u>	Encoptolophus costalis					No Photo
Three-Banded Range Grasshopper	Hadrotettix trifasciatus					No Photo
Arroyo Grasshopper	Heliastus benjamini					No Photo
Pard Grasshopper	Metator pardalinus					No Photo
Campestral Grasshopper	Spharagemon campestris					No Photo
Mottled Sand Grasshopper	Spharagemon collare					No Photo
Say's Grasshopper	Spharagemon equale					No Photo
Finned Grasshopper	Trachyrhachys aspera					No Photo
Grasshopper	Trimerotropis barnumi					No Photo
Grasshopper	Trimerotropis cincta					No Photo
<u>Grasshopper</u>	Trimerotropis fratercula					No Photo
Thomas' Slender Grasshopper	Trimerotropis gradilis					No Photo
Broad-Banded Grasshopper	Trimerotropis latifasciata					No Photo
Barren Land Grasshopper	Trimerotropis pristrinaria					No Photo
Crackling Forest Grasshopper	Trimerotropis verruculata					No Photo
Red Shanks Grasshopper	Xanthippus corallipes					No Photo
Grasshopper	Xanthippus montanus					No Photo
Green Streak Grasshopper	Hesperotettix viridis					No Photo
Narrow-Winged Spur-Throat Grasshopper	Melanoplus angustipennis					No Photo
Two-Striped Grasshopper	Melanoplus bivittatus					No Photo

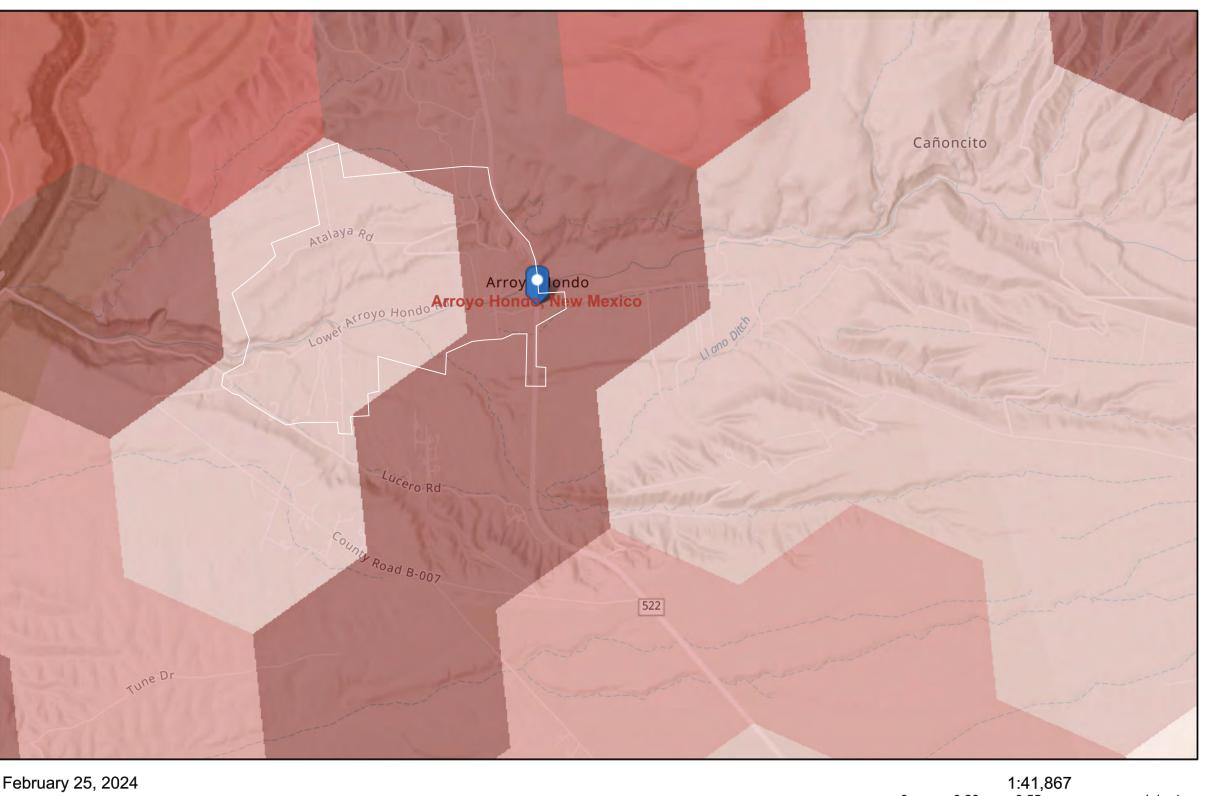


Common Name	<u>Scientific Name</u>	<u>NIVIGF</u>	<u>USFWS</u>	Oritical <u>Habitat</u>	<u>SGCN</u>	<u>Photo</u>
Northern Spur-Throat Grasshopper	Melanoplus borealis					No Photo
Bowditch's Spur-Throat Grasshopper	Melanoplus bowditchi					No Photo
Little Pasture Spur-Throat Grasshopper	Melanoplus confusus					No Photo
Huckleberry Spur-Throat Grasshopper	Melanoplus fasciatus					No Photo
<u>Grasshopper</u>	Melanoplus foedus					No Photo
Gladston's Spur-Throat Grasshopper	Melanoplus gladstoni					No Photo
Glaucous-Legged Grasshopper	Melanoplus glaucipes					No Photo
Flabellate Grasshopper	Melanoplus occidentalis					No Photo
<u>Grasshopper</u>	Melanoplus oregonensis					No Photo
Packard's Grasshopper	Melanoplus packardi					No Photo
<u>Grasshopper</u>	Melanoplus splendidus					No Photo
Platte Range Grasshopper	Mestobregna plattei					No Photo
A Caddisfly	Rhyacophila pellisa					No Photo
A caddisfly	Hydropsyche vanaca					No Photo
A Caddisfly	Lepidostoma cascadense					No Photo
<u>Mayfly</u>	Ameletus doddsianus					No Photo
<u>Mayfly</u>	Acentrella turbida					No Photo
<u>Mayfly</u>	Baetis bicaudatus					No Photo
<u>Mayfly</u>	Baetis tricaudatus					No Photo
<u>Mayfly</u>	Callibaetis ferrugineus					No Photo
<u>Mayfly</u>	Epeorus deceptivus					No Photo
<u>Mayfly</u>	Epeorus longimanus					No Photo
<u>Mayfly</u>	Nixe criddlei					No Photo
<u>Mayfly</u>	Rhithrogena hageni					No Photo
<u>Mayfly</u>	Rhithrogena morrisoni					No Photo
<u>Mayfly</u>	Rhithrogena plana					No Photo
<u>Mayfly</u>	Rhithrogena robusta					No Photo
<u>Mayfly</u>	Rhithrogena undulata					No Photo
<u>Mayfly</u>	Paraleptophlebia memorialis					No Photo
<u>Mayfly</u>	Siphlonurus occidentalis					No Photo
Mayfly	Attenella margarita					No Photo



Common Namo	Scientific Norma		USFWS	Critical Habitat	SCON!	Dhoto
Common Name  Mayfly	Scientific Name  Drunella coloradensis	<u>NIVIGF</u>	<u>USFVVS</u>	панац	<u>SGCN</u>	<u>Photo</u> No Photo
<u>Mayfly</u>	Drunella doddsi					No Photo
<u>Mayfly</u>	Drunella grandis					No Photo
<u>Mayfly</u>	Ephemerella altana					No Photo
<u>Mayfly</u>	Ephemerella inermis					No Photo
<u>Mayfly</u>	Ephemerella infrequens					No Photo
<u>Mayfly</u>	Serratella tibialis					No Photo
Mayfly	Tricorythodes dimorphus					No Photo
Mayfly	Tricorythodes explicatus					No Photo
Comb-Footed Spider	Theridion montanum					No Photo
Comb-Footed Spider	Theridion neomexicanum					No Photo
Comb-Footed Spider	Theridion ohlerti					No Photo
Comb-Footed Spider	Theridion transgressum					No Photo
<u>Spider</u>	Spirembolus maderus					No Photo
<u>Spider</u>	Allocosa parva					No Photo
Thin-legged Wolf Spider	Pardosa concinna					No Photo
Thin-legged Wolf Spider	Pardosa distincta					No Photo
Thin-legged Wolf Spider	Pardosa sternalis					No Photo
Thin-legged Wolf Spider	Pardosa xerampelina					No Photo
Thin-legged Wolf Spider	Pardosa yavapa					No Photo
<u>Spider</u>	Trochosa terricola					No Photo
<u>Pseudoscorpion</u>	Hysterochelifer proprius					No Photo
<u>Pseudoscorpion</u>	Dinocheirus species					No Photo
<u>Pseudoscorpion</u>	Dinocheirus validus					No Photo
<u>Pseudoscorpion</u>	Microbisium parvulum					No Photo
<u>Ubiquitous Peaclam</u>	Pisidium casertanum					No Photo
<u>Peadam</u>	Pisidium variabile					No Photo
<u>Scud</u>	Hyalella azteca					No Photo

## Letter ANSI A Landscape



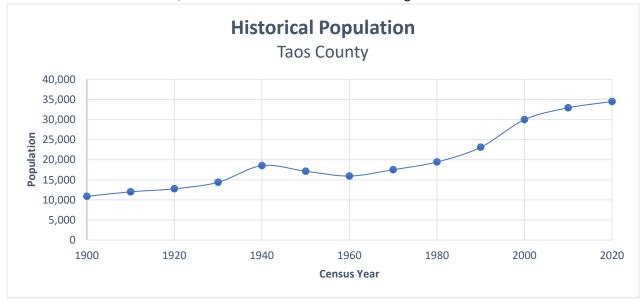




## Historical Population Data (1)

Taos	Coun	nty
Year	Рори	ılation
	1900	10,889
	1910	12,008
	1920	12,773
	1930	14,394
	1940	18,528
	1950	17,146
	1960	15,934
	1970	17,516
	1980	19,456
	1990	23,118
	2000	29,979
	2010	32,937
	2020	34,489

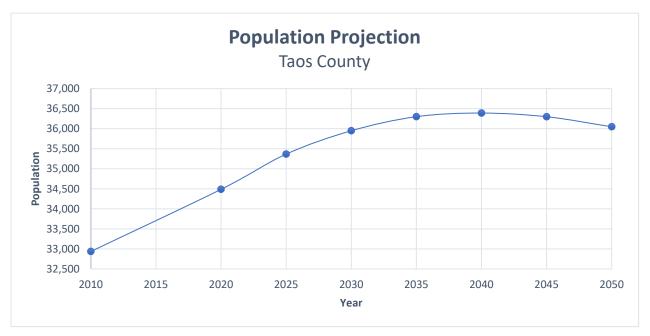
 $^{(1)}$  Source: U.S. Census Bureau, Decennial Censuses from 1900 through 2020.



## Population Projections (1)

Taos	County	Notes
Year	Population	
2010	32,937	Estimate
2020	34,488	Projection
2025	35,367	Projection
2030	35,949	Projection
2035	36,300	Projection
2040	36,391	Projection
2045	36,299	Projection
2050	36,048	Projection

 $<sup>^{\</sup>rm (1)}$  Source: UNM GPS, https://gps.unm.edu/pru/projections.



## UNM GPS projected population and annual growth rates in Taos County and Lower Arroyo Hondo MDWCA PPA

			Lower Arroyo Hondo
			MDWCA
Year	<b>Taos County Population</b>	% Growth per Year	PPA Population
2020 <sup>(3)</sup>	34,488		184
2025 <sup>(3)</sup>	35,367	0.50%	189
2030 <sup>(3)</sup>	35,949	0.33%	192
2035 <sup>(3)</sup>	36,300	0.19%	194
2040 <sup>(3)</sup>	36,391	0.05%	194
2045 <sup>(3)</sup>	36,299	-0.05%	194
2050 <sup>(3)</sup>	36,048	-0.19%	192
Growth rate over 20-y	ear period (2025-2045):	0.10%	

#### Notes:

<sup>&</sup>lt;sup>(1)</sup> 2010 Census Count (source: U.S. Census Bureau)

<sup>(2)</sup> UNM BBER (https://bber.unm.edu/data/bberdb/)

<sup>(3)</sup> UNM GPS Projection (source: https://gps.unm.edu/pru/projections)

**All Topics** 



1 Population estimates, July 1, 2024, (V2024)

### QuickFacts

### **Taos County, New Mexico**

QuickFacts provides statistics for all states and counties. Also for cities and towns with a *population of 5,000 or more*.

Computer and Internet Use

Enter state, county, city, town, or zip code

-- Select a fact --







#### **Table**

Population	
1 Population estimates, July 1, 2024, (V2024)	△ NA
Population estimates, July 1, 2023, (V2023)	<b>△</b> 34,405
Population estimates base, April 1, 2020, (V2024)	▲ NA
Population estimates base, April 1, 2020, (V2023)	<b>△</b> 34,490
Population, percent change - April 1, 2020 (estimates base) to July 1, 2024, (V2024)	▲ NA
Population, percent change - April 1, 2020 (estimates base) to July 1, 2023, (V2023)	▲ -0.2%
1 Population, Census, April 1, 2020	34,489
Population, Census, April 1, 2010	32,937
Age and Sex	
Persons under 5 years, percent	▲ 3.5%
Persons under 18 years, percent	<b>△</b> 15.3%
Persons 65 years and over, percent	▲ 31.3%
7 Female persons, percent	△ 51.2%
Race and Hispanic Origin	
White alone, percent	▲ 86.9%
1 Black alone, percent (a) (a)	<b>△</b> 1.0%
American Indian and Alaska Native alone, percent (a) (a)	▲ 8.2%
Asian alone, percent (a) (a)	▲ 1.1%
Native Hawaiian and Other Pacific Islander alone, percent (a) (a)	▲ 0.1%
1 Two or More Races, percent	<b>△</b> 2.7%
1 Hispanic or Latino, percent (b) (b)	▲ 50.5%
1 White alone, not Hispanic or Latino, percent	<b>△</b> 41.0%
Population Characteristics	
① Veterans, 2019-2023	2,189
7 Foreign-born persons, percent, 2019-2023	6.2%
lousing	
1 Housing Units, July 1, 2023, (V2023)	21,432
Owner-occupied housing unit rate, 2019-2023	78.8%
Median value of owner-occupied housing units, 2019-2023	\$354,000
Median selected monthly owner costs - with a mortgage, 2019-2023	\$1,604
Median selected monthly owner costs -without a mortage, 2019-2023	\$436
1 Median gross rent, 2019-2023	\$1,069
1 Building Permits, 2023	118
Families & Living Arrangements	
1 Households, 2019-2023	14,459
Persons per household, 2019-2023	2.36
1 Living in the same house 1 year ago, percent of persons age 1 year+, 2019-2023	92.1%
1 Language other than English spoken at home, percent of persons age 5 years+, 2019-2023	33.9%

·dat	per	
Education	Population estimates, July 1, 2024, (V2024)	
1 High school graduate or higher, percent of persons ag	ge 25 years+, 2019-2023	93.4%
1 Bachelor's degree or higher, percent of persons age 2	5 years+, 2019-2023	37.1%
Health		
1 With a disability, under age 65 years, percent, 2019-20	023	11.0%
Persons without health insurance, under age 65 years, percent		<b>△</b> 11.3%
Economy		
1 In civilian labor force, total, percent of population age	16 years+, 2019-2023	52.5%
1 In civilian labor force, female, percent of population age 16 years+, 2019-2023		47.9%
Total accommodation and food services sales, 2017 (\$1,000) (c)		140,382
1 Total health care and social assistance receipts/rever	nue, 2017 (\$1,000) (c)	136,462
1 Total transportation and warehousing receipts/revenue	ue, 2017 (\$1,000) (c)	6,352
1 Total retail sales, 2017 (\$1,000) (c)		352,477
1 Total retail sales per capita, 2017 (c)		\$10,743
Transportation		
16 Mean travel time to work (minutes), workers age 16 y	ears+, 2019-2023	23.6
Income & Poverty		
1 Median households income (in 2023 dollars), 2019-20	023	\$58,908
1 Per capita income in past 12 months (in 2023 dollars), 2019-2023		\$40,018
1 Persons in poverty, percent		<b>△</b> 18.5%
Businesses  ① Total employer establishments, 2022		1,075
1 Total employment, 2022		
1 Total annual payroll, 2022 (\$1,000)		9,191
- ' ' ' ' ' ' '		
Total employment, percent change, 2021-2022		326,588
		326,588 13.2%
Total employment, percent change, 2021-2022		326,588 13.2% 3,519
1 Total employment, percent change, 2021-2022 Total nonemployer establishments, 2022		326,588 13.2% 3,519 914
<ul> <li>Total employment, percent change, 2021-2022</li> <li>Total nonemployer establishments, 2022</li> <li>All employer firms, Reference year 2017</li> </ul>		326,588 13.2% 3,519 914 449
<ul> <li>Total employment, percent change, 2021-2022</li> <li>Total nonemployer establishments, 2022</li> <li>All employer firms, Reference year 2017</li> <li>Men-owned employer firms, Reference year 2017</li> </ul>		326,588 13.2% 3,519 914 449 214
<ul> <li>Total employment, percent change, 2021-2022</li> <li>Total nonemployer establishments, 2022</li> <li>All employer firms, Reference year 2017</li> <li>Men-owned employer firms, Reference year 2017</li> <li>Women-owned employer firms, Reference year 2017</li> </ul>	017	326,588 13.2% 3,519 914 449 214 213
<ul> <li>Total employment, percent change, 2021-2022</li> <li>Total nonemployer establishments, 2022</li> <li>All employer firms, Reference year 2017</li> <li>Men-owned employer firms, Reference year 2017</li> <li>Women-owned employer firms, Reference year 2017</li> <li>Minority-owned employer firms, Reference year 2017</li> </ul>	017	326,588 13.2% 3,519 914 449 214 213
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<ul> <li>Total employment, percent change, 2021-2022</li> <li>Total nonemployer establishments, 2022</li> <li>All employer firms, Reference year 2017</li> <li>Men-owned employer firms, Reference year 2017</li> <li>Women-owned employer firms, Reference year 2017</li> <li>Minority-owned employer firms, Reference year 2017</li> <li>Nonminority-owned employer firms, Reference year 2017</li> <li>Veteran-owned employer firms, Reference year 2017</li> </ul>		326,588 13.2% 3,519 914 449 214 213 565
<ul> <li>Total employment, percent change, 2021-2022</li> <li>Total nonemployer establishments, 2022</li> <li>All employer firms, Reference year 2017</li> <li>Men-owned employer firms, Reference year 2017</li> <li>Women-owned employer firms, Reference year 2017</li> <li>Minority-owned employer firms, Reference year 2017</li> <li>Nonminority-owned employer firms, Reference year 2</li> <li>Veteran-owned employer firms, Reference year 2017</li> <li>Nonveteran-owned employer firms, Reference year 2017</li> <li>GEOGRAPHY</li> </ul>		326,588 13.2% 3,519 914 449 214 213 565
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### About datasets used in this table

### Value Notes

Methodology differences may exist between data sources, and so estimates from different sources are not comparable.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info 🐧  $\ \ \, \text{row in TABLE view to learn about sampling error.}$ 

The vintage year (e.g., V2024) refers to the final year of the series (2020 thru 2024). Different vintage years of estimates are not comparable.

Users should exercise caution when comparing 2019-2023 ACS 5-year estimates to other ACS estimates. For more information, please visit the 2023 5-year ACS Comparison Guidance page.

#### **Fact Notes**

- Includes persons reporting only one race
- Hispanics may be of any race, so also are included in applicable race categories
  Economic Census Puerto Rico data are not comparable to U.S. Economic Census data (c)

#### Value Flags

- Suppressed to avoid disclosure of confidential information Fewer than 25 firms

- FN NA S X Z Footnote on this item in place of data

- Not available
  Suppressed; does not meet publication standards
  Not applicable
  Value greater than zero but less than half unit of measure shown
  Either no or too few sample observations were available to compute an estima Population estimates, July 1, 2024, (V2024)
- open ended distribution.
- Data for this geographic area cannot be displayed because the number of sample cases is too small.

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Incom Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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Measuring America's People, Places, and Economy





# OFFICE OF THE PUBLIC REGULATION COMMISSION

#### CERTIFICATE OF AMENDMENT

OF

LOWER ARROYO HONDO MUTUAL DOMESTIC WATER CONSUMERS AND MUTUAL SEWAGE WORKS ASSOCIATION (LOWER ARROYO HONDO MDWCA) 3348281

The Public Regulation Commission certifies that duplicate originals of the Articles of Amendment attached hereto, duly signed and verified pursuant to the provisions of the SANITARY PROJECTS ACT

(3-29-1 to 3-29-19 NMSA 1978)

have been received by it and are found to conform to law.

Accordingly, by virtue of the authority vested in it by law, the Public Regulation Commission issues this Certificate of Amendment and attaches hereto a duplicate original of the Articles of Amendment.

Dated: MAY 12, 2008

In testimony whereof, the Public Regulation of the State of New Mexico has caused this certificate to be signed by its Chairman and the seal of said Commission to affixed at the City of Santa Fe.

Chairman

Bureau Chief

FILED IN OFFICE OF NM PUBLIC HEG. COMM

MAY 1 2 2008

CORPORATION BUREAU

Public Regulation Commission Corporation Department Attn. Document Division P. O. Drawer 1269

### Re: Amending Articles of Incorporation

We, the undersigned officers of the association mentioned below, a New Mexico Corporation formed and operating under the provisions of the Sanitary Projects Act of the State of New Mexico, do hereby certify that at a special meeting of the members of this Association was duly called and held at the Lower Arroyo Hondo Community Center, New Mexico on April 6, 2008.

The following resolution adopting <u>Articles of Incorporation</u> was voted by members of the Association present at such meeting, to wit:

BE IT RESOLVED: That we, the Members of the Central Arroyo Hondo MDWC & MSWA, which is known by the community as <u>Lower Arroyo Hondo MDWCA</u> desire to amend entirely the 1968 Articles of Incorporation to comply with the provisions of the Sanitary Projects Act of the State of New Mexico, Chapter 3, Article 29, NMSA 1979, Sections 3-29-1 through 3-29- 20 as amended.

Please file the amended Articles of Incorporation. Thank you.

Fresident

Secretary/Townser

j ſ

Date: 4 24 08



THE CONTRACTOR OF COMM.

MAY 1 % 2008

# ENTIRELY AMENDED ARTICLES OF INCORPORATION

CORPORATION BUREAU

OF

## Central Arroyo Hondo Mutual Domestic Water Consumers' and Mutual Sewage Works Association

### RESOLUTION

WHEREAS, the Members of the Central Arroyo Hondo MDWC & MSWA, which is known by the community as <u>Lower Arroyo Hondo MDWCA</u> desire to amend entirely the 1968 Articles of Incorporation to comply with the provisions of the Sanitary Projects Act of the State of New Mexico, Chapter 3, Article 29, NMSA 1979, Sections 3-29-1 through 3-29-20 as amended.

NOW, THEREFORE, As of <u>April 6, 2008</u> be it resolved that the Articles of Incorporation of the Association be, and are hereby amended entirely to read as follows:

### Article I

The corporate name of this Association shall be:

LOWER ARROYO HONDO MUTUAL DOMESTIC WATER CONSUMERS AND MUTUAL SEWAGE WORKS ASSOCIATION (Lower Arroyo Hondo MDWCA).

### Article II

The Association shall have perpetual existence.

### Article III

The principle business of this Association shall be at:Lower Arroyo Hondo, Taos County, New Mexico.

## Article IV

The objects and purposes for which the Association is formed are as follows:

- Section 1. To associate its Members together for their mutual interest and benefit and to that end, to acquire, construct, install, maintain and operate a water and/or sewer system for the supplying and distribution of water for domestic uses and/or for the collection of sewage for its Members; and to engage in any activity related thereto, including, but not limited to, the acquisition of water by purchase, appropriation, lease or otherwise; and the diversion and storage thereof; the drilling, pumping and purchase; laying installation; operation, maintenance and repair of wells, pumping equipment, canals, ditches, structures, pipelines, valves and all other material and equipment necessary to the construction, repair, maintenance and operation of a complete domestic water supply distribution system and a sewage collection and treatment facility.
- <u>Section 2.</u> To borrow from any source, money, goods or services and to pledge or mortgage any of its property as security therefore, in any manner permitted by law.
- Section 3. To acquire and hold, own and exercise all rights of ownership in and to sell Memberships of the Association.
- Section 4. To buy, lease, hold and exercise all privileges of ownership in and to the real or personal property as may be necessary or convenient for the conduct and operation of the Association.

- property as may be necessary or convenient for the conduct and operation of the Association.
- <u>Section 5</u>. To levy assessments and make charges for water and sewer services in such manner and in such amount as may be provided in the Rules and Regulations of this Association.
- Section 6. To have and to exercise all power, privileges and rights conferred on nonprofit Associations or corporations by the Laws of the State of New Mexico, all of which are hereby expressly claimed, including all powers which may be necessary, convenient or expedient for the accomplishment of the purposes of this Association, except such powers as are inconsistent with the provisions of the Act under which this Association is incorporated.
- Section 7. The principle activities and business of this Association will be carried on in <u>Taos</u> County, State of New Mexico, but its entire business and activities will not necessarily be limited to said County.

### Article V

### **Election of Directors**

The business and affairs of this Association shall be conducted and managed by a Board of Directors, consisting of five (5) Members (the minimum is three (3), must be an odd number, there is no maximum), all of whom shall be Members in good standing of this Association.

The Members of the Board of Directors shall be elected biannually-every two years from the Membership of the Association, for staggered terms.

Elections every two (2) years provide a system of staggered four (4) year terms, so that three (3) directors will be elected in one (1) year and two (2) years later the other two (2) directors shall be elected. The staggering of the terms begins with the election of three directors at the Association the very first election after approval of this Articles of Incorporation. The directors shall draw lots to designate who the first three will be. Two years later the other two directors shall be elected.

Officers shall be selected from the elected directors in the manner provided in the Association Bylaws.

## Article VI

### Membership

The Association shall have no capital stock and no shares of stock shall be issued by said Association to its Members. Membership in this Association shall be represented and evidenced by a Membership Certificate issued by the board of directors.

Any person in the community who owns a house or who owns property or is inherited property in the community to place a home within the community water system, even if said person does not reside in the community at present but intends to reside in the future, may become a member by applying for membership to the board of directors and upon being approved, by paying the current non refundable membership fees as set by the board, and upon complying with the Articles, Bylaws and Rules of the Association. Membership is required for each hookup or in case of vacant property for each future hookup in the Association. Thus a land/property owner may purchase more than one Membership and receive more than one Membership Certificate.

## Article VII

### Voting

Notwithstanding any provision made in Article VI above, for issuing more than one Membership Certificate, for the purpose of equalizing assessments against Membership Certificates on the basis of services rendered by the Association, each person being a Member shall be entitled to one and only one vote in the affairs and business of this Association\_regardless of how many Membership Certificates he or she owns in the property.

Where there is joint property ownership the one vote can be split so that all owners of said property are allowed to vote as long as it adds up to one vote. For example, a husband and wife get .5 of a vote each for a total of one vote. When there is multiple owners, the owners may designate a representative who will vote and participate in the matters of the association.

Voting by proxy and/or by mail shall not be allowed.

## Article VIII Dissolution, Merger, Reincorporation

In the event this Association shall be directed by the Members to dissolve, the Board within the time designated by the Members or any extension thereof, shall liquidate the assets of this Association and shall pay its debts and expenses, shall return to the Members the amount of the Membership fees paid for Membership certificates.

In the event this Association shall be directed by the Members to merge or consolidate with another entity (s), the Board within the time designated by the Members or any extension thereof, shall create a merger plan and execution there of with minimum impact in the services provided to the membership and within the process as provided by state statue. The association will merge assets and liabilities and will dissolve the corporation.

In the event this Association shall be directed by the Members to reincorporate, the Board within the time designated by the Members or any extension thereof shall follow the process as provided by law.

## Article IX

#### Amendments

These articles may be repealed or amended by a vote of the majority of the Members present at any Annual Meeting of the Association, provided that there is quorum, or at any special meeting of the Association called for that purpose, except that so long as any indebtedness is held by or guaranteed by the USDA/Rural Development, the Members shall not have the power to change the purposes of the Association so as to decrease its rights and powers under the laws of the State, or to waive any requirement of bond or other provision for the safety and security of the property and funds of the Association or its Members, or to amend the articles as to effect a fundamental change in the policies of the Association without prior approval of the USDA/Rural Development in writing.

## Article X

## **Registered Agent**

The board of directors will designate a registered agent for the Association.

IN WITNESS WHEREOF, we, the Board Members, have set our hands and s	seals this <u>24</u> day of
Isabelle T. Rendow Treis	L. (Signature & Title)
PAUL C JARAMILLO VICE PROSIDENT	(Signature & Title)
Missel Manta Secrebary	(Signature & Title)
June Trensupe	(Signature & Title)
They Mila Member	(Signature & Title)
STATE OF NEW MEXICO, COUNTY OF COUNTY	20.00
The foregoing instrument was acknowledged before me this 24 day of A	orl , 3008.
By those persons signing above.	11.0
(Sea) Dounda Dounna	-Marie
PUBLIC / Notary Public C	/ 0
My commission expires: $4-10-2012$	
The total number of Members of this Association is: 76.	
Levelthaul	
Secretary	
The following is a list of the names of all Members of the Association	



## **Members List**

Christine Abeyta

Paige Anderson

Celso Arellano Jr

Lester Arellano

Lester Arellano

Lucia Arellano

Marbella Arellano

Frank Armijo

Arroyo Hondo Community Center

Arroyo Hondo Post Office

Bertha Chacon

Jesse & Sally Chacon

Greg & Suzanne Chase

Harold & Linda Cisneros

Grace Community Church

Carolina Dominguez

Elijia Espinoza

Elijia Espinoza

Elijia Espinoza

Gilbert & Deborah Graves

Alyson Lerner

Herb's Lounge

Becky Holt

Michael & Ann James

Nickolas Jaramillo

Paul & Jenny Jaramillo

Freddie & Lorraine Johnson

Michael Kittredge

Rebecca Kittredge

Cornelia Kittredge

Frank & Thelma Mares

Steve & Yolanda Mares

Dianna Martinez

Gilbert & Doreenda Martinez

Gilbert & Doreenda Martinez

Gerald Martinez

Marcia Martinez

Raul Martinez

Steven & Anna Martinez

Steven & Anna Martinez

Dolores Medina

Herbert & Georgina Medina

Jesse & Ramona Medina

Tony & Odilia Medina

Olaf Mingo

Joe & Belinda Montoya

Rubana Montoya

Carlos Ortega

Carlos Ortega

Leonard & Karen Ortega

Miguel Ortega

Noberto & Flora Ortega

Samuel Ortega

Max & Brenda Ochoa

Israel & Santana Padilla

Robert & Berlin Padilla

Robert & Berlin Padilla

Milton & Adelida Pease

Steve Rael

Rudy Rael

Robert Rael

Charlie Rendon

Isabelle Rendon

Andy Romero

David & Quirina Sanchez

Genara Sanchez

Tom Sanchez

Lara Santoro

**Eleanor Smith** 

Euclides Sohn

Jace & Paula Trujillo

Glady's Valenzuela

Arnold & Elaine Vigil

Sylvia Wilson Paul Wyman

Charlie

NM PUBLIC REG. COMM.

This form has been adopted from the USDA Form (FmHA-NM Instruction 1942-A. Guide 2) by Rural Community Assistance Corporation (RCAC).

## **BYLAWS**

## Of the

## Lower Arroyo Hondo MDWCA

A Non-Profit Association Formed Under the Sanitary Projects Act (SPA).

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## Resolution

Article I Name, Objects, Purposes, Principal Place of Business

Article II Seal

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Article IV The General Membership

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Article VI The Board of Directors

Article VII Duties of Board Members and Officers

Article VIII Water Service, Rates, Assessments, and Reserve Funds

Article IX Other General Association Matters

Article X Amendments to the Bylaws

### Resolution

WHEREAS, the Members of the <u>Lower Arroyo Hondo</u> MDWCA, hereafter referred to as the Association, desire to amend the bylaws previously adopted by the Membership.

As stated in the Sanitary Projects Act (SPA) Articles of Incorporation and Bylaws and all amendments thereof must be approved by the Membership and must be filed with the New Mexico Public Corporation Commission (PRC).

If any provisions of the Bylaws and/or Articles of Incorporation contradict one another, the document either Articles of Incorporation or Bylaws last amended as approved by the Membership must prevail. The Membership must take the necessary steps to amend the document needing amendment.

NOW, THEREFORE be it resolved that these Bylaws were adopted by the Membership of the Association on October 19, 2008 and they hereby are amended to read as follows:

#### ARTICLE I

### Name, Objects, Purposes, Principal Place of Business

A. The corporate name, the objects and purposes of this Association shall be as stated and provided in the Articles of Incorporation of the Association.

B. The principal office of the Association shall be located in <u>Taos County</u>, New Mexico. The Association may have such other offices within the County, as the Board of Directors may designate or as the business of the Association may require from time to time.

### ARTICLE II

### Seal

The Seal of this Association shall be in the form of a circle and shall have inscribed in it the name of the Association in a circular fashion, the year of its organization and the words "Non-Profit Association." The secretary of the Association shall have custody of the seal.

## ARTICLE III Fiscal Year

The fiscal year of the Association shall begin on the first day of July of each year.

### ARTICLE IV

### The General Membership

## Section 1. Membership Qualification, Type, and Availability

- A. Any person in the community who owns a house or who owns property or is inherited property within the community water system, even if said person does not reside in the community at present but intends to reside in the community and utilize water service from the community is eligible to purchase a membership by showing proof of property ownership or by showing a written document from the property owner stating that the applicant is heir to the property, payment of a non refundable Membership fee, payment of other fees and/or obligations such as water rights, and complying with other requirements as stated in the Rules and Regulations of the Association.
- B. The Association shall have residential and non residential Memberships as stated in the Rules and Regulations of the Association.
- C. In the case of a Membership where there is more than one individual property owner, the owners shall designate in writing a single individual to act as their official representative, who shall be entitled to one (1) vote for the Membership. Such designation may include alternative designated Members who may replace the initial designated Member. All actions taken by the designated Member or the replacement shall be binding on all other property owners.
- D. Provided, however, that Membership may be denied if the physical infrastructure or legal capacity of the Association is inadequate to supply the needs of its existing Members and/or if it shall cause a financial hardship to its existing Members and/or is prohibited by funding agencies.
- E. In the event of a shortage of water, the Association shall take appropriate measures to provide water to meet the needs of existing Association Members before consideration of new Membership applications for new Members or existing Members.

### Section 2. Additional Memberships & Service Connections.

Additional application for Membership for existing Members shall be considered, provided that the Association and/or Association Board of Director's has:

- a. adequate infrastructure capacity,
- b. meets the current needs of its Members,
- c. considered the revenue requirements of all Members,
- d. considered that new service connections shall not cause undue hardship to the Association,
- e. been assured that the applicants bring or pay for water rights
- f. been assured that the applicants pay for all expenses associated with the new connections, and
- g. been assured that the applicant complies with the Association Articles of Incorporation, Bylaws and Rules and Regulations.

### Section 3. Service to Non Members

- A. Provided that there is sufficient water supply, water rights, and infrastructure capacity after the domestic and safety needs of its Members have been met, the Association may provide water service to non Members but only after specific written approval and authorization has been obtained from the Board of Directors.
- B. Domestic usage shall have priority over other uses.

### Section 4. Approval of all Memberships and Connection to System

- A. All applications for Membership and/or transfer of Membership to another owner shall be approved by the Board of Directors.
- B. Connection to the system shall only be approved and completed after the applicant has paid or agreed to pay all associated Membership and connection/hook up fees and has complied with other requirements as stated in this Bylaws and Rules and Regulations of the Association.
- C. Membership shall <u>not</u> be denied because of the applicant's race, color, creed, national origin or sex

### Section 5. Construction Criteria.

- A. .All service connections into the Association shall meet the Association construction criteria.
- B. All service connections requiring distribution line extension shall be paid for by the applicant unless public funding has been approved including such connection within the stated scope of such project.
- C. The Member shall be responsible for maintaining all water lines from his/her metering facility and shall promptly repair all water leaks or damaged pipes.

### Section 6. Eminent Domain

- A. The Association acting through its Board of Directors may exercise the right of eminent domain to take and acquire the necessary property or rights of way for the construction, maintenance and operation of water and sewer lines and related facilities.
- B. The Association shall exercise this right in the manner provided by the NM Eminent Domain Code.

### Section 7. Rights, Privileges and Obligations of Members

- A. The rights, privileges and obligations of all Members of this Association shall be equal.
- B. Individual Members shall not have any legal interest or ownership in the assets of the Association.

### Section 8. Voting

A. Each Member shall be entitled to one vote on each matter submitted to vote at a meeting of the Members, irregardless of how many connections and/or hookups they own.

B. No Member shall be permitted to vote in any election unless the Membership has been approved by the Association Board of Directors for at least thirty (30) days prior to any election.

C. Voting by mail will not be permitted.

D. Voting by proxy will be permitted when the member uses a Proxy Form provided for the Association. Proxy votes do not constitute quorum.

### Section 9. Form of Membership Certificate

The Board of Directors shall determine the form of Membership certificate and the same shall be signed by the President attested by the Secretary-Treasurer or another Board Member.

### Section 10. Membership Book/Record

As a part of the records of the Association, there shall be kept an official Membership Book/Record which shall contain a list of the certificates of Membership which have been issued.

### Section 11. Transfer and/or Purchase of Existing Membership

- A. Membership may be transferred to another property owner but not another property provided that any required transfer fee has been paid to the Association and that the transferee shall be eligible for Membership and shall be approved by the Board of Directors. Any indebtedness to the Association shall be paid in full before the transfer is processed and noted on the books of the Association.
- B. A transfer of Membership or alternate designation of Member for a property with more than one owner, shall only be approved upon receipt of a written request and/or a demonstration of property conveyance by appropriate instrument filed in the County Clerk's office. Upon approval of such transfer, a new Membership Certificate shall be issued and the prior Membership Certificate shall be terminated and void for all future uses and purposes of the Association.
- C. The Directors may purchase a Membership on behalf of the Association in accordance with the Rules and Regulations of the Association. In the event of the purchase of the Membership by the Association, the proceeds shall first be applied to the payment of any indebtedness due to the Association by the Member.

### Section 12. Membership Status in Good Standing

Members of the Association have the obligation to keep the Membership in good standing paying their bills as specified in the Rules and Regulations so that the Association operates in the best manner to provide safe drinking water to all users.

## Section 13. Terminating the Supply of Water/Sewer Service.

- A. The Board of Directors shall have the authority to terminate the delivery of water service to a delinquent Member and/or other causes as stated in the Rules and Regulations of the Association.
- B. The Board shall act after a written notice of delinquency has been sent to the delinquent Member by mail, certified mail, and/or by posting on premises of the service meter or location.

## Section 14. Terminating Membership & Voluntary Relinquishing

A. In addition to terminating the water supply, the Board of Directors shall have the authority to terminate the Membership of any Member in the event of non-payment of any water charges or

assessments owing by such Member or for violating the Association's Bylaws, Rules and Regulations, or policies.

B. The Association shall not terminate any Membership until after a written notice of the delinquency or violation has been sent to the Member by mail, certified mail and/or by posting on premises of the service location.

C. The Association must collect any amount due to the Association from a terminated Membership. In accordance with the Sanitary Projects Act, the Association through its Board of Directors may place a lien on the property in the manner provided by the laws of the state.

D. Any property owner whose Membership has been terminated may be eligible to apply for a new Membership upon payment of all previously owed monies and compliance with Membership application set in this bylaws and all Rules and Regulations of the Association.

E. Any Member may voluntarily relinquish their Membership. The Association shall issue a written verification/notification of the termination or voluntary relinquishment of any Membership. Termination of Membership in any manner shall not release the Member or the Member's estate or successors from any debts due to the Association, which must be paid in full.

### ARTICLE V

### Meetings of the Membership

### Section 1. Purpose of Annual Membership Meeting

The general purpose of the annual meeting is to provide an opportunity for the Members to hear from the Board of Directors regarding the Association management during the previous year such as reports regarding revenue and expenditures, changes to and the condition of the water system, and to transact such other matters as may properly come before the Members such as elections of directors. Failure to hold the annual meeting at the designated time shall not work as forfeiture or dissolution of the Association.

### Section 2. Meetings Agenda

The order of business at the meeting of the Membership, and as far as possible, at other meetings, shall be:

- 1. Determination of existing or non-existing quorum
- 2. Call to order
- 3. Proof of notice of meeting
- 4. Approval of Agenda
- 5. Reading and approval of previous Membership meeting minutes
- 6. Report and Approval of officers and committees,
  - a. President's report
  - b. Treasurer's report including financial statement report.
  - d. Other reports
- 7. Election of directors, if appropriate
- 8. Unfinished business
- 9. New business
- 10. Adjournment

### Section 3. Date, Time, Location & Quorum of Annual Membership Meeting

- A. A general meeting of the Members of this Association shall be held every year in the community of Lower Arroyo Hondo some time in the months of <u>September and October</u>. The Board of Directors will set the specific date, time and location and will inform the Members 10 days in advance of the date, time and location of the meeting.
- B. Members present at the meeting will constitute a quorum to conduct business.

## Section 4. Calling for a Special Meetings

- A. Special meetings of the Members of the Association may be called at any time by:
  - a) the President upon a resolution of the Board of Directors,
  - b) upon a written request signed by any two Directors, or
  - c) upon a written petition to the President of the Board, signed by ten (10%) percent of the Members.
- B. The purpose of every special meeting shall be stated in the notice thereof, and no business shall be transacted thereat, except such as is specified in the notice.

## Section 4. Notice of Meetings

- A. Notice of all meetings shall follow the NM Open Meeting Act (OMA).
- B. Unless otherwise specified in the OMA resolution adopted annually by the Board, notice will be given as follows, at least ten (10) days prior to the annual meeting; three (3) days prior to a special meeting; one (1) day prior to an emergency meeting.
- C. Such a notice will state the nature, time, place and purpose of the meeting.
- D. The failure of any Member to receive notice of an annual or special meeting of the Members shall not invalidate any action that may be taken by the Members at such meeting.

## Section 5. Quorum for other than Annual Membership Meeting

- A. <u>Ten (10%)</u> percent of Members, present in person, of the Association shall constitute a quorum at special meetings of the Membership.
- B. If a quorum is present, unless otherwise provided by law, the affirmative vote of a majority of the Members at the meeting entitled to vote on the subject matter shall be the act of the Members.
- C. After a quorum has been established at a Member's meeting, the subsequent withdrawal of Members, so as to reduce the number of Members entitled to vote at the meeting below the number required for a quorum, shall not affect the validity of any action taken at the meeting or any adjournment thereof.

## Section 6. Membership Concurrence Needed

The following actions shall require the affirmative vote or concurrence of the Members of the Association:

- A. Adopting an amendment or amendments to the Articles of Incorporation and/or Bylaws;
- B. Authorizing the sale, lease, exchange or other disposition of all or substantially all of the property and assets of the Association, not in the usual and regular course of business;
- C. Approving a plan of merger, consolidation, or exchange
- D. Adopting a resolution to dissolve the Association;

#### ARTICLE VI

#### The Board of Directors

#### Section 1. Number of Directors

A Board of five (5) directors shall manage the business and affairs of this Association.

## Section 2. Eligibility Requirements

- A. All Members shall be eligible and encouraged to become a director of the Association.
- B. Board Members are required to be in good standing with payments due to the Association per Rules and Regulations.
- C. No two or more family Members who live in the same residence may serve on the Board at the same time.

#### Section 3. Elections & Terms

The Members of the Board shall be elected annually to staggered terms of two years;

A. The members of the board of directors shall be elected biennially (every two years) for staggered

terms of four (4) years each.

B. At the first election, the five current directors shall number the positions from #1 through #5 and draw lots; positions #1 through #2 are to be elected in this first election; positions #3 through #5 are designated to go through elections in two years.

#### Section 4. Selection and Meeting of the Officers

- A. The Board of Directors shall meet within thirty days after the holding of the election to select among themselves a President, Vice-President, Secretary, Treasurer (Secretary/Treasurer) and Member at Large.
- B. Each of whom shall hold office through the next annual Membership meeting and until the election and qualification of his or her successor unless removed by death, resignation, or for cause.

#### Section 5. Responsibilities, Duties and Powers

The Board has the following responsibilities:

- Comply with Federal and State laws that govern the delivery of drinking water and management of the drinking water systems.
- Select staff and contractors, as appropriate, delegate of authority to them necessary for the b) management of the Association's business;

c) Control of expenditures by authorizing budgets;

- d) Establishing water charges/rates, penalties, fees and the levying of assessments and the enforcement and collection thereof, in accordance with the provisions of these bylaws. equitable uniform rules and regulations and the Laws of the State of New Mexico.
- Make and adopt Rules and Regulations/ operating policies not inconsistent with law, the Articles of Incorporation or these Bylaws,

f) Keeping Members fully informed of business of the Association:

- Causing of audits to be made from time to time as is necessary or required by Federal and State g) Laws:
- h) Studying the requirements of Members and promoting good Membership;

Prescribing the form of Membership certificates; i)

- Have the general power to act for the Association in any manner not prohibited by Statue or the i) Articles of Incorporation
- k) Pursue sustainable management and financial methods, including accounting, audits, and/or conservation practices.

#### Section 6. **Board Conflict of Interest and Disclosure**

Directors must avoid actual or apparent conflict of interest and must disclose to the full Board any such conflict.

#### Section 7. **Board Training Requirement by State Law**

- A. Board Members are required to attend training as stipulated in state statue. The purpose of the training is to help clarify, understand, and/or expand knowledge of their duties and responsibilities as Board Members.
- B. Travel and related expenses must be reimbursed by the Association.

## **Compensation of Directors**

A. The Association will pay/reimburse expenditures for training and related efforts that would

- enable a Board Member to perform more effectively on behalf of the Association.
- B. The Board of Directors of the Association may receive a monthly stipend for being on the board that shall equal the base rate for monthly water service.
  - C. In order to comply with the Audit Act, the Association shall issue a check in the amount of the stipend or reimbursement to each board member.

#### Section 9. Vacancies

At any time that a vacancy or vacancies develop in the Board the remaining Board Members should take action at their next meting to fill the vacancy (s) by appointment of another Members

## Section 9. Removal of Member of the Board of Directors

- A. Any Director or officer of the Board may be removed from office for cause shown by a vote of not less than two-thirds (2/3) of the Members of the Association present at any annual meeting, or at any special meeting called for that purpose, provided that a quorum is present. The Director or officer shall be informed in writing of the charges against him/her at least ten (10) days before such meeting. The Director/officer may appear in person or by counsel, and present witnesses in his/her behalf.
- B. Self Removal of Members of the Board of Directors Any Member of the Board of Directors who fails to attend as many as <u>three (3) consecutive</u> meetings (regularly scheduled or special) of the Board of Directors in a one year period and without prior notification and cause shall be deemed to have resigned from the Board.

# ARTICLE VII Duties of Board Members and Officers

## Section 1. Meetings of the Board of Directors

- A. The Board shall hold meetings at regular intervals throughout the year as specified in the Open Meetings Act Resolution or by a resolution of the Board.
- B. Each year, the Board shall adapt an Open Meetings Act Resolution.
- A majority of the Board at any meeting shall constitute a quorum for the conduct of business thereat.
- D. All meetings of the Board are open to the Membership/public as required by the Open Meetings Act.
- E. Special or emergency meetings of the Board of Directors may be called by the President or by any two (2) Directors, who shall fix the time and place for the holding of the meeting.

#### Section 2. Duties of the President

- A. The President shall preside over all meetings of the Association and the Board of Directors, shall call special meetings of the Board of Directors and perform all acts and duties usually performed by an executive and presiding officer.
- B. He or She shall sign all Membership certificates, notes, bonds, mortgages, contracts and other instruments on behalf of the Association.
- C. He or she shall be an ex-officio Member of all standing committees and shall have such powers and shall perform such other duties as may be properly required of him or her by the Board of Directors.

#### Section 3. Duties of the Vice-President

- A. The Vice-President, in the absence or disability of the President, shall perform the duties of the President.
- B. However, in case of death, resignation or disability of the President, the Board of Directors may

declare the office vacant and elect his or her successor, to fill the unexpired portion of the president's term.

C. The Vice- President may be in charged of all technical matters of the Association.

## Section 4. Duties of the Secretary

- A. If the Association has either a full time of part-time staff, some of all duties of the Secretary may be delegated to the staff person, but the responsibility for their proper execution remains with the elected Secretary acting in behalf of the Board and the Association.
- B. The Secretary, unless otherwise directed by the Board of Directors, shall:
  - a) Keep a complete record of all meetings of the Association and of the Board of Directors;
  - b) Attest the President's signature on all Membership certificates and other papers pertaining to the Association;
  - Keep the corporate seal, complete and attest all certificates issued and affix said Association seal to all papers requiring seal;
  - Keep a proper Membership certificate record, showing the name of each Member of the Association and date of issuance, surrender, transfer, termination, cancellation or forfeiture;
  - e) Prepare, serve, mail, or deliver all notices required by law and by these bylaws;
  - f) Make a full report of all matters and business pertaining to his or her office to the Members at the annual meeting, or at such other time or times as the Board of Directors may require.
- C. Upon the election of his or her successor, the Secretary shall turn over to him or her all books and other property belonging to the Association that he or she may have in his or her possession.

#### Section 5. Duties of the Treasurer

- A. If the Association has either a full time of part-time staff, some of all duties of the Treasurer may be delegated to the staff person, but the responsibility for their proper execution remains with the elected Treasurer acting in behalf of the Board and the Association.
- B. The Treasurer and paid staff shall be covered in the performance of his or her duties by a surety bond in an amount to be determined by the Board of Directors. The premium for such bond shall be paid by the Association.
- C. Unless otherwise directed by the Board of Directors, the treasurer shall:
  - Have general charge and supervision of the financial books and records of the Association;
  - b) Shall maintain a record of the indebtedness of the Association and to the Association;
  - Shall maintain a record of the payments made and the current condition of all accounts;
  - Make a full report of all matters and business pertaining to his or her office to the Members at the annual meeting, or at such other time or times as the Board of Directors may require;
  - Collect all assessments and monies due the Association and deposit same in the depository designated by the Board of Directors; and,
  - f) Shall disburse funds or assure that disbursement is conducted under direct guidance and oversight, keep the Association current of all compliance reports and accounts payable, and shall make a report on the business transacted by him or her on a monthly basis or as requested.
- D. Upon the election of his or her successor, the Treasurer shall turn over to him or her all books and other property belonging to the Association that he or she may have in his or her possession.

## Section 6. Duties of Members at Large

The Member at Large shall perform duties in behalf of the Association as assigned by the Board members at a meeting of the board.

#### ARTICLE VIII

## Water Service, Rates, Assessments, and Reserve Funds

#### Section 1. Water Service

- A. All Membership Certificates shall pay a minimum monthly service fee or base rate to pay for fixed expenditures regardless of whether or not they use the water.
- B. In compliance with Federal and/or State laws, all service connections shall be metered and a certified operator shall make all connections.
- C. A representative of the Association will have the right at all reasonable hours and after prior notification to enter upon Member's premises for the purpose of inspection and enforcement of state and federal laws including inspection related to cross connection, leak detection, line integrity.

## Section 2. Establishing Rates and Budget

- A. The Board of Directors shall establish a rate schedule.
- B. The established rate schedule shall apply to each Membership Certificate.
- C. The Board of Directors shall review the established rate schedule of charges at least annually to assure that sufficient income shall be generated for the upcoming year to cover anticipated expenses. This determination shall be based on the previous year's actual expenses and the estimated budget for the coming year.
- D. The Board of Directors may call a public hearing of the membership to get input about the annual budget and rates.

#### Section 3. Assessments

If at any time prior to the end of the fiscal year, it appears to the Board of Directors that the amount derived, or which shall be derived, is insufficient to pay, when due, all costs of operating the water system, the Board shall levy an assessment against each member to cover such costs.

## Section 4. Establishing Reserve Funds

- A. The Board shall establish rates at a level which provides for a percentage of annual operating revenues to be placed in a fund (s) to be used for the purpose of reserve funds for contingency, emergency and sustainability of Association assets.
- B. If necessary, the Board of Directors shall follow federal and/or state guidelines to determine the total amount of such reserve funds and at which amount it shall be maintained.

#### ARTICLE IX

#### Other General Association Matters

## Section 1. Other Employees or Agents

- A. The Board of Directors may hire a manager, certified operator, meter reader, bookkeeper, and other agents/contractors or employees, which may be necessary to superintend the water system of the Association and its construction, maintenance and repair.
- B. Such agents/contractors or employees may be authorized by the Board of Directors under its direction and pursuant to its rules and regulations to provide for the delivery of water service to the Members of the Association.
- C. Such agents or employees shall be paid a compensation for the performance of their duties in an amount determined by the Board of Directors and paid by the users of the Association.
- D. Employees and agents may be removed from office or employment at any time by action of the Board of Directors.

## Section 2. Paid Training by the Association

- A. If the Association agrees to pay for training for a Member of the Board and/or the community such training must be necessary for the operation of the water Association.
- B. The person receiving the benefit must agree to perform the duties for which they were trained for during a period specified in a written agreement between the Association and the person receiving the training.
- C. If they resign or are relieved for cause, that person must reimburse the Association for all training related costs.

#### Section 3. Performance Bond

- A. Officers and or contractors and employees of the Association who the authority to sign financial documents and funds of the Association shall be covered in the performance of their duties by a surety/fidelity bond, in an amount to be determined by the Board of Directors.
- B. The Association shall pay the premium(s) for these bonds.

## Section 4. Property of the Association

Any property and/or records that belong to the Association, which is in possession of Board Members, employees or agents of the Association, must be returned within thirty (30) days to the Association upon resignation, termination, dismissal or end of term.

## Section 5. Water in exchange for Service

- A. No Services, contract or through employment, for the Association may be compensated by reduced water rates, free water, free or reduced hook ups, etc.
- B. Compensation must be in U.S. currency and recorded in the books of the Association.

#### Section 6. Transfer of Meter

- A. All meters are the property of the Association and are permanently fixed at their respective service locations. Therefore, no meter is transferable from the property that it is intended to serve to any other location or property.
- B. In the event that a dwelling or place of service is permanently discontinued or eliminated by the owner of record and Membership relinquished, the Association may, in its sole discretion, elect to either remove the meter or retain the meter at its location to provide service for possible future users.
- C. In the event of the sale, transfer, assignment, lease or conveyance of the subject property by the owner of record, all of the rights to service from the meter that serves the subject property shall automatically be included in the sale, transfer, assignment, lease or conveyance of that property. This also applies to all duly authorized service connections that have inoperable meters or where no meters exist.

#### Section 7. Public Records

The records of the Association shall be made available upon receipt of a written request from any Member in compliance with the Inspection of Public Records Act and other applicable State Laws.

#### ARTICLE X

## Amendments to the Bylaws

A. These bylaws may be repealed or amended by a vote of the majority Members present at any annual

- meeting of the Association, or at any special meeting of the Association called for that purpose, provided that at the meeting a quorum of the Membership as stated in these Bylaws is present.
- B. The Members shall not have the power to change the purposes of the Association so as to decrease its rights and powers under the laws of the state, or to waive any requirement of any provision for the safety and security of the property and funds of the Association or its Members, or so to amend the bylaws as to effect a fundamental change in the policies of the corporation or any indebtedness with or guaranteed by the USDA/Rural Development.

We the undersigned below President and Secretary of the <u>Lower Arroyo Hondo</u> MDWCA, an Association existing under the laws of the State of New Mexico, hereby certify that the above is a true and correct copy of the bylaws, together with all amendments thereto, were duly adopted by the members on <u>October 19</u>, 2008.

President

(Seal)

# Lower Arroyo Hondo MDWCA

These rules and regulations are issued in compliance with the bylaws of the association, and are designed to govern the supplying and taking of services rendered by the association. They are subject to change from time to time by a majority vote of the board of directors.

If a provision of the rules and regulations should conflict with a provision of the bylaws, the bylaw provision will prevail.

## PROCEDURE FOR ESTABLISHING RULES & REGULATIONS

1. Proposals for establishing policies may be presented to the board of directors by either the employees or any director of the association.

2. Members of the association may also petition the board for implementation or amendment of the rules.

3. Each proposed policy will be evaluated by the board.

4. The final policy must be approved by majority vote of the board in order for it to become official.

5. The passage of a rule will be documented in the minutes of the board meeting at which the policy was approved.

6. Additional rules will be numbered according to the year passed and the sequence numbers as seeing in these Rules.

## OF

## Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## DEFINITIONS

- Membership Certificate. A document issued to approved members. Membership certificates can only be transferred to another property owner upon sale or conveyance of said property. Membership fees are non-refundable.
- Member. One who holds a membership certificate that accompanies a physical property in the community and that has been approved by the board of directors.
- Membership Status. A property owner (s) may own more than one membership certificate. However, they are entitled to one vote only.
- Membership in Good Standing. One who is *not* past due or delinquent to the Association. An explanation of past due and delinquent is provided in these Rules.
- Residential Unit/dwelling. It includes a garage, shed, barn, guest house, shop/studio, but not a set rental units. Any guest house/apartment/ or investment dwelling within the same property that is occupied by another family either, renters, friends or relatives will be considered a separate Unit/dwelling and must acquire its own membership. The Association may charge commercial rates to rental units in the same property which do not have its own membership.
- Commercial Unit: a non residential establishment used for business or commercial purpose.

Institutions: churches, the community center, and other non profit organizations.

## Type of Membership:

- o Active Users: members who are using the service every day or most of the year.
- Active Non-Users: members who have a connection but are not using the service, for example a vacant home or an outside connection.
- Active Seasonal: members who have a connection and use the service seasonally, for example during the summer, holidays, some weekends.

o **Inactive Users:** members who have a certificate and have the option to connect to the association but have chosen not to do so. There is a membership on paper but no connection.

Membership Fee: A *non refundable* fee assessed to each certificate of membership to cover administrative expenses and meter maintenance. It is NOT the same as a hook up fee or any other fee.

Hook up Fee: The actual cost that must be paid <u>to the association</u> for the connection of water services from the association lines to the public right of way or association easement. By federal and state law, the connection must be completed with a certified operator present. The fee paid to the Association includes the meter. Other connection costs such as the metering facilities, the connection, labor, and materials will be paid by the member to contractors either hired by the member or the Association.

#### OF

## Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## MEMBERSHIP PURCHASE, APPROVAL, TRANSFER

- 1.A. Application for Membership. As stated in the bylaws water service will be available subject to the availability of water. Any person in the community who owns a house or who owns property or is inherited property in the community to build a house within the community water system, even if said person does not reside in the community at present but intends to reside within one year from the purchase date of the membership may apply to purchase a membership from this Association following the process below.
- **1. B. Application Process:** To obtain water services, the applicant must purchase a membership certificate into the association following these steps.
  - I. Bring the following to the secretary of the board or to the regular board meeting:

1. A completed and signed Water Users Agreement/Certificate of Membership

2. Payment by check or Money Order of a non-refundable membership fee and a plan as to how you will pay for hook up fees and other fees as stated in the Water Users Agreement.

3. Proof of property ownership as stated in the Water Users Agreement

- 4. Approximate physical location to install the metering facility. Please draw a map of your property showing approximately location to install the meter. If you have a survey of the property, you can use that to show where you want the meter to be located.
- II. Approval of the Application. Upon submitting of the requirements stated above the board will promptly review and make its decision. Incomplete applications may be grounds for denial of service. If membership application is disapproved, the membership fee will be returned.
- III. Notification of Approval. Once the application has been approved, the member will be notified by the association along with any amount due, which must be paid in full before connecting to the system.
- IV. Services Ready to be Connected. At the time the member is ready to be connected to the system and has completed all requirements as stated above, a

metering facility will be placed by the Association's certified operator at the main water line easement and all connection costs will be paid by the member. Violation of this policy will result in cancellation of membership and payment of any federal and/or state fines in case the water system gets contaminated.

V. Issuance of a Certificate of Membership. After all necessary fees have been paid in full a Membership Certificate and/or a copy of the signed Water Users Agreement will be issued and mailed or given to the new member.

- 1.C. Water Services for Rental Property. The property owner will be the member and responsible for all bills incurred to the association.
- 1. D. Disconnection of Illegal/Unauthorized Connections. Pursuant to the SPA, NMSA 1978, 3-29-6.D, the association will disconnect, after notice:
  - a. unauthorized service connections (those who notify the association but proceed to connect before the application approval process has been completed);
  - b. illegal service connections (those who connect without notifying the association);
  - c. service connections for which charges are delinquent in payment.

## OF

## Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## PROVIDING WATER SERVICES

- 2. A. <u>Water Services Ready to Use: Minimum Charge.</u> Water Services will be considered ready to use when the application process has been completed, the application has been approved, regardless of whether or not the member makes use of it, and charges will be made for services as of this date. Minimum charges will apply to all membership certificates and must cover at least the association's fixed expenses.
- 2. B. <u>Service Deactivation and Reactivation</u>. Members who temporarily will be <u>out</u> of their residence may choose to have the water services disconnected by the association during their absence. The service activation and deactivation will be completed by the Association's Certified Operator or by its agent as required by law and the member will pay actual costs incurred for these services. The request for this service must be made at a regularly scheduled meeting of the board or in writing and sent by certified mail and/or with proof of receipt.
- 2. C. <u>Multiple Services Connections are illegal</u>. As stated above each residential unit/dwelling must have its own membership certificate, thus meter facilities. Multiple residence connections into **one** residential meter are prohibited by funding agencies and are unfair to the members of the association. Water service is for the sole use of the member, his agent(s) or tenant(s) <u>at the location requested</u>, and does not permit the transfer or cross-connection of water by any means to another dwelling or place of business. Members who allowed multiple residence connections may be disconnected from the system.
- 2. D. <u>Connection to Private System/Well</u>. There will be no physical connection between any private water system/well and the water system of the association. Violation of this provision is cause for disconnection of a member's Water Services. If a back flow prevention valve is required to be installed, the member will pay for all expenses incurred.
- 2. E. <u>Continuity of Service</u>. The association will make all reasonable efforts to supply continuous, uninterrupted service. However, it will have the right to interrupt service for the purpose of making repairs, connections, line extensions, or for other necessary work. Efforts will be made to notify members who may be affected by such interruptions, but the association will not accept responsibility for losses, which might occur due to such necessary interruptions of service or shortage of water supply.

## OF

## Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## THE METER/METERING FACILITIES

- 3. A. Metering of Water Service. Water service will be metered to each individual dwelling or place of business with an approved membership certificate.
  - Several residences/dwellings will not be connected to one meter.
  - Metering facilities are owned by the association and must be installed by the association.
  - o The member is responsible for any activity from the meter to the home.
- 3. B. Tampering with Metering Facilities: Metering facilities will be installed and maintained by the association and will be paid for by the member. These will consist of a service clamp, corporation stop, service line, meter yoke, meter box, back flow device and meter. Tampering with meter facilities is a violation of this association property thus against Federal Law. Anyone in violation will be penalized by the board or prosecuted in court. All community drinking water system facilities and operations are regulated by Federal and State laws.
- 3. C. <u>Location of Metering Facilities</u>: Metering facilities will be located at <u>the main line</u> or at <u>member's property line</u>. In special cases where this is not practical, the location will be agreed upon jointly by the board of directors and the member. The member is responsible for any activity from the meter to the home.
- 3. D. Easement for the Metering Facilities. Should the location be within the member's property, he or she will grant the association an easement of right-of-way and the right of ingress and egress to said property for the purposes of servicing or removing the metering facilities. Membership certificate will be cancelled for members who refuse to provide the required easement.
- 3. E. <u>Transfer of Meter.</u> All the meters are the property of the Association and are permanently fixed at their respective service locations. Therefore, no meter is transferable from the property that it is intended to serve to any other location. Thus, in the event of the sale, transfer, assignment, lease or conveyance of the subject property by the owner of record, all of the rights to service from the meter that serves the subject property shall automatically be included in the sale, transfer, assignment, lease or conveyance of that property. This also applies to all duly authorized service connections that have inoperable meters or where no meters exist. In the event that a dwelling or place of service is permanently discontinued or eliminated by the owner of record, the Association

may, in its sole discretion, elect to either remove the meter or leave the meter to provide service for possible future users.

- 3. F. Meter Accuracy & Testing: Service meters, where errors do not exceed two (2%) percent fast or slow, will be considered as within the allowable limits of accuracy for billing purposes. Meter testing requested by members will be performed without cost to the member, if the meter is found to be off in excess of two (2%) percent. Otherwise, the member for whom the required testing was made will be charged for the cost of making the test.
- 3. H. Meter Reading: Meters will be read by the association per schedule set by the board. The meters may not be read in winter months November through February. Members will pay an average flat fee based on previous months readings. The board will keep a record of water used during the winter months. If usage is higher or lower than was charged then an adjustment will be made.

# RULES AND REGULATIONS OF Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## SEWER SYSTEM

4. Sewer System. At this time the Association does not own and/or manage sewage facilities.

OF

## Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## BILLING AND PAYMENT FOR WATER SERVICES

5. A. <u>Billing of Water Services</u>. The association will bill the membership <u>on or about the first week of each month</u> for water services from actual meter readings and/or at the rates set forth on the approved water rate schedule.

In order to reduce cost to the members, during the time when the rates are a flat fee, meaning that we are not reading meters or charging for actual water used, the Association will not mail a bill.

5. B. <u>Payment of Water Services</u>: Bills for Water Services are due on the <u>30th</u> of the month and become past due on the <u>following month/billing period</u>.

## Payment must be by check or money order only.

- 5. C. <u>Past due Accounts</u>: Past due payments are subject to <u>a ten dollar (\$10.00) fee</u>. This fee will be applied to all accounts that have not been paid by the time the bill was due and will accumulate month to month.
- 5. D. Delinquent Accounts, Notification & Disconnection of Services:
  - I. Members who fail to pay for water services and applicable late fees within two months/billing cycles will be considered delinquent and will be subject to disconnection procedures. The past due fee will continue to accumulate until account is brought current.
  - II. All delinquent members or members in violation will be notified by mail or by certified mail at the discretion of the billing contractor on or about the first of the month after payment has not been received. The notification will include the amount due, date to comply, and a statement saying, "If no payment is received by the date to comply water service will be disconnected."
  - III. The date to comply shall be the 20<sup>th</sup> day from the date the notice is sent to the member.
    - IV. Failure to comply or pay as specified in the notice will result in water services being disconnected and/or meter pulled by the time the next billing is processed. By this time the member may be delinquent with his/her bill at least four months. No

further notice will be sent to the delinquent member. To reinstate services the reconnection fee must be paid in full. See below.

V. Delinquent amount cannot be paid to the person(s) making the disconnection.

5. F. Negotiating Monthly Payment Schedule (For members only).

I. To avoid disconnection of services, the Association and the Member may negotiate, through a written Payment Agreement, a monthly payment schedule for the delinquent amount.

a. The member needs to keep current on their monthly fee and pay the

additional amount as agreed on the "Payment Agreement"

b. From the time, the member signs the agreement, the association will not charge the late fee for the unpaid amount as long as the member keeps the agreement.

c. If the member becomes past due and delinquent there is a breach of contract and the association will disconnect services. No further notice of disconnect will be given to the delinquent member.

- II. If services are disconnected, the Association and the Member may still negotiate in writing a monthly payment schedule for the delinquent amount. Services will be reinstated provided the member pays the reconnection fee and agrees to pay the amount due to the association per written agreement.
- 5. G. Reconnection of Water Services: Any water service which has been disconnected due to a delinquent account or for other reasons, will not be reconnected until the account has been paid current or a written Payment Agreement has been signed and the reconnection fee is paid in full. The member shall pay the above charges with a certified bank check or money order.

5. H. Cancellation of Membership.

- I. If a member is delinquent for <u>six (6) months</u> after non-payment, the membership in the Association will be considered in default and shall be canceled, the meter should one exists will be removed and/or the line will be capped.
- II. All delinquent members having their membership cancelled will be notified by mail, certified mail and other means at the discretion of the billing clerk or the board of directors. As much as possible to avoid higher cost, the board will use regular mail.
- III. The notification will include the amount due and will provide a date to comply. The date to comply shall not be less than twenty (20) days from the date the notice

is sent to the member.

- IV. Failure to comply will result in loss of membership. After that date a request for reconnection will be subject to membership eligibility as defined in the Bylaws and Rules and Regulations of the Association. Memberships may not be available.
- V. In the event that the membership is canceled by the Association, a copy of the board minutes and of the notice of cancellation sent to the member must be kept in the association files.
- VI. After being disconnected and/or having the membership cancelled, a member may decide not to reconnect to the Association. The member must send a note in writing canceling the membership and must pay the amount due to the association. The Association will close the account. If no payment is received, the Association will collect any amount due to the Association by placing a lien on the property.
- 5.I. <u>Collections</u>: The association has the responsibility and the authority within state law to take all action necessary to collect the arrears through a collections agency or a lien on the property. Should this occur, the member will be responsible for all collection, legal and court costs, attorney fees and any fees not mentioned that are required to collect the money owed.

# Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## SERVICE CONNECTIONS BEYOND THE SYSTEM SERVICE AREA

## 6. A. Extension of Water Mains Lateral Lines:

- Authorized mains and lateral lines to an individual applicant laid beyond the association's existing water system will be installed to the association's specifications and paid for by the individual applying for membership.
- The member(s) must provide easements to the system, should easements be necessary.
- Lateral lines may become the property of the Association and are to be maintained by the Association.
- In cases where a group of individuals or a business is applying for membership. The Board will consider such extension provided that the cost and water demand caused by such extension does not cause hardship on the current membership.
- The board of directors may enter into special service contracts to extend the lines in cases where the applicant has unusual service requirements. However, in no case will the association enter into such a contract before obtaining approval from the general membership.
- o A lateral line is a transmission distribution line. It is not the line that the goes from the meter to the home or business- this is a service line.
- 6. B. Cost Sharing of New Hook-Ups to Existing Lines: In a situation where a "new" hook-up is requested to an existing line where a member invested in the cost of installing the line the new hook-up must reimburse the member for a proportional amount of the cost to run the water line. Additionally, the new hookup is subject to approval by the Association after verification of no adverse impact of the new hookup on existing connection (s).

Members cannot be required to pay in excess of 50% of the cost incurred to run the existing line, nor can this member be denied service because of such a claim by the existing member. The following provisions must be met in all such situations:

1. The Member that installed the initial line must document the initial cost.

2. The requesting Member, shall pay for the proportional cost, based on a formula which is based on linear feet of property owned, multiplied by the initial cost of the line installed. (linear feet of property of the member requesting X the cost per linear foot for initial installation = cost).

3. The term of limitation of this requirement for reimbursement is a total of six (6)

years from the date of installation.

OF

# Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## FEES & RATE STRUCTURE for WATER SERVICES

Residential:

Membership fees:

\$ 500.00

Hookup/connection:

\$ 100.00 does not include materials

Non Residential:

Membership Fee:

Residential Meter:

\$ 500.00

Other Size of Meter:

To be determined by Board based on meter size.

Hookup/connection:

\$ 100.00 does not include materials

Other Fees:

Disconnect and Reconnection fee:

\$ 25.00 plus related expenses

Bounced Check fee:

\$ 25.00 plus actual bank charge

Voluntary Service Deactivation and Activation fee:

\$ 25.00 plus related expenses

Membership Ownership transfer fee:

\$ 100.00

## RATE STRUCTURE

The rate structure currently in effect is:

Members Active:

\$ 7.97

Rental:

\$13.28

Inactive:

\$3.00

Commercial:

\$26.56

Institutions: churches, the community center

\$15.00

The proposed rate structure beginning January 1, 2009 is:

Members Active:

\$ 20.00

Rental:

\$20.00

Inactive

\$4.00

Commercial:

\$ 35.00

Institutions: churches, the community center

\$15.00

Page 14 of 17

Lower Arroyo Hondo Rules and Regulations 2009

The proposed rate includes gross receipt taxes and water conservation and it cover the Association expenses for the FY09 budget.

## RULES AND REGULATIONS

OF

## Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## MEMBER SERVICE/MEMBER SERVICE

8. A. Addressing & Recording Member Complaints. All member comments, complaints or suggestions must be addressed to the board. The member should file a complaint about a water bill within thirty (30) days of the date of the bill.

When the association receives member complaints about a balance on an account or a discrepancy, the association treasurer and/or bookkeeper will first research the account to determine the nature of the discrepancy and resolve it or bring it to the board for resolution.

8. B. Adjustments Due to Leaks on Member (s) Property:

The Board may consider adjustment of the water bill when a member experiences an unusually high water bill due to a break in their service line or a leak in their house/business. Only if the damage or leak is repaired as soon as possible and under the following conditions:

- The member reports the damage or leak to the Association as soon as detected and the water service is terminated by the association until the damage/leak is repaired.
- 2. The board detects the leak notifies the member and the member takes all steps to repair the leak. The water service is terminated by the association until the damage/leak is repaired.

3. The member submits receipts and/or invoices documenting the repairs made.

The following schedule will be utilized for valid adjustments as considered and/or approved by the Board:

- 1st Time Adjustment: Adjust to prior year usage or prior month if not data for the

previous year is available.

- 2<sup>nd</sup> Time Adjustment: 75% reduction of total bill at the time of damage/leak.

- 3<sup>rd</sup> Time Adjustment or Further Adjustment: 50% reduction of total bill at the time of damage/leak.
- 8. C. Member Overpayment. Overpayments should be applied toward future billings.

Overpayments on an account may be credited to the member account on a case by case basis. In cases where the account is being closed and the membership canceled, the overpayment may be refunded to the member.

**RULES AND REGULATIONS** 

OF

# Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## FISCAL MATTERS

Bank Accounts and Signatures. The Board shall have bank accounts established in the name of the Association. The Board shall determine which of the officers will be authorized to sign checks and to conduct financial transaction on behalf of the Association.

Audits. This Association shall be subject to audits as mandated under the Audit Act, 12-6-1 NMSA, 1978 et seq. and OMB Circular 133 when required.

<u>Budgets</u>: The Association shall prepare an annual operating budget at the beginning of each fiscal year. The budget should be realistic and consider historical data as well as inflationary factors.

<u>Purchasing</u>: In order to ensure compliance with all Federal and State laws and the New Mexico Procurement Code, all purchases of supplies, materials, equipment and contractual services for the Association shall be made in accordance with these procedures. Any purchases in the amount of \$500.00 or more must be pre approved by the board.

Reserve Funds: The Lower Arroyo Hondo MDWCA will maintain reserve funds as mandated by funders or state and federal laws or guidelines. The board shall maintain reserve funds for emergencies at the cost of at least the replacement of the well pump and to fix a major leak that can potentially leave the community without water.

# Lower Arroyo Hondo Mutual Domestic Water Consumers Association

## COMPLIANCE WITH THESE RULES AND REGULATIONS

Each employee, agent, contractor of this association is expected to fully enforce these Rules and

Regulations without further approval of the board.

Board authority to approve and enforce these Rules and Regulations comes from the provisions of the

State of New Mexico Sanitary Projects Act [3-29-1 to 3-29-19 NMSA 1978].

These Rules and Regulations we adapted by resolution of the board and are effective as of April 1, 2009.

Oficer

Oficer

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After theses rules have been adapted, provide a copy to each member of the Association.



## New Mexico Office of the State Engineer

# **Water Right Summary**

get image list

WR File Number: RG 16502

Subbasin:

TA Cross

**Reference:** 

MDW COMMUNITY TYPE USE

**Primary Purpose:** - MDWCA, PRIVATE OR

COMMERCIAL SUPPLIED

**Primary Status:** ADJ Adjudicated

**Total Acres:** 0.000 **Subfile:** RG-16502 **Header:** 

**Total Diversion:** 24.300 **Cause/Case:** 

Owner: CENTRAL ARROYO HONDO

**MDWCA** 

Owner Class: Owner

**Contact:** 

Owner: LOWER ARROYO HONDO

WATER ASSCO

Owner Class: Owner

## **Documents on File**

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.		Acres	Diversion	Consumptive
	<u>722955</u>	ORDER	2008-09-08	ADJ	PRC	RG 16502 CORRECT & AMEND	Т	0.000	24.300	
	490536	ORDER	2006-10-06	ADJ	PRC	RG 16502	T	0.000	24.300	
	728294	STGPP	1995-08-03	PMT	ET	01701 INTO RG-16502	T	0.000	1.250	
	736415	CLWPP	1993-03-02	PMT	MTR	RG 51793 INTO RG 16502	Т	0.000	1.000	
	<u>727097</u>	CLWPL	1969-08-04	PMT	MTR	RG 16502 CLW	T	0.000	21.420	
	<u>727097</u>	CLWPL	1969-08-04	PMT	MTR	RG 16502 CLW	F	0.000	20.670	
	727094	DCL	1969-04-02	DCL	PRC	RG 16502	T	0.000	21.420	

## **Current Points of Diversion**

POD Number	Well Tag	Source	Q64	Q16	<b>Q4</b>	Sec	Tws	Rng	X	Y	Мар	Other Location Desc
RG 02756	NA	Shallow	NW	NE	NW	33	27N	12E	439895.5	4043765.6		43 OLD HWY 3
RG 04262		Shallow										NO QTRS GIVEN/SEE COMMENTS
RG 12811						32	17N	09E	408618.0	3946758.0 *		
RG 16502		Shallow	SW	SW	NE	33	27N	12E	440338.0	4042876.6		

<sup>\*</sup> UTM location was derived from PLSS - see Help

## **Priority Summary**

1815-12-31 ADJ 0.000 24.300 <u>RG 02756</u> Shallow <u>RG 04262</u> Shallow <u>RG 12811</u>	Priority	Status	Acres	Diversion	POD Number	Source
	1815-12-31	ADJ	0.000	24.300	RG 02756	Shallow
<u>RG 12811</u>					RG 04262	Shallow
					RG 12811	
RG 16502 Shallow					RG 16502	Shallow

## **Place of Use**

Q256	Q64	Q16	<b>Q4</b>	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
								24.300		MDW	1815-12-31	ADJ	Defendant's service area.

## **Source**

Acres	Diversion	CU	Use	Priority	Source	Description
0.000	24.300		MDW	1815-12-31	GW	

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# COATING & CORROSION SPECIALISTS, INC.

53 Tierra Madre Road Placitas, NM 87043 Fax 505-867-7260 Mobile 505-220-2414 dwslade@comcast.net

September 26, 2011

Southwest CM 508 Alcalde Place SW Albuquerque, NM 87104

Reference: NACE Inspection on a 35,000 gallon bolted potable water tank at Arroyo Hondo, NM

#### INTRODUCTION

Coating & Corrosion Specialist was retained by Anthony Valdez of Southwest CM to inspect the coatings on a 35,000 gallon bolted potable water tank in arroyo Hondo, NM.

Coating & Corrosion has inspected the bolted tank on the interior and exterior. The results of the inspection of the coatings on the interior and exterior are that the mils were ok except in one area on the wall where there was a 4.5 mil reading.

The floor and walls were holiday tested using a low voltage wet sponge tester.

The floor had scratches on most of the floor which were holidays or voids in the coating. This is due to grit on the shoes which scratch the 5.7 mil coating.

All the ladder rungs or angles had holidays on both ends of the rungs. An angle on the floor had both ends with holidays. Both man ways had holidays on the edges and surface of the man ways.



# COATING & CORROSION SPECIALISTS, INC.

53 Tierra Madre Road Placitas, NM 87043 Fax 505-867-7260 Mobile 505-220-2414 dwslade@comcast.net

September 26, 2011

One man way had been touched up using an artist brush; the results were there were holidays on each area touched up.

The recommendation is that Columbia tank sends a man back to the project to finish the job.

The holidays should be sanded cleaned and coated with the epoxy with 6 to 8 mils DFT mil to cover the areas with the correct amount of mils.

The on site Forman for Southwest should be there as well as Souder Millers on site inspector.

The Columbia tank people left epoxy for the on site inspector to touch up any holidays. If this was allowed and the coating failed then Souder Miller would be liable for the failure and the warranty would be no good.

Also the Columbia tank people said if the tank leaked at the bottom connection then Southwest could tighten the bolts this is the same thing Southwest would be liable if the leaks did not stop. This is all Columbia tanks responsibility.

If you need any further inspection on this project please call.

Sincerely,

David W. Slade

NACE INDEPENTENT CERTIFIED COATING INSPECTOR # 1897

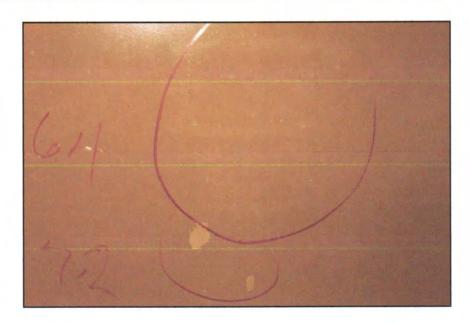


PHOTO (1) This is a holiday on the floor of a bolted tank built by Columbia tank in Arroyo Honda NM. The floor had numerous holidays or voids in the coating.



PHOTO (2) One of the reasons for so many holidays is the coating is thin 5.7 mils and scratches easily. A normal coating on a potable water tank interior is 10.5 to 12.5 mils DFT



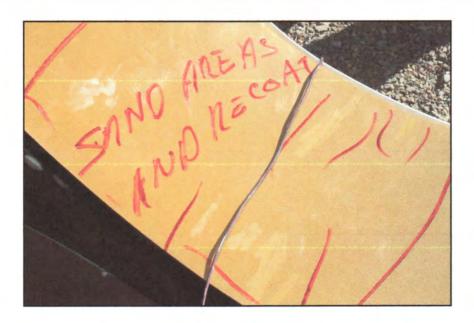


PHOTO (3) What you see here is where the fabricators employee touched up a scratch with an artist brush and the scratches were not prepared correct and holidays exist.



PHOTO (4) This is a ladder rung or angle used for the ladder with holidays on all the ends of the angle used for the ladder.





PHOTO (5) You can see the scratches in the coating, the floor was supposed to have been clean of all dirt but was not. The tank erector was not on site and had left the state.

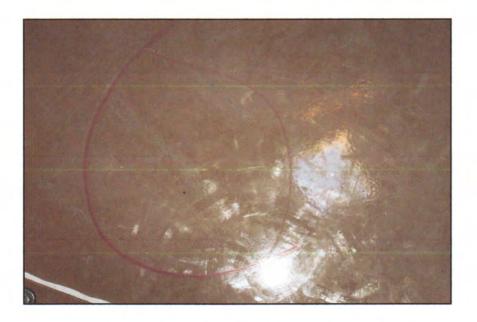


PHOTO (6) More holidays this 35 thousand tank had more holidays than I have found in a 500 thousand welded tank coating.



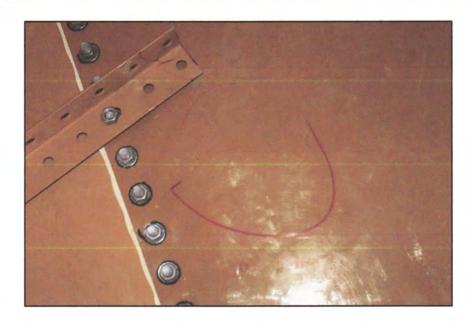


PHOTO (7) The end of the angle on the floor has holidays as well as the floor. There were two holidays on the walls.

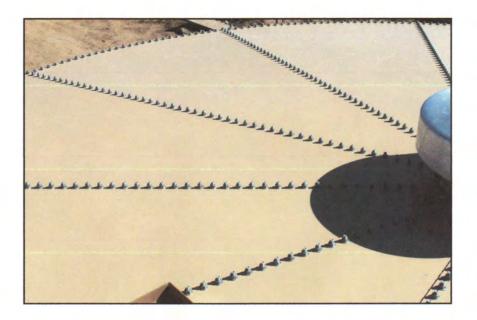


PHOTO (8) Checking the exterior the for mils and scratches. The exterior looked good no starches to bare metal.



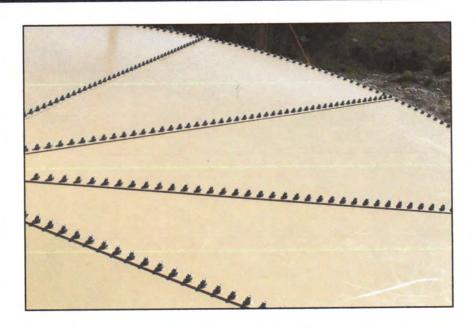


PHOTO (9) Same here different areas.



PHOTO (10) Last photo of the bolted tank.



## DEO-IEST

GEOTECHNICAL ENGINEERING SERVICES JOB NO. 1-20806 LOWER ARROYO HONDO MDWCA WATER SYSTEM IMPROVEMENTS ARROYO HONDO, NEW MEXICO

GEO-TEST, INC. 3204 RICHARDS LANE SANTA FE, NEW MEXICO 87507 (505) 471-1101 FAX (505) 471-2245

8528 CALLE ALAMEDA ALBUQUERQUE, NEW MEXICO 87113 (505) 857-0933 FAX (505) 857-0803

2805-A LAS VEGAS CT LAS CRUCES, NEW MEXICO 88007 (575) 526-6260 FAX (575) 523-1660 PREPARED FOR:

FILE CONSTRUCTION, LLC

## DEO-IEST

October 10, 2022 Job No. 1-20806

File Construction, LLC 109 Industrial Avenue, NE Albuquerque, New Mexico 87107

ATTN: Mayra Gaxiola, Project Coordinator

RE: Geotechnical Engineering Services

Lower Arroyo Hondo MDWCA Water System Improvements Arroyo Hondo, New Mexico

Dear Ms. Gaxiola:

Submitted herein is the Geotechnical Engineering Services Report for the above referenced project. The report contains the results of our field investigation, laboratory testing, and recommendations for wellhouse foundation and floor slab, trenching and excavation, horizontal directional drilling, jack and bore, bedding, backfill, as well as general site grading.

It has been a pleasure to serve you on this project. If you should have any questions, please contact this office.

Respectfully submitted:

Reviewed by:

Robert D Booth.

**GEO-TEST, INC.** 

Timothy Matson, Staff Engineer

cc: Addressee

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## DEO-IEST

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#### INTRODUCTION

This report presents the results of the geotechnical engineering services investigation performed for the proposed Lower Arroyo Hondo MDWCA water system improvements in Arroyo Hondo, New Mexico.

The objectives of this investigation were to:

- 1) Evaluate the nature and engineering properties of the subsurface soils underlying the wellhouse, the proposed waterline, as well as the highway and river crossings.
- 2) Provide recommendations for foundation design, as well as criteria for site grading.
- 3) Provide information regarding the relative difficulty of excavation of the underground pipe trenches and trenchless waterline installation and crossings, as well as opinions regarding bedding and backfill.

The investigation includes subsurface exploration, selected soil sampling, laboratory testing of the samples, performing an engineering analysis and preparation of this report.

#### PROPOSED CONSTRUCTION

It is understood that the project consists of the construction of a new wellhouse and installation of about 3,174 linear feet of 8-inch PVC or HDPE waterline either by horizontal directional drilling (HDD) methods and/or open trench installation methods. In addition, 2 crossings are planned, one via jack and bore methods crossing under NM-522 and one crossing under the Rio Hondo using HDD methods. The wellhouse will be on the order of 80 square feet (8' x 10') utilizing wood frame construction with no basements and concrete slabs will be cast on-grade.

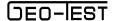
Should project details vary significantly from those outlined above, this firm should be notified for review and possible revision of recommendations contained herein.

#### FIELD EXPLORATION

Ten exploratory borings were drilled, one on either side of the NM-522 crossing, and one on either side of the Rio Hondo crossing, and six along the waterline alignment at about 500-foot spacings. The locations of the borings are shown on the Boring Location Maps, Figures 1-5. The soils encountered in the borings were continuously examined, visually classified and logged during the drilling operation. The boring logs are presented in a following section of this report. Drilling was accomplished using a truck mounted drill rig

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equipped with 2.25-inch diameter continuous flight hollow stem auger Subsurface materials were sampled at a depth of 5 feet utilizing an open tube split barrel sampler driven by a standard penetration test hammer. Auger cuttings were also collected from some of the borings.

#### LABORATORY TESTING

Selected soil samples were tested in the laboratory to determine certain engineering properties of the soils. Moisture contents were determined to evaluate the various soil deposits with depth. The results of these tests are presented on the boring logs.

Sieve analysis and Atterberg limits tests were performed on selected samples to aid in soil classification. In addition, unconfined compression tests were performed on select clay samples from the Rio Hondo crossing to evaluate the undrained shear strengths of these materials. The results of these tests are presented in the Summary of Laboratory Results and on the individual test reports presented in a following section of this report.

To aid in corrosion analysis, pH and laboratory resistivity testing as well as sulfate and chloride ion concentrations are being determined. The results of these tests will be provided in an addendum once they are completed.

#### **SITE CONDITIONS**

A brief site reconnaissance was performed during our site exploration. The site for the proposed wellhouse is located south of the existing wellhouse and southeast of the existing water storage tank. The area is relatively flat and with existing underground water and electric lines. We also observed what appeared to be a concrete footing. It is understood it was from a previous water storage tank. The new waterline will come down the dirt service road and cross beneath NM-522. The new waterline will then turn to the north and run parallel to NM-522 along its west shoulder. We observed water on the surface in the marsh area west of the highway. The line then turns to the west on Old Highway 3 a payed road and follows the roadway which turns towards the north and turns into Vigil Road and will then cross under the Rio Hondo and Camino Del Medio. We also observed a pond on the northside Old Highway 3 and water on the surface in marshy areas on the east side of Vigil Road. An acequia was also flowing during our site visit on the west side of Vigil Road. Water was also observed on the surface of the roadway where the road turns from Old Hwy. 3 to Vigil Road which appears to be overflowing from the acequia.

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### **SUBSURFACE SOIL CONDITIONS**

#### <u>Wellhouse</u>

The soils encountered at the wellhouse site (B-10) consist of silty gravels with



various amounts of sand, cobbles and boulders. These soils were non-plastic and refused the auger at about 7 feet below existing site grades. Very difficult drilling was experienced below a depth of about 2½ feet below existing site grade. No groundwater was encountered, and soil moisture contents were relatively low throughout the extent of the boring.

#### NM-522 Crossing

As indicated by exploratory borings the soils encountered in borings nos. 8 & 9, varied. The soils encountered in boring no. 8, consisted of about 5 feet of man-made fill soils, comprised of non-plastic silty gravels with various amount of sand. These soils were loose and were most likely derived from backfill of nearby underground utility lines. Below the man-made fill soils, the native soils also consisted of silty gravels with various amounts of fine sand. The soils were non-plastic, medium dense and extended to full depth explored. The soils encountered in boring no. 9, consisted of interbedded layers of silty/clayey sand and silty sand. The soils were medium dense, ranged from non-plastic to low in plasticity and extended to a depth of about 4 feet below existing site grade. Below the interbedded soils, silty sands with gravel were encountered and extended to full depth explored. These soils were nonplastic, dense to very dense with varying degrees of cementation. Although the subsurface materials below about 4 feet were logged as very dense soils. most of these materials are believed to consist of weathered sandstone of the Lama Formation. The Lama Formation in this area is a sedimentary rock deposited approximately 5 million years ago and has the engineering properties of a very dense soil or weak rock. No groundwater was encountered, and soil moisture contents were relatively low throughout the extent of the borings.

#### NM-522 Alignment

The soils encountered in borings nos. 5-7 along the shoulder on NM-522 consist of man-made fill soils used to build up of the embankment of the roadway during construction of the highway. The fill soils generally consisted of gravels with various amount of silt, sand and clay with occasional cobbles. The soils were non-plastic to low in plasticity and extended to depths ranging from about 2 to 8 feet below existing site grades. Below the man-made fill soils, sandy clay and clayey sands were encountered and extended to full depth explored in boring nos. 5 & 6 and to about 8 feet in boring no. 7. These soils were low in plasticity and ranged from soft to moderately firm. Below the clayey sands in boring no. 7, silty gravel with sand were encountered and extended to full depth explored. These soils were medium dense and nonplastic to low in plasticity. Groundwater was encountered at about 8 feet below existing site grade in boring no. 5, about the same elevation as the standing water in the marshy meadow to the west. Groundwater was not encountered in boring ns. 6 & 7, however, the soil moisture contents of the native soils below about 8 feet were moderate to high. The soil moisture content of the manmade fill soils was generally low. It should be noted that the percentage of cobble sized particles are difficult to ascertain in the exploratory borings.

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#### **Old Highway 3**

The soils encountered in boring nos. 3 & 4, consisted of man-made fill soils used to construct the roadway. These soils consisted of silty gravels with sand and various amounts of cobbles and possible boulders. The soils were non-plastic and very dense and refused the auger at depths ranging from 6½ to 8 feet below existing site grades. Groundwater was not encountered; however, it is believed to be at about the same elevation as the pond and marsh land below the roadway fill. Moisture contents of the man-made fill soils was low.

#### **Rio Hondo Crossing**

The soils encountered at the Rio Hondo Crossing, boring nos. 1 & 2, consisted of about 8 feet of man-made fill soils consisting of silty gravels with sand and silty/clayey sand with gravel with various amounts of cobbles/boulders and possible construction debris from construction of the bridge. The soils ranged from non-plastic to low in plasticity and were medium dense in the upper 4 to 5 feet. Below these depths, very difficult drilling was experienced and refused the auger several times before we could get through the man-made fill. Below the man-made fill, silty/clayey sands with gravel were encountered. These soils were low in plasticity, medium dense and extended to about 11½ feet below existing site grade. Below the silty/clayey sands with gravel, low plasticity silty clays with sand were encountered. These soils ranged from moderately firm to firm and extended to full depths explored. Groundwater was encountered in the borings at about 8 feet below existing site grade and appeared to be perched on the very fine-grained silty clay. Soil moisture contents above the groundwater were relatively low.

Fluctuations in the level of the groundwater may occur due to variations in rainfall, snow melt, underground drainage patterns, and may also be affected by outside factors such as pumping of local wells and the Rio Hondo, as well as other factors not evident at the time our measurements were made. Groundwater may even rise to the surface in some areas along the alignment around the intersection of Old Highway 3 and Vigil Road to the Rio Hondo bridge.

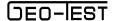
#### **CONCLUSIONS AND RECOMMENDATIONS**

#### Wellhouse

The near surface soils encountered in the borings are dense to very dense at shallow depths, and thus, are considered suitable to provide reliable support of the proposed structure. Accordingly, provided the site is prepared as recommended in the Site Grading section of this report, it is recommended that the proposed structure be supported on shallow spread-type footings and slab on-grade bearing directly on densified native soils or on properly compacted structural fill. Detailed recommendations concerning the required site preparation and for foundation design are presented in the following sections of this report.

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Post-construction moisture increases in the supporting soils would cause some differential foundation movements. Therefore, moisture protection is considered an important design consideration and should be reflected in overall site grading and drainage details as recommended in the Moisture Protection section of this report.

#### **FOUNDATIONS**

Shallow spread-type footings bearing directly on densified native soils, or on properly compacted structural fill, are recommended for the support of the wellhouse structure. An allowable soil bearing pressure of 2,500 pounds per square foot is recommended for footing design. The bearing pressure applies to full dead load plus realistic live loads and can be safely increased by one-third for totals loads including wind and seismic forces.

Exterior footings should be established a minimum of 2.5 feet below lowest adjacent grade while interior footings should extend at least 12 inches below finished floor elevation. The minimum recommended width of continuous footings is 16 inches while the minimum recommended width of isolated spot footings is 2.0 feet.

All bearing surfaces should be cleaned of all loose, disturbed material prior to placement of structural fill or concrete. All foundation systems should be adequately reinforced to aid in redistributing loads and to minimize the effects of differential settlement.

Maximum settlements of foundations designed and constructed as recommended herein are estimated not to exceed  $\frac{3}{4}$  inch for the in-situ soil moisture contents or compaction moistures introduced during construction. Differential settlements are not expected to exceed  $\frac{1}{2}$  inch. Significant moisture post-construction increases could create additional settlements and, thus, the moisture protection provisions presented in a following section of this report are considered important.

#### **LATERAL LOADS**

Resistance to lateral forces will be provided by soil friction between the base of the footings and tank floors and the soil and by passive earth resistance against the sides of the footings and stem walls. A coefficient of friction of 0.40 should be used for computing the lateral resistance between bases of footings and floor of the tanks and the soil. With backfill placed as recommended in the site grading section of this report, a passive soil resistance equivalent to a fluid weighing 325 pounds per cubic foot should be used for analysis.

#### **SLABS ON GRADE**

Adequate support for any lightly loaded slab-on-grade floors will be provided by the densified native soils or structural fill when placed and compacted as

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recommended in a following section of this report. Thus, the use of granular base for structural support of lightly loaded slabs is not considered necessary. However, should it be desired as a working surface, a course of granular base can be placed beneath concrete floor slabs.

Heavily loaded floor slabs bearing directly on densified native soils or on structural fill can be designed using a modulus of subgrade reaction (k) value of 200 pci. This value can be increased to 300 pci provided the slab bears on a 6-inch thickness of granular base placed and compacted beneath the slabs. Where granular base is used beneath the slabs, it should have a plasticity index of no greater than 3 and meet the following grading requirements.

Sieve Size Square Openings	Percent Passing by Dry Weight
1 Inch	100
¾ Inch	85-100
No. 4	45-95
No. 200	0-10

The granular base should be compacted to at least 95 percent of maximum dry density as determined in accordance with ASTM D1557.

The granular base will act as a capillary barrier but will not totally eliminate the rise of moisture to the slabs. If floor coverings are proposed which are highly sensitive to moisture, it is recommended the slab be placed in accordance with the procedures recommended by the American Concrete Institute (ACI 302.1R-04).

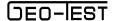
#### SITE GRADING

The following general guidelines should be included in the project construction specifications to provide a basis for quality control during site grading. It is recommended that all structural fill and backfill be placed and compacted under full-time engineering observation and testing in accordance with the following:

- 1) After site clearing and grubbing and any required excavations or overexcavations, the exposed soils throughout the building area should be densified prior to placement of foundations or structural fill.
- Densification of the native soils should consist of scarifying to a depth of 8 inches, moisture conditioning to the optimum moisture content or above and compacting the area to a minimum of 95 percent of maximum dry density as determined in accordance with ASTM D-1557. If the exposed cut surface cannot be scarified due to large gravels or cobbles, compaction of the exposed cut surface will not be necessary provided the surface is cleaned of all loose, disturbed material prior to construction or placement of structural fill.

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The results of this investigation indicate that most of the existing soils will be suitable for use as structural fill, however, some blending and removal of oversized cobbles/boulders may be required. Any imported material should also meet the specification for structural fill presented below. All structural fill or backfill material should be free of vegetation and debris and contain no rocks larger than 4 inches. Gradation of the structural fill or backfill material, as determined in accordance with ASTM D-422, should be as follows:

Size	Percent Passing
4-inch	100
No. 4	60 - 100
No. 200	10 - 45

- 4) The plasticity index should be less than 15 when tested in accordance with ASTM D-4318.
- be placed in 8-inch loose lifts and compacted with approved compaction equipment. Lifts should be reduced to 4 inches if hand-held compaction equipment is used. All compaction of fill or backfill shall be accomplished to a minimum of 95 percent of the maximum dry density as determined in accordance with ASTM D-1557. The moisture content of the backfill during compaction should be within 2 percent of the optimum moisture content.
- 6) Tests for degree of compaction should be determined by the ASTM D-1556 method or ASTM D-6938. Observation and field tests should be performed during fill and backfill placement by the geotechnical engineer to assist the contractor in obtaining the required degree of compaction. If less than 95 percent is indicated, additional compaction effort should be made with adjustment of the moisture content as necessary until 95 percent compaction is obtained.

#### **PIPELINE INSTALLATION**

## Wellhouse to NM-522

The results of this investigation, as well as the fact that there is an existing waterline that is assumed to have been installed using open trench construction, indicate that the surficial soils can be readily excavated using normal earth moving and excavation equipment. However, cobbles may be encountered in some areas which may require an oversized excavator bucket. In addition, most of the excavated soils will be suitable for use as backfill above pipe bedding and embedment materials. Some of the excavated soils may be

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used as pipe bedding, provided they are screened and conform to the pipe manufacturer's recommendations.

#### NM-522 Crossing

Excavation of the soils encountered in boring nos. 8 & 9, for jack and bore pits may be readily accomplished using normal earthmoving equipment, however, below about 4 feet in boring no. 9 were very dense and strongly cemented soils or weathered sandstone bedrock and may require additional effort to excavate as encountered, however, it is not anticipated that heavy ripping or rock breaking equipment will be required. It has been our experience that if we can drill through the material, then it can be excavated using a large backhoe or medium sized excavator.

Based on the results of this investigation, jack and bore method to install the pipe under NM-522 can be done, however, the gravelly generally cohesionless soils are not the ideal soils for pipe jacking methods since they have a risk of collapse. It is anticipated that the gravels should not create impedance during pipe jacking, however, based on our observation of adjacent road cuts near the site and large gravel and some cobbles observed in the pothole near B-8, some cobbles may be present below the roadway which could make the installation difficult. In general, a cohesive soil free of cobbles and boulders are the most favorable soils for jack and bore methods.

### NM-522 Alignment

Based on the results of this investigation, horizontal directional drilling along the shoulder of NM-522 is considered feasible but will be difficult. The pipeline will be installed mainly through man-made fill soils used to create the roadway embankment as well as some native alluvial deposits. It should be noted that there could be some oversized material in the roadway embankment which could result in refusal of directional drilling equipment.

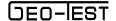
The surficial soils encountered in the borings can also be readily excavated using normal earth moving and excavation equipment. In addition, most of the excavated soils will be suitable for use as backfill above the pipe bedding and embedment materials. Some of the excavated soils may be used as pipe bedding provided, they are screened and conform to the pipe manufacturer's recommendations.

### Old Highway 3 & Vigil Road Alignment

Based on the results of this investigation, horizontal directional drilling beneath the roadway will be very difficult due to the presence of large gravels/cobbles and possible boulders and construction debris. Thus, open trench installation methods should probably be used in this area of the alignment. The surficial soils encountered in the upper 6 to 8 feet in the borings can be readily excavated using normal earth moving and excavation equipment. However, excavation of these soils may require an oversized bucket. In addition, most

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of the excavated soils will be suitable for use as backfill above the pipe bedding and embedment materials. Some of the excavated soils may be used as pipe bedding provided, they are screened and conform to the pipe manufacturer's recommendations.

#### **Rio Hondo Crossing**

Based on the results of this investigation, crossing of the Rio Hondo using Horizontal Directional Drilling techniques in the upper 8 to 10 feet will be very difficult due to the presence of large gravels/cobbles/ boulders and possible construction debris. However, provided the entry and exit pits penetrate these soils, drilling through the clayey soils beneath this zone can be readily accomplished and, thus, is considered feasible.

#### **EXCAVATIONS**

Excavated slopes for foundation and utility construction should be designed and constructed in accordance with OSHA 29 CFR 1926, Subpart P, and any applicable state or local regulations. Temporary slopes less than 10 feet will not require shoring so long as the slopes do not exceed 1.5 to 1 (horizontal to vertical) and spoil piles, heavy equipment or other surcharge loads are not allowed within 3 feet of the top of the slopes. Excavations for the jack and bore pits may require shoring or some type of trench box where there is limited room between the roadway and existing utilities. The contractor should be responsible for all temporary slopes excavated at the pits or along the proposed waterlines and the design of any required temporary shoring, as applicable. Shoring, bracing, and benching should be performed by the contractor in accordance with applicable safety standards.

In open trench installation, once the trench excavations are complete, and prior to the placement of piping or bedding materials, all loose or disturbed soils in the bottom of the excavations should be removed so that undisturbed native soils are exposed throughout. Bedding and pipe embedment materials to be used around the pipes should conform to the pipe manufacturer's recommendations and should be placed and compacted in accordance with project specifications, local requirements or governing jurisdiction. All soils encountered at the site are considered suitable for use as general backfill and may be used above or below the manufacturer approved embedment materials, provided all cobbles larger than 4 inches are removed and the backfill soils are inspected and approved by the geotechnical engineer. Any material to be imported as trench backfill should be tested and approved by the geotechnical engineer prior to importation or placement.

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### MOISTURE PROTECTION

As stated above, precautions should be taken during and after construction to minimize moisture increases of foundation soils. Positive drainage should be established away from the exterior walls of the structure. If necessary, to provide positive drainage, the building area should be raised above adjacent



site grades with structural fill. Backfill should be well compacted and should meet the specifications outlined in the site grading section of this report. Irrigation within 10 feet of foundations should be carefully controlled. All utility trenches leading into the structure should be backfilled with compacted fill. Special care should be taken during installation of the subfloor sewers and water lines to reduce the possibility of post-construction soil moisture increases beneath the structure.

Proper landscaping and drainage maintenance are required to preclude the accumulation of excessive moisture in the soils beneath the structure. Accumulations of excessive moisture could be harmful to some types of interior flooring, to HVAC ductwork beneath the slabs, and can weaken or cause other changes in the soils supporting the foundations. This can cause additional differential movement of foundations and can result in cosmetic or structural damage to structure.

If any water line leaks or if irrigation system leaks are detected, they should be promptly repaired. In addition, if any depressions develop from the settlement of soils in utility trenches or other areas, they should be promptly backfilled to maintain the grade so that surface water drains rapidly away from the structure.

The foregoing recommendations should only be considered minimum requirements for overall site development. It is recommended that a civil/drainage engineer be consulted more detailed grading and drainage recommendations.

#### FOUNDATION REVIEW AND INSPECTION

This report has been prepared to aid in the evaluation of this site and to assist in the design of this project. It is recommended that the geotechnical engineer be provided the opportunity to review the final design drawings and specifications in order to determine whether the recommendations in this report are applicable to the final design. Review of the final design drawings and specifications should be noted in writing by the geotechnical engineer.

In order to permit correlation between the conditions encountered during construction and to confirm recommendations presented herein, it is recommended that the geotechnical engineer be retained to perform continuous observations and testing during the earthwork portion of this project. Observation and testing should be performed during construction to confirm that suitable fill soils are placed upon competent materials and properly compacted, and foundation elements penetrate the recommended soils.

## **CLOSURE**

Our conclusions, recommendations and opinions presented herein are:

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- 1) Based upon our evaluation and interpretation of the findings of the field and laboratory program.
- 2) Based upon an interpolation of soil conditions between and beyond the explorations.
- 3) Subject to confirmation of the conditions encountered during construction.
- 4) Based upon the assumption that sufficient observation will be provided during construction.
- 5) Prepared in accordance with generally accepted professional geotechnical engineering principles and practice

This report has been prepared for the sole use of File Construction, specifically to aid in the design of the proposed Lower Arroyo Hondo MDWCA water system improvements to be located in Arroyo Hondo, Taos County, New Mexico, and not for the use by any third parties.

We make no other warranty, either express or implied. Any person using this report for bidding or construction purposes should perform such independent investigation as he deems necessary to satisfy himself as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project. If conditions encountered during construction appear to be different than indicated by this report, this office should be notified.

All soil samples will be discarded 60 days after the date of this report unless we receive a specific request to retain the samples for a longer period of time.

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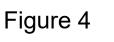














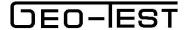


Lower Arroyo Hondo MDWCA Improvements Arroyo Hondo, New Mexico Job No. 1-20806

Figure 5



GEOTECHNICAL ENGINEERING AND MATERIAL TESTING



Date: 08/27/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

#### **GROUNDWATER DEPTH**

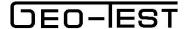
NO: 1 During Drilling: 8.0 After 24 Hours:

					SAM	MPLE			SUBSURFACE PROFILE				
	DEPTH (Ft)	700	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	nsc	DESCRIPTION	20	blo 40	N ows/ft	80
	_	<b>****</b>						AC \ & /	Asphalt & Base Course		- · <u>†</u>	‡ -	
	- - 5 — -			SS SS	7-11-14 25 8-20-27 47	4		\ABC /	SILTY GRAVEL with SAND (GM), fine to coarse grained, some cobbles and boulders, non-plastic to low plasticity, medium dense to dense, slightly moist to moist, dark brown/black  *very difficult drilling below 4'		25 +	- · <del> </del> - - · <del> </del> - - · <del> </del> - - · <del> </del> - - · <del> </del> -	- · + - · - - · + - · - - · + - · - - · + - · -
,22	-								<u> </u>	 	/. <u>¦</u>	_ + -	
ST.GDT 10/6,	10 —			SS	17-12-8 20	16		SC-SM	SILTY, CLAYEY SAND with GRAVEL, fine to medium grained, some cobbles, low plasticity, very moist to wet, light brown	20	0 - 1	- · <del> </del> - · · <del> </del> - · · · · · · · · · · · · · · · · · ·	- · <del> </del> - · - - · <del> </del> - · -
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22	15 —  15 —  20 —  25 —			SS SS	4-7-10 17 6-12-12 24 8-11-15 26	26 23	106	CL-ML	SILTY CLAY with SAND, low plasticity, moderately firm to firm, very moist, brown		- · · · · · · · · · · · · · · · · · · ·	- · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · † - · · † - · · † - · · † - · · † - · · † - · · † - · · † - · · † - · · † - · · † - · · † - · · † - · · · ·	
OG OF TEST	- - -				20				STOPPED SAMPLER AT 24' STOPPED SAMPLER AT 25.5'		- · <del> </del>   - · <del> </del>	- · <del> </del> - · · <del> </del> - · · <del> </del> - · · · · · · · · · · · · · · · · · ·	- · <del> </del> - · -   - · <del> </del> - · -

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler

UD - Undisturbed



Date: 08/27/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

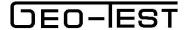
#### **GROUNDWATER DEPTH**

NO: 2 During Drilling: 8.0 After 24 Hours:

					SAN	MPLE			SUBSURFACE PROFILE					
	DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	nsc	DESCRIPTION	20		N lows/1		30
		-						AC &/	Asphalt & Base Course		_ !			! 
	5 -			AC SS	4-13-12 25	4		ABC /	SILTY, CLAYEY SAND with GRAVEL (SC-SM), fine to coarse grained, some cobbles and boulders, low plasticity, medium dense to very dense, slightly moist, dark brown/black  *very difficult drilling below 5'		25   - +       	· + · · · · · · · · · · · · · · · ·	· · - · - · · · · · · · · · · ·	
EST.GDT 10/6/22	10 -			SS	4-10-6 16	16		SC-SM	SILTY, CLAYEY SAND with GRAVEL, fine to coarse grained, low plasticity, wet, brown/light brown	     	- <del> </del> - <del> </del> 6- <del> </del> - +	· <del> </del> · <del> </del> · <del> </del> · <del> </del>	· -	   
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22	15 -			SS	12-7-10 17	19	108			<del> </del>   <del> </del> • <del> </del> 1	- · <del> </del> · · · <del> </del> · · · · · · · · · · · · · · · · · · ·	· - · + · - · · + · - · · † · + · +		- · -     - · -     - · -     - · -     - · -
806-LOWER ARROYO	20 -			SS	8-10-14 24	17		CL-ML	SILTY CLAY with SAND, low plasticity, moderately firm to firm, wet to very moist, brown		24 + - 1 24 + - 1	· + · + · + · †		- · -     - · -     - · -     - · -
TEST BORING 1-20	25 -	-		SS	3-7-13 20	21			STOPPED AUGER AT 24' STOPPED SAMPLER AT 25.5'		- <del> </del> - <del> </del> 120 +	· — · ‡ - — · ‡ - — · ‡	- — · - - — · - - — · -	; - · -   ! - · -   ! - · -
LOG 0F									STOLLED SANIFELIX AT 23.3	+	- · <del> </del>	· – · † - – · †		<u> </u> - · -

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

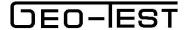
#### **GROUNDWATER DEPTH**

NO: 3 During Drilling: NONE After 24 Hours:

				SAI	MPLE			SUBSURFACE PROFILE				
DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	USC	DESCRIPTION	20	blov 40	N ws/ft 60	80
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA.GPJ. GEO TEST.GDT. 10/6/22  5			AC		2		AC & ABC FILL	Asphalt & Base Course  SILTY GRAVEL with SAND (GM), fine to coarse grained, some cobbles/boulders, non-plastic, dense, slightly moist to dry, dark brown/black  *very difficult drilling below 2'  AUGER REFUSAL ON VERY DENSE GRAVELS/COBBLES/BOULDER AT 6.5'				

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

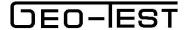
#### **GROUNDWATER DEPTH**

NO: 4 During Drilling: NONE After 24 Hours:

				SAI	MPLE			SUBSURFACE PROFILE			
DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	nsc	DESCRIPTION	bl 20 4	N lows/ft 0 60 8	30
ST.GDT 10/6/22 10 –			AC		2		AC & ABC	Asphalt & Base Course  SILTY GRAVEL with SAND (GM), fine to coarse grained, some cobbles/boulders, non-plastic, dense, slightly moist to dry, dark brown/black  *very difficult drilling below 4'  AUGER REFUSAL ON VERY DENSE GRAVELS/COBBLES/BOULDER AT 8'			
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA GPJ GEO TEST GDT 10/6/22 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- - - - - - -										
LOG OF TEST BORING 1-20806											

**LEGEND** 

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

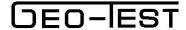
#### **GROUNDWATER DEPTH**

NO: 5 During Drilling: 8.0 After 24 Hours:

					SA	MPLE			SUBSURFACE PROFILE				
	DEPTH (Ft)	ГОС	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	nsc	DESCRIPTION	20	blov	vs/ft	80
	- - - 5 —			AC		6		FILL	SILTY SAND with GRAVEL, fine to coarse grained, some cobbles, non-plastic to low plasticity, slightly moist, brown				
3DT 10/6/22	- - 10 —			AC SS	3-4-4 8	21		CL	SANDY CLAY, low plasticity, soft, moist to very moist, brown		- · <del> </del> -	· + - - · + - - · + -	
3PJ GEO TEST.(	- - -								STOPPED AUGER AT 9' STOPPED SAMPLER AT 10.5'		- · <del> </del> - - · <del> </del> - - · <del> </del> -	· + - · · + - · · + -	· + - · - · + - · -
NDO MDWCA.G	15 — -										- · <del> </del> -	·	
3806-LOWER ARROYO HO	- 20 — -										- · <del> </del> - · · <del> </del> - · · <del> </del> - · · · · · · · · · · · · · · · · · ·	- · <del> </del> - - · <del> </del> - - · <del> </del> - - · <del> </del> -	
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA,GPJ GEO TEST.GDT 10/6/22	25 — - - -											· ; =	

**LEGEND** 

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

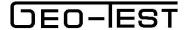
#### **GROUNDWATER DEPTH**

NO: 6 During Drilling: NONE After 24 Hours:

					SAI	MPLE			SUBSURFACE PROFILE	
	DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft 20 40 60 80
	- - - 5 — -			AC AC		7		FILL	SILTY GRAVEL with SAND, fine to coarse grained, some cobbles, non-plastic to low plasticity, slightly moist to moist, brown/light brown	
DT 10/6/22	- 10 —			SS	6-8-6 14	17		CL	SANDY CLAY, low plastcity, soft to moderately firm, moist to very moist, brown	
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22	  15 - - - 20 -				17				STOPPED AUGER AT 9' STOPPED SAMPLER AT 10.5'	
LOG OF TEST BOR	25 — - - -	-								

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

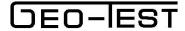
#### **GROUNDWATER DEPTH**

NO: 7 During Drilling: NONE After 24 Hours:

					SA	MPLE			SUBSURFACE PROFILE				
	DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	USC	DESCRIPTION	20	N blow 40	s/ft	80
	-			AC		8		FILL	CLAYEY SAND with GRAVEL (SC), fine to coarse grained, low plasticity, slightly moist to moist, brown		- <del> </del> -	. !	<u>+</u> - · -
	- 5 — - -			AC		16 17		SC	CLAYEY SAND, fine grained, low plasticity, moist to very moist, brown				
.GDT 10/6/22	10 —			SS	4-6-8 14	9		GM	SILTY GRAVEL with SAND, fine to coarse grained, non-plastic, medium dense, moist, brown		- <del> </del> -	· <del> </del> - ·	
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22	- - - 15 — -								STOPPED AUGER AT 9' STOPPED SAMPLER AT 10.5'			· + - · · + - · · · + - · · · · · · · ·	+ - ·
20806-LOWER ARROYO	20 — -											· + - ·	+ - ·
LOG OF TEST BORING 1-2	25 — - - -												

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

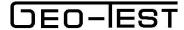
#### **GROUNDWATER DEPTH**

NO: 8 During Drilling: NONE After 24 Hours:

					SAI	MPLE			SUBSURFACE PROFILE	
	DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	USC	DESCRIPTION	N blows/ft 20 40 60 80
	- - - 5 —			SS SS	5-3-2 5 3-3-1	7		FILL	SILTY GRAVEL with SAND, fine to coarse grained, non-plastic, loose, slightly moist to moist, brown	
DT 10/6/22	- - - - 10 —			AC SS	4 16-10-16 26	6		GM	SILTY GRAVEL with SAND, fine to coarse grained, non-plastic, medium dense, slighty moist to moist, brown	
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22	- - - 15 —				20				STOPPED AUGER AT 9' STOPPED SAMPLER AT 10.5'	
VER ARROYO HONDO M	- - - 20 —									
T BORING 1-20806-LOV	- - - 25 —									
LOG OF TES	- - -	-								

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/26/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

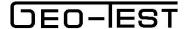
#### **GROUNDWATER DEPTH**

NO: 9 During Drilling: NONE After 24 Hours:

					SAI	MPLE			SUBSURFACE PROFILE					
	DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pdf)	usc	DESCRIPTION	2		N olow 10	s/ft 60	80
	-			AC		7		SC-SM	SILTY, CLAYEY SAND, fine to medium grained, non-plastic to low plasticity, loose to medium dense, slightly moist to moist, brown			<u> </u>		. !
	-		$\geq$	SS	7-10-13 23	11		SM	SILTY SAND, fine grained, non-plastic, medium dense, slightly moist, light brown		<u> </u>  •23  \	<u> </u>	-	· <del> </del>
/22	5 — - -			SS	11-21-27 48	6		SM	SILTY SAND with GRAVEL, fine to medium grained, non-plastic, dense to very dense, moderately to strongly cemented, slightly moist, tan/light brown  *possible Sandstone, Lama Formation				18  -   18  -   -   -   -   -	·
EST.GDT 10/6	10 —			SS	50/6"	5			STOPPED AUGER AT 9' SAMPLER REFUSAL AT 9.5'	··	     	<del>-</del> -  + -	· <del> </del> - · <del> </del> - · <del> </del> -	· <del> </del> - · -   · <del> </del> - · -   · + - · -
LOG OF TEST BORING 1-20808-LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22	- -											<del>-</del>	· † -	· <del>†</del> - · - · <del>†</del> - · -
HONDO MDW	15 — - -											+ - + - ! _		· + - · -
WER ARROYO	20 —											 	. + -	
G 1-20806-LO	-										!  -	! + - ! + -	. <del> </del> -	
TEST BORIN	25 —										· · · · · · · · · · · · · · · · · ·			· + - · -
L0G 0F		-									· ·     · ·	+ - - -	. + -	. +

#### **LEGEND**

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed



Date: 08/27/2022 Project No: 1-20806

Elevation: Type: 2.25" I.D. HSA

## LOG OF TEST BORINGS

#### **GROUNDWATER DEPTH**

NO: 10 During Drilling: NONE After 24 Hours:

		SAMPLE						SUBSURFACE PROFILE				
DEPTH (Ft)	907	SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	nsc	DESCRIPTION		N blows/ft 20 40 60		80
5			AC		2		GM	SILTY GRAVEL with SAND, fine to coarse grained, some cobbles and boulders, non-plastic, very dense, slightly moist to dry, tan/brown/light brown  *very difficult drilling from the surface				
TEST.GDT 10/6/22 01	-							AUGER REFUSAL ON VERY DENSE COBBLES/BOULDERS AT 7'		· + -	· + - · · + - · · + - · · + -	
HONDO MDWCA.GPJ GEO	- - - -								· <del> </del> - · <del> </del> - · <del> </del> - · <del> </del> -	· · + - · · + - · · + - · · + -	·· + - ·· + - ·· + - ·· + - ·· + -	· ‡ - · - · ‡ - · - · ‡ - · - · ‡ - · -
20806-LOWER ARROYO H										· + -	· + - · · - + - · - + - · - + -	
LOG OF TEST BORING 1-20806-LOWER ARROYO HONDO MDWCA GPJ GEO TEST.GDT 10/6/22  C	- - - -										T =	

**LEGEND** 

SS - Split Spoon AC - Auger Cuttings UD/SL - Undisturbed Sleeve AMSL - Above Mean Sea Level CS - Continuous Sampler UD - Undisturbed

## **SUMMARY OF LABORATORY RESULTS**

							SIEVE ANALYSIS PERCENT PASSING										
TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
1	3.0		3.7														
1	5.0	GM	10.0	30	7	18	24	33	45	51	62	69	86	100			
1	10.0		15.6														
1	15.0	CL	25.5	30	10	87	97	99	100								
1	20.0		22.9														
1	25.0		22.1														
2	2.5	SC-SM	3.7	22	6	17	22	30	45	61	78	87	97	100			
2	10.0	SC-SM	15.5	27	7	30	39	51	71	83	90	96	100				
2	15.0		18.9														
2	20.0		17.4														
2	25.0	CL-ML	21.0	24	5	85	91	94	97	99	100						
3	3.3		1.5														
4	2.5	GM	2.5	NP	NP	12	16	21	32	42	58	66	79	84	96	100	
2 2 2 3 4 4 5 5 6 6 6	6.5		1.6														
5	2.5		5.5														
5	7.5	CL	21.0	30	13	63	72	81	92	96	99	100					
6	2.5	SM	7.0	NP	NP	19	25	36	51	61	76	82	95	100			
6	7.5		8.9														
6	10.0		17.3														

**DEO-IEST** 

LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Lower Arroyo Hondo MDWCA Water System Improvements

Location: Arroyo Hondo, New Mexico

## **SUMMARY OF LABORATORY RESULTS**

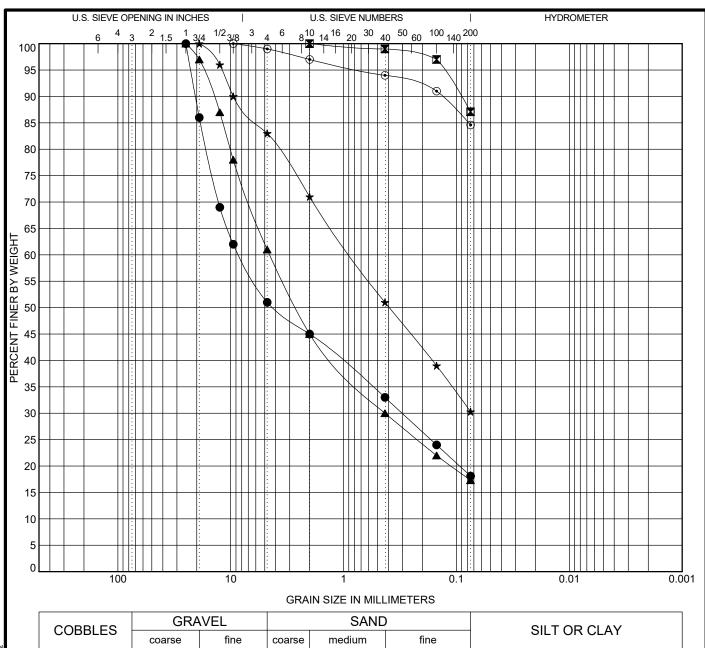
ſ													EVE ANAL					
Ī	TEST HOLE	DEPTH (FEET)	UNIFIED CLASS	(%) MOIST	LL	PI	NO 200	NO 100	NO 40	NO 10	NO 4	3/8"	1/2"	3/4"	1"	1 1/2"	2"	4"
	7	1.0		7.6														
	7	3.5	SC	15.9	33	13	45	51	61	75	86	96	100					
	7	7.5		16.7														
	7	10.0		9.4														
I	8	3.0		6.8			_		_		_							
	8	5.0		6.5											_			
	8	7.5	GM	5.6	NP	NP	15	20	29	39	46	62	70	100				
0/6/22	8	10.0		6.6														
LGDT 1	9	1.3	SC-SM	7.0	23	5	26	33	45	65	77	87	91	93	100			
O TEST	9	3.0	SM	11.2	NP	NP	34	57	84	95	98	100						
GPJ GE	9	5.0	SM	6.3	NP	NP	17	27	45	70	80	90	92	100				
DWCA.	9	9.0		5.2														
NDO M	10	3.5	GM	1.8	NP	NP	13	16	22	34	51	74	81	90	96	100		
LOWER ARROYO HONDO MDWCA.GPJ GEO TEST.GDT 10/6/22																		

**DEO-IEST** 

LL = LIQUID LIMIT
PI = PLASTICITY INDEX
NP = NON PLASTIC or NO VALUE

Project: Lower Arroyo Hondo MDWCA Water System Improvements

Location: Arroyo Hondo, New Mexico



COBBLES	GRA	VEL		SAND	)	SUTORCIAV
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAT

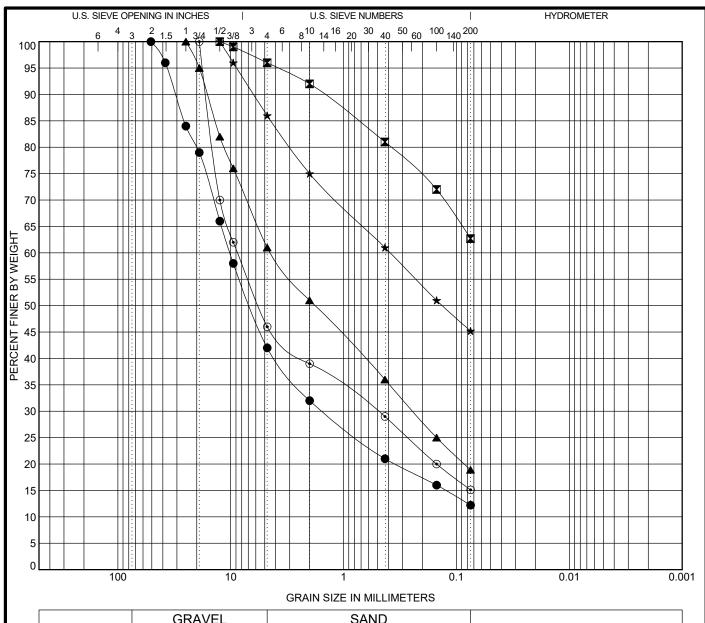
10/4	S	Spec	imen Identification		Cla	ssification			LL	PL	PI	Сс	Cu
.GDT	•	1	5.0		SILTY GRAV	/EL with SAN	ND(GM)		30	23	7		
GEO TEST.GDT	X	1	15.0		LEA	N CLAY(CL)			30	20	10		
3E0	▲	2	2.5	SILTY,	CLAYEY SA	ND with GR	AVEL(SC-SM	l)	22	16	6		
GPJ (	*	2	10.0	SILTY,	CLAYEY SA	ND with GR	AVEL(SC-SM	l)	27	20	7		
VCA.	•	2	25.0		SILTY CLAY	with SAND(	CL-ML)		24	19	5		
MDV	S	Spec	imen Identification	D100	D60	D30	D10	%Grav	el %	6Sand	%Si	lt 9	6Clay
NDO	•	1	5.0	25	8.375	0.303		49.0		32.9		18.1	
OHC	X	1	15.0	2				0.0		12.9		87.1	
ROY		2	2.5	25	4.5	0.43		39.0		43.7		17.3	
RAF	*	2	10.0	19	0.859			17.0		52.7		30.3	
OWE	•	2	25.0	9.5				1.0		14.4		84.6	



## **GRAIN SIZE DISTRIBUTION**

Project: Lower Arroyo Hondo MDWCA Water System Improvements

Location: Arroyo Hondo, New Mexico



COBBLES	GRA	VEL		SAND		SILT OD CLAV
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAT

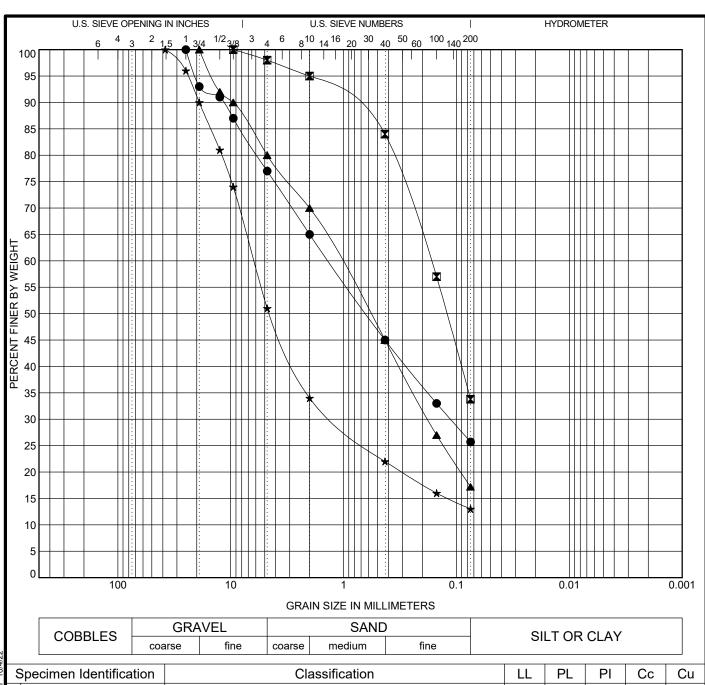
<del>-</del>												
10/4/	S	pecimen Identification		Cla	assification			LL	PL	PI	Сс	Cu
.GDT	•	4 2.5		SILTY GRAV	/EL with SAN	ND(GM)		NΡ	NP	NP	4.48	202.65
TEST.GDT	×	5 7.5		SANDY I	LEAN CLAY(	CL)		30	17	13		
GEO	▲	6 2.5		SILTY SAND	with GRAV	EL(SM)	I	NΡ	NP	NP		
.GPJ	*	7 3.5		CLAY	EY SAND(SC	5)	,	33	20	13		
VCA.	•	8 7.5		SILTY GRAV	/EL with SAN	ND(GM)	I	NΡ	NP	NP		
MDV	S	pecimen Identification	D100	D60	D30	D10	%Grave	l %	Sand	%Si	It %	6Clay
NDC	•	4 2.5	51	10.175	1.512		58.0		29.8		12.2	
OHO.		5 7.5	12.5				4.0		33.3		62.7	
ROY	▲	6 2.5	25	4.356	0.242		39.0		42.1		18.9	
ER AF	*	7 3.5	12.5	0.387			14.0		40.8		45.2	
LOWER ARROYO HONDO MDWCA	•	8 7.5	19	8.712	0.501		54.0		30.9		15.1	



## **GRAIN SIZE DISTRIBUTION**

Project: Lower Arroyo Hondo MDWCA Water System Improvements

Location: Arroyo Hondo, New Mexico



10/4	S	Specimen Identification		Classification						PI	Сс	Cu
GEO TEST.GDT	•	9 1.3	SILTY,	CLAYEY SA	ND with GR	AVEL(SC-SM	1)	23	18	5		
TEST	X	9 3.0		SILT	Y SAND(SM)			NP	NP	NP		
3EO	•	9 5.0		SILTY SAND	with GRAVI	EL(SM)		NP	NP	NP		
	*	10 3.5		SILTY GRAV	/EL with SAN	ID(GM)		NP	NP	NP		
VCA.												
MDV	S	Specimen Identification	D100	D60	D30	D10	%Grav	∕el %	6Sand	%Sil	lt %	6Clay
NDO	•	9 1.3	25	1.362	0.113		23.0		51.3		25.7	
OHO	X	9 3.0	9.5	0.169			2.0		64.2		33.8	
ROY	<b>A</b>	9 5.0	19	1.081	0.179		20.0		62.8		17.2	
OWER ARROYO HONDO MDWCA.GPJ	*	10 3.5	38	6.23	1.198		49.0		38.0		13.0	
OWE												



## **GRAIN SIZE DISTRIBUTION**

Project: Lower Arroyo Hondo MDWCA Water System Improvements

Location: Arroyo Hondo, New Mexico



## **Unconfined Compression**

**Undisturbed Cylindrical Sample** 

Project
Job #
Sample
Description of Soil

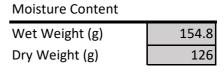
Lower Arroyo Hondo WSI	
1-20806	
Boring 1 @ 20 ft	

Clay with Sand (CL)

Date 10/3/2022

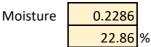
Intial Height (L <sub>0</sub> )
Specimen Diameter (D <sub>0</sub> )
Weight of Specimen

2.574	in
1.498	in
155.4	grams



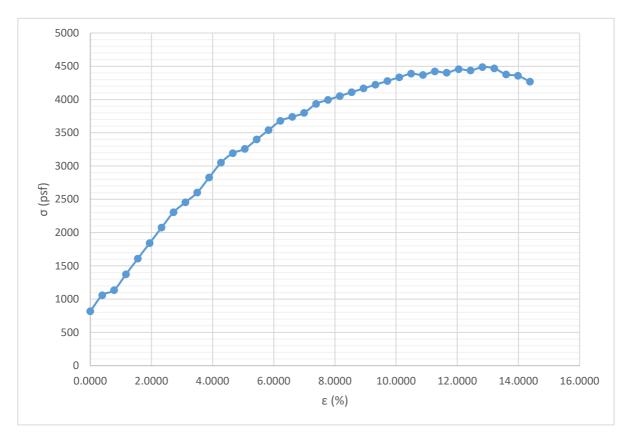
Initial Area Of Specimen Volume of Specimen

1.762437	in
4.536512	in



Unit Weight ( $\gamma$ ) Dry Unit Weight ( $\gamma_d$ )







## **Unconfined Compression**

**Undisturbed Cylindrical Sample** 

Project Job # Sample Lower Arroyo Hondo WSI 1-20806 Boring 2 @ 15 ft

Sample Description of Soil

Silty Clay with Sand

Date

10/3/2022

Intial Height (L<sub>0</sub>)

Specimen Diameter (D<sub>0</sub>) Weight of Specimen

2.971	in
1.47	in
169.5	grams

**Moisture Content** 

 Wet Weight (g)
 167.8

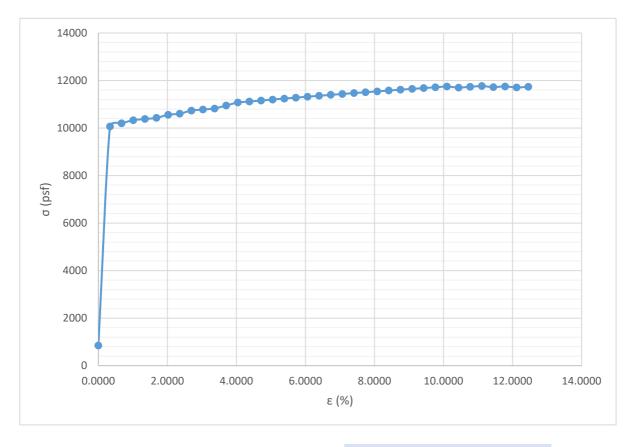
 Dry Weight (g)
 141.1

Initial Area Of Specimen
Volume of Specimen

1.697167 in<sup>2</sup> 5.042283 in<sup>3</sup> Moisture

0.1892 18.92 %

Unit Weight ( $\gamma$ ) Dry Unit Weight ( $\gamma_d$ ) 128.06 pcf 107.68 pcf



q<sub>u</sub> = 11765.98 psf

 $S_u = 5882.992 \text{ psf}$ 

# LOWER ARROYO HONDO MDWCA MASTER METER READINGS

	Meter Readings	Metered Usage	Metered Usage
Date	(gallons)	(gallons)	(acre-ft)
1/11/2021	2,315,410	-	-
1/28/2021	2,506,590	191,180	0.59
2/24/2021	2,834,740	328,150	1.01
3/12/2021	3,414,440	579,700	1.78
5/10/2021	3,827,730	413,290	1.27
6/8/2021	4,270,040	442,310	1.36
7/20/2021	4,944,260	674,220	2.07
8/7/2021	5,183,710	239,450	0.73
8/21/2021	5,374,320	190,610	0.58
9/20/2021	5,800,790	426,470	1.31
10/11/2021	6,070,230	269,440	0.83
10/15/2021	6,100,710	30,480	0.09
11/10/2021	6,716,100	615,390	1.89
12/28/2021	6,915,040	198,940	0.61
1/18/2022	7,164,480	249,440	0.77
2021 TOTAL		4,849,070	14.88
2021 AVERAGE DAILY DEMAND		13,035	

	Meter Readings	Metered Usage	Metered Usage
Date	(gallons)	(gallons)	(acre-ft)
1/18/2022	7,164,480	-	-
3/15/2022	7,885,120	720,640	2.21
4/12/2022	8,244,110	358,990	1.10
5/9/2022	8,662,840	418,730	1.29
5/16/2022	8,810,840	148,000	0.45
6/10/2022	9,275,640	464,800	1.43
7/7/2022	9,703,730	428,090	1.31
8/10/2022	103,810	400,080	1.23
9/6/2022	536,120	432,310	1.33
9/8/2022	569,780	33,660	0.10
9/19/2022	715,720	145,940	0.45
10/9/2022	1,009,420	293,700	0.90
11/1/2022	1,317,510	308,090	0.95
11/7/2022	1,341,610	24,100	0.07
12/5/2022	1,775,030	433,420	1.33
1/16/2023	2,474,180	699,150	7.59
2022 TOTAL		5,309,700	21.74
2022 AVERAGE DAILY DEMAND		14,627	

	Metered Reading	Metered Usage	Metered Usage						
Date	(gallons)	(gallons)	(acre-ft)						
1/16/2023	2,474,180		-						
1/31/2023	2,755,420	281,240	0.86						
2/14/2023	3,029,440	274,020	0.84						
2/16/2023	3,071,280	41,840	0.13						
3/29/2023	3,559,060	487,780	1.50						
4/5/2023	3,637,360	78,300	0.24						
4/10/2023	3,697,950	60,590	0.19						
4/18/2023	3,775,240	77,290	0.24						
5/1/2023	3,894,480	119,240	0.37						
5/22/2023	4,151,280	256,800	0.79						
8/10/2023	25,200	25,200	0.08						
9/19/2023	530,900	505,700	1.55						
10/20/2023	560,100	29,200	0.09						
10/21/2023	595,600	35,500	0.11						
12/4/2023	727,600	132,000	0.41						
1/2/2024	962,600	235,000	0.72						
2023 TOTAL		2,639,700	8.10						
2023 AVERAGE DAILY DEMAND		9,741							
New meter installed on 7/4/2023. No meter records from 5/23/23-8/9/2023.									

Date	Metered Reading (gallons)	Metered Usage (gallons)	Metered Usage (acre-ft)
1/2/2024	962,600		-
1/10/2024	1,042,100	79,500	0.24
3/15/2024	1,543,800	501,700	1.54
4/15/2024	1,930,300	386,500	1.19
5/25/2024	2,597,127	666,827	2.05
5/29/2024	2,609,608	12,481	0.04
5/31/2024	2,644,600	34,992	0.11
7/22/2024	3,463,700	819,100	2.51
8/6/2024	3,779,500	315,800	0.97
9/4/2024	4,223,900	444,400	1.36
11/7/2024	4,652,000	428,100	1.31
11/20/2024	5,226,900	574,900	1.76
12/27/2024	5,720,200	493,300	1.51
1/20/2025	6,032,200	312,000	0.96
2024 TOTAL		5,069,600	15.56
2024 AVERAGE DAILY DEMAND		13,202	

<sup>\*</sup>Meter readings provided by Andy Miera, water operator for Lower Arroyo Hondo MDWCA, on 3/13/2025

## **CCR Report Lower Arroyo Hondo 2023**

#### Spanish (Espanol)

Este informe contiene informacion muy importante sobre la calidad de su agua beber. Traduscalo o hable con alguien que lo entienda bien.

#### Is my water safe?

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies.

#### Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

#### Where does my water come from?

Your Water Comes from a ground water source Artesian well Located In Arroyo Hondo NM off of Highway 522 right before the Midtown Market store. 35,000 GALLONS STORAGE TANK ON A GRAVITY FED SYSTEM.

#### Source water assessment and its availability

NMED DWB has completed our source water assessment and if you would like to view this information its on file in office Conserve water, prepare for Drought,

#### Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:

microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

#### How can I get involved?

Attend Meetings, Volunteer for board, pay your bill, in a timely matter, conserve water, and know where system is located and where shutoffs are in case of emergencies

#### **Additional Information for Lead**

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Lower Arroyo Hondo Mdwca is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have

your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Lower Arroyo Hondo Mdwca is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

## **Water Quality Data Table**

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range Low High		Sample Date	Violation	Typical Source			
Inorganic Contaminants											
Barium (ppm)	2	2	.077	NA	NA	2023	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits			
Chromium (ppb)	100	100	0	NA	NA	2023	No	Discharge from steel and pulp mills; Erosion of natural deposits			
Fluoride (ppm)	4	4	.2	NA	NA	2023	No	Erosion of natural deposits; Water			

									additive which promotes strong teeth; Discharge from fertilizer and aluminum factories			
Nitrate [measured as Nitrogen] (ppm)	10	10 10		1	NA	NA	2023	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits			
Radioactive Contaminants												
Alpha emitters (pCi/L)	0	1	5	2.1	NA	NA	2022	No	Erosion of natural deposits			
Radium (combined 226/228) (pCi/L)	0	5	5	.36	NA	NA	2022	No	Erosion of natural deposits			
Uranium (ug/L)	0	3	0	12	NA	NA	2022	No	Erosion of natural deposits			
Contaminants	S	MCLG	AL	Your Water	Samp Date	le E	Samples xceeding AL	Exceeds AL	Typical Source			
Inorganic Contami	nants											
Copper - action level consumer taps (ppm)		1.3	1.3	.073	2021		0	No	Corrosion of household plumbing systems; Erosion of natural deposits			
Lead - action level a consumer taps (ppb)	-	0	15	1.2	2021	0		No	Corrosion of household plumbing systems; Erosion of natural deposits			

Unit Descr	riptions
Term	Definition
ug/L	ug/L: Number of micrograms of substance in one liter of water
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (μg/L)
pCi/L	pCi/L: picocuries per liter (a measure of radioactivity)
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.

<b>Important Drin</b>	Important Drinking Water Definitions									
Term	Definition									
MCLG	MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.									
MCL	MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.									
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.									

AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
MRDL	MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

#### For more information please contact:

Contact Name: Andy Miera Address: Po Box 294 arroyo hondo, NM 87513 Phone: 5757706291



MICHELLE LUJAN GRISHAM
Governor
HOWIE MORALES
Lt. Governor

## State of New Mexico ENVIRONMENT DEPARTMENT

#### **Drinking Water Bureau**

PO Box 5469

Santa Fe, NM 87502
Tel. 505-476-8612 • Fax 505-476-8656
www.env.nm.gov/drinking water/



JAMES C. KENNEY Cabinet Secretary

JENNIFER J. PRUETT Deputy Secretary

March 29, 2019

Debra Gonzales Lower Arroyo Hondo MDWCA, NM3505429 P.O. Box 294 Arroyo Hondo, NM 87513

**RE: 2018 Sanitary Survey Report** 

Dear Debra Gonzales:

On December 21, 2018, the New Mexico Environment Department Drinking Water Bureau (DWB) conducted a sanitary survey site visit at the Lower Arroyo Hondo MDWCA water system.

The Lower Arroyo Hondo MDWCA water system must submit a written Corrective Action Plan to DWB within 30 days of the sanitary survey cover letter date and take corrective action for any significant deficiencies found during the sanitary survey no later than 120 days after the sanitary survey cover letter date, or be in compliance with a DWB-approved schedule and plan for correcting these deficiencies [NMAC 20.7.10.100 incorporating 40 CFR §141.403(a)(4) and §141.403(a)(5)(i)-(ii)].

Failure to correct and provide documentation of significant deficiency corrections within the established timeframes, will result in treatment technique violation(s) being issued to Lower Arroyo Hondo MDWCA water system.

NMED DWB appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's drinking water. If you or members of your staff have any questions or need additional clarification concerning this report, please feel free to contact me at call 505-476-8647 or e-mail urshula.bajracharya@state.nm.us.

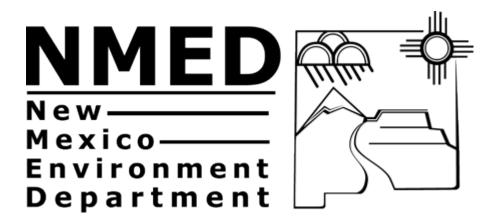
Respectfully,

Urshula Bajracharya, Compliance Officer

Drinking Water Bureau Water Protection Division

cc: Wayne Jeffs, Compliance Supervisor (electronic) Lower Arroyo Hondo MDWCA water system Area Office file

Electronic Central File



## SANITARY SURVEY REPORT

## For

# Lower Arroyo Hondo MDWCA NM3505429

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

Date: March 29, 2019

#### Prepared by:

New Mexico Environment Department 1190 St. Francis PO Box 5469 Santa Fe, NM 87502-5469 505.476.8620

### State of New Mexico Environment Department Water Protection Division Drinking Water Bureau

PO Box 5469 Santa Fe, NM 87502



This Sanitary Survey Report fulfills the requirements of New Mexico Administrative Code 20.7.10.100 incorporating 40 Code of Federal Regulations 141.21(d) (ii) (2) and 142.16(o)(2) for completing a State approved survey. The information and data were prepared by Urshula Bajracharya, Compliance Officer.

NMED APPROVING AUTHORITY:

Urshula Bajracharya, Compliance Officer

Date: 03/29/2019

#### Introduction

A sanitary survey enables the NMED Drinking Water Bureau Water (DWB) to provide a comprehensive and accurate review of the components of a water system, to assess the operating condition and adequacy of the water system, and to determine if past recommendations have been implemented effectively. The Sanitary Survey encompasses eight specific elements that are evaluated during the survey. Those eight elements are:

- Source (Protection, Physical Components, and Condition);
- Treatment
- Distribution System
- Finished Water Storage
- Pumps/Pump Facilities and Controls
- Monitoring/Reporting/Data Verification
- Water System Management/Operations
- Operator Compliance with State Requirements

Each element may not be specifically mentioned within this report; however, a significant deficiency or recommendation will be noted if any issues are discovered with any of these eight (8) elements.

As part of a sanitary survey the DWB conducted a site inspection of the Lower Arroyo Hondo MDWCA water system. The site inspection was conducted on December 21, 2018 by Urshula Bajracharya, Compliance Officer, and accompanied by Lower Arroyo Hondo MDWCA water system operator, Andy Miera. In addition to the site inspection, DWB reviewed various operational, managerial, and financial documents submitted by the Lower Arroyo Hondo MDWCA water system and conducted a review of DWB compliance files for the water system.

#### **System Description**

The Lower Arroyo Hondo MDWCA water system has approximately two hundred and four (204) year-round residents daily and is classified as a Community water system according to the New Mexico Drinking Water Regulations 20.7.10 NMAC. The water system consists of one (1) well, one (1) storage tank, and distribution system. The well is approximately one hundred and seventy-five (175) feet deep and constructed out of steel casing. The storage tank has a capacity of forty-five thousand (45,000) gallons and constructed out of bolted steel. The distribution system is comprised of 2 and 4-inch diameter PVC, there are four (4) fire hydrants and four (4) flush hydrants in a single pressure zone. The length of distribution is unknown. The water system has 80 service connections

\* Pursuant to 20.7.10.9 (A) NMAC: "The residential portion of the population shall be calculated by multiplying the number of service connections by the average household size in the county where the service connections are located. The most recent census conducted by the U.S. census bureau shall be the source of the average household size data." U.S. Census Bureau indicates average persons per household in Taos County (2013 - 2017) = 2.55. The water system reports 80 service connections which equates to a population of 204.

#### **Survey Findings**

Sanitary surveys serve as a proactive public health measure and can provide important information on a water system's design and operations, can identify minor and significant deficiencies for correction before they become major problems, and can improve overall system compliance. The following significant and minor deficiencies were identified during the sanitary survey.

#### **Significant Deficiencies:**

A significant deficiency is defined as any deficiency that is causing or has the potential to cause a threat to public health [New Mexico Administrative Code (NMAC) 20.7.10.100 incorporating 40 Code of Federal Regulations (CFR) §141.403(a)(4)]. Water systems must consult with DWB within 30 days and take corrective action for any significant deficiencies found during the sanitary survey no later than 120 days after receiving written notification of such deficiencies, or be in compliance with a DWB-approved schedule and plan for correcting these deficiencies within the same 120 day period [NMAC 20.7.10.100 incorporating 40 CFR §141.403(a)(4) and §141.403(a)(5)(i)-(ii)]. Failure to provide documentation to NMED of the significant deficiency correction, within 120 days of the date on this report, will result in a treatment technique violation of NMAC 20.7.10.100 incorporating 40 CFR Part 141 Subpart S.

A total of three (3) significant deficiencies were identified at the Lower Arroyo Hondo MDWCA water system during the survey.

1. Deficiency: (001T) No or inadequate system maps.

Regulatory Citation: 20.7.10.400.E NMAC

Concern/Description: Operation/Management. Mapping of water supply infrastructure provides a

number of benefits, including the capacity to more accurately respond to emergencies. System operations and maintenance also benefit by easily locating problems; completing repairs; and scheduling maintenance as well as the ability to identify required compliance sampling points such at Total

Coliform sampling locations.

Corrective Action: Water system needs to provide Drinking Water Bureau with a copy the water

system map.

2. Deficiency: (001K) Inadequate surface construction or missing appurtenances at well

or spring box (e.g. vent, check valve, flow meter, isolation valves, pressure

gauge, air/vac valve, etc)

a. The air relief valve was not screened

Regulatory Citation: 20.7.10.400.C NMAC

Concern/Description: Direct Contamination; Delivery; Treatment. Improper surface construction or

lack of appurtenances may allow contamination of the source, failure of pumps, damage to casings, damage to discharge lines, inability to provide adequate treatment or process control decisions, or determine water loss.

Corrective Action: Water system needs to screen the air relief valve opening and provide

photographic evidence to Drinking Water Bureau.



Air relief valve is not screened.

#### 3. Deficiency: (004K) Inadequate overflow splash pad.

**a.** The overflow pipe is not 12 to 18 inches above the splash pad.

Regulatory Citation: 40 CFR 141.403(a)(4)

Concern/Description: Delivery. Erosion of the facility site can result in a collapse of the storage

facilities which will cause a water outage.

Corrective Action: The deficiency was corrected on December 27, 2018.



Storage tank overflow is not 12 to 18 inches above ground.

#### **Minor Deficiencies:**

No minor deficiencies were identified during this sanitary survey.

#### Conclusion

The sanitary survey for the Lower Arroyo Hondo MDWCA water system was completed on December 21, 2018. Based upon the onsite inspection and review of various operational and managerial documents and of DWB compliance files, three (3) significant deficiencies were identified and no recommendations were given. The Lower Arroyo Hondo MDWCA water system must comply with the following bullets in the correction of these deficiencies.

- Upon receipt of this report, the Lower Arroyo Hondo MDWCA water system must consult with the DWB within 30 days for all significant deficiencies (i.e., provide written documentation to DWB within 30 days of receipt of this report stating how and when each significant deficiency will be addressed).
- Failure to consult with DWB within 30 days on all significant deficiencies will result in a monitoring and reporting violation of NMAC 20.7.10.100 incorporating 40 CFR Par 141 Subpart S.
- The Lower Arroyo Hondo MDWCA water system must take corrective action on all significant deficiencies and provide compliance documentation that is acceptable to DWB no later than 120 days after receiving written notification of such deficiencies OR be in compliance with a DWB approved schedule and plan for correcting these deficiencies within 120 days.
- Failure to correct any significant deficiency in accordance with the previous bullet will result in a treatment technique violation of NMAC 20.7.10.100 incorporating 40 CFR Part 141 Subpart S.
- In addition, the Lower Arroyo Hondo MDWCA must provide written documentation to the DWB within 30 days of completing corrective action for each significant deficiency. Failure to submit documentation within 30 days will result in a monitoring and reporting violation of NMAC 20.7.10.100 incorporating 40 CFR Part 141 Subpart S.

If you have any questions or need additional clarification concerning this report, please call 505-476-8647 or e-mail urshula.bajracharya@state.nm.us.



Storage tank.



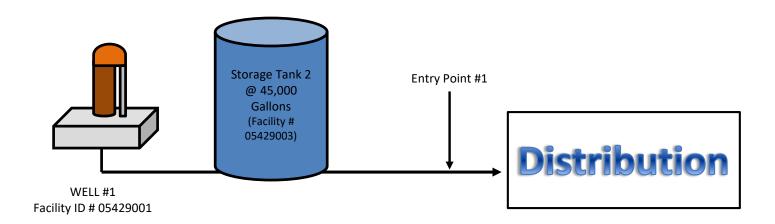
Air vent in storage tank.



### NMED - Drinking Water Bureau System Schematic

Lower Arroyo Hondo MDWCA NM3505429







# State of New Mexico ENVIRONMENT DEPARTMENT

PO Box 5469
Santa Fe, NM 87502
Tel. 505-476-8612 • Fax 505-476-8656
www.nmenv.state.nm.us/dwb



JAMES C. KENNEY Cabinet Secretary JENNIFER J. PRUETT Deputy Secretary

October 27, 2020

Debra Gonzales Lower Arroyo Hondo MDWCA, NM3505429 P.O. Box 294 Arroyo Hondo, NM 87513

Re: 2018 Sanitary Survey No Further Action Required

#### Debra Gonzales:

This letter is to inform you that the New Mexico Environment Department-Drinking Water Bureau (NMED-DWB) has received adequate compliance documentation on September 30, 2020 to resolve the significant deficiencies documented during the sanitary survey report conducted on December 21, 2018 and issued on March 29, 2019. Based on the information submitted, no further action is required concerning this survey.

NMED-DWB appreciates your assistance in this matter and your compliance efforts to ensure protection of the State's drinking water. If you or members of your staff have any questions or need additional clarification concerning this report, please feel free to contact me at 505-469-7457 or by e-mail at <a href="mailto:wayne.jeffs@state.nm.us">wayne.jeffs@state.nm.us</a>.

Respectfully,

Wayne Jeffs

Compliance Supervisor Water Protection Division Drinking Water Bureau

Wayne A Jeff

xc:

Santa Fe System file Electronic File System



# New Mexico Environment Department - Drinking Water Bureau Violation Inventory Action Form

General Informati	ion		GWR – 30 Day Signifi	icant Defi	iciency			
System Name:	Lower Arro	oyo Ho WCA	ndo Staff:	Wayne	Jeffs	Supervisor	Wayr	ne Jeffs
WSS#	NM35054	29	Data Steward:	Da	aniel Ramirez	<u> </u>	Date:	10/27/2020
Violation Type	e: <u>45 (G</u>	iWR)	Enforcement Type	SIA	SIE	Determina	ation Date:	10/27/2020
Water System Fa	cility #:	<u>000</u>		Violation	Period(s):			
Comments:				_				
SOX all significant d	eficiencies							
Violation Action								
Validat								
_	•	-	sor Approval Below)					
Delete	(Needs Area	Supervis	sor and PWSS Manager	Approval I	Below)			
A remarkal Doguirod	f- " Dalatad a	- Daiget	- J.V. alakiana					
Approval Required	for Deleted of	r Rejecti		IPERVISOF				
Approved			ANEA 30	PERVISOR	Denied			
Area Supervisor Co	mments:							
Area Supervisor	Name:					Dat	te:	
·								
Area Supervisor S	ignature:							
			PWSS GROU	JP MANA				
Approved					Denied			
PWSS Group Manag	ger Comment	:S:						
PWSS Group Ma	anager Name:	:				Dat	:e:	
PWSS Group Mar	nager Signatu	re: _						



# Taos County Fire - Rescue

1395 Weimer Rd., Taos, New Mexico 87571

Telephone: (575)737-6469 Facsimile: (575) 751-7264 www.taoscountynm.gov

**Bob Romero** District 1

To: Lower Arroyo Hondo Mutual Domestic Water Association

From: James Hampton, Taos County Fire Marshal **Subject**: Fire Protection Water Supply Requirements Date: 03/13/2025

Miguel Romero District 2

Greetings,

Darlene Vigil District 3

First off, the Taos County Fire & Rescue Department is in full support of any and all improvements to a local water system that will increase the level of fire protection for that served area.

Anjanette Brush District 4

This letter shall serve as a broad overview of the requirements for fire protection water supplies including fire hydrants. The following items are requirements to meet the minimum fire flow to be an accepted water supply system for fire operations.

Ronald Mascarenas District 5

Main water lines of at least 6-inch diameter

Brent Jaramillo County Manager Lateral lines servicing any fire hydrant at least 6-inch diameter

Michael Cordova County Fire/EMS Chief

Minimum water capacity of the holding system after daily usage and consumption of 40,000 gallons usable water

David Varela

Each fire hydrant installed have a flow rate of no less than 500 gallons per minute during maximin usage times. A flow rate of greater than 750 gallons per minute is preferred.

County EMS OPS. Chief

The spacing of hydrants shall be every 500 feet or within 500 feet of each serviced structure Fire hydrants shall have 3 feet of clear space 360 degrees around the hydrant

This again is a broad overview of the main requirements for fire protection water systems. In the event

that this project does receive funding, all the final requirements will be taken from the International Fire Code 2021 edition as adopted by Taos County Ordinance.

Please reach out with any questions you may have.

County Fire Marshal/ Fire OPS Chief

James Hampton

James Hampton

Sincerely.

Taos County Fire Marshal



#### Lower Arroyo Hondo Mutual Domestic Water Consumers Association

#### Fees & Rate Structure for Water Services Effective January 1, 2020

#### New Membership Fees:

Residential: \$2,500.00 (Includes connection to meter/service line up to \$2,000)\* Commercial: \$2,500.00 (Includes connection to meter/service line up to \$2,000)

#### Other Fees:

Disconnect/Reconnect: \$25.00 (plus any related costs)
Returned Check Fee: \$25.00 (plus amount of check)
Voluntary Deactivation/Reactivation: \$25.00 (plus any related costs)

Membership Transfer Fee: \$100.00

#### Rate Structure As Of January 1, 2020

Active Residential Rate (unmetered): \$52.00 per mo.

Active Commercial Rate (metered): \$185.64 (up to 2k gallons; Then \$.002/gal up to 15k/gals.)and .003/gal over 15k

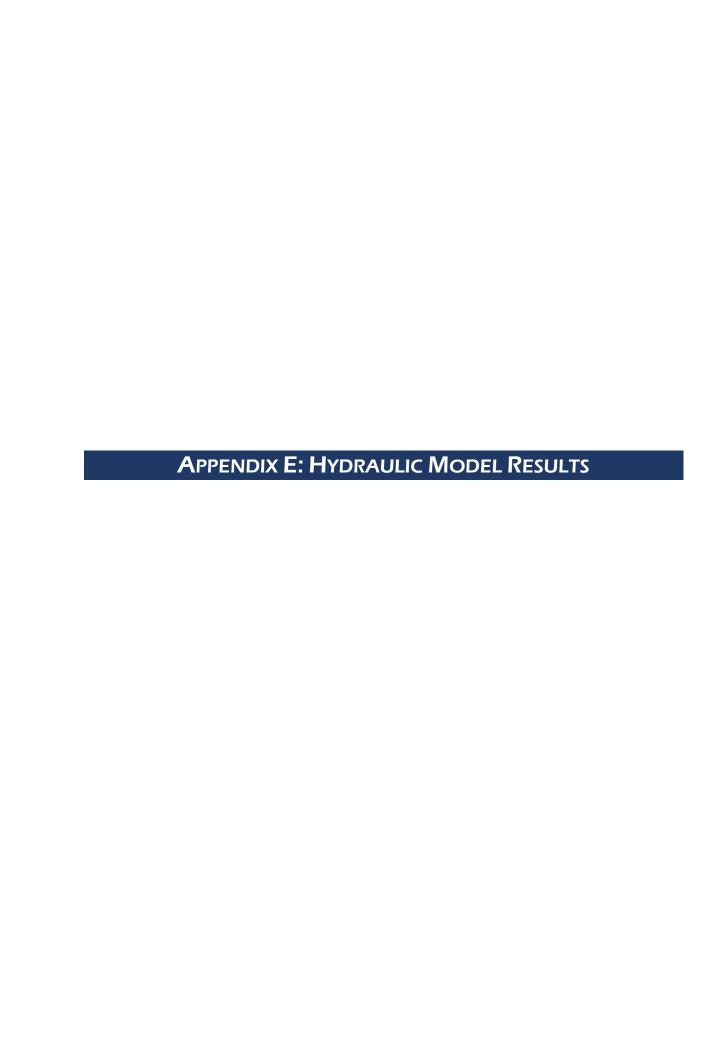
Inactive Residential Rate: \$17.00 per mo. Inactive Commercial Rate: \$17.00 per mo.

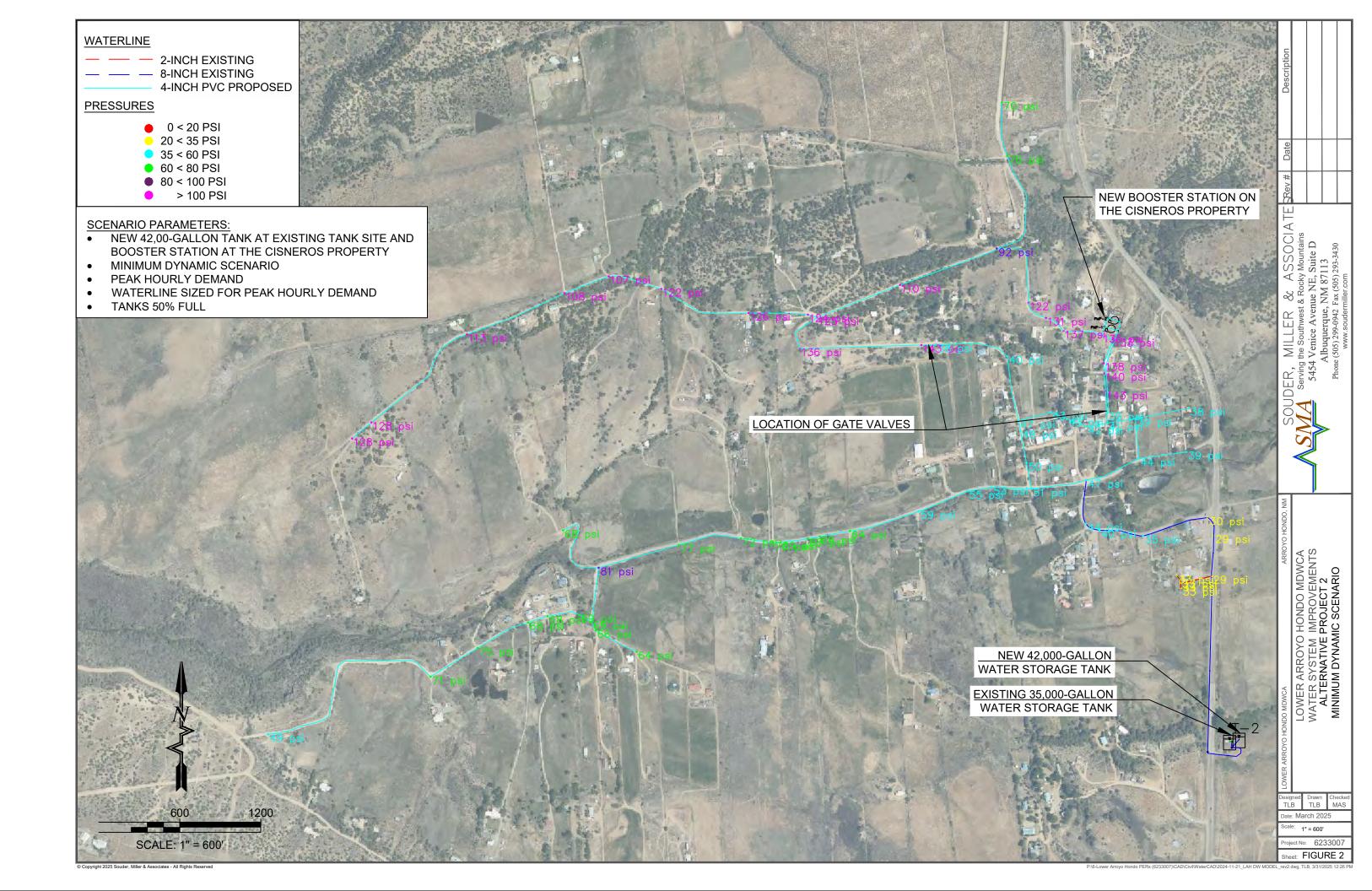
# LOWER ARROYO HONDO MDWCA INCOME AND EXPENSES

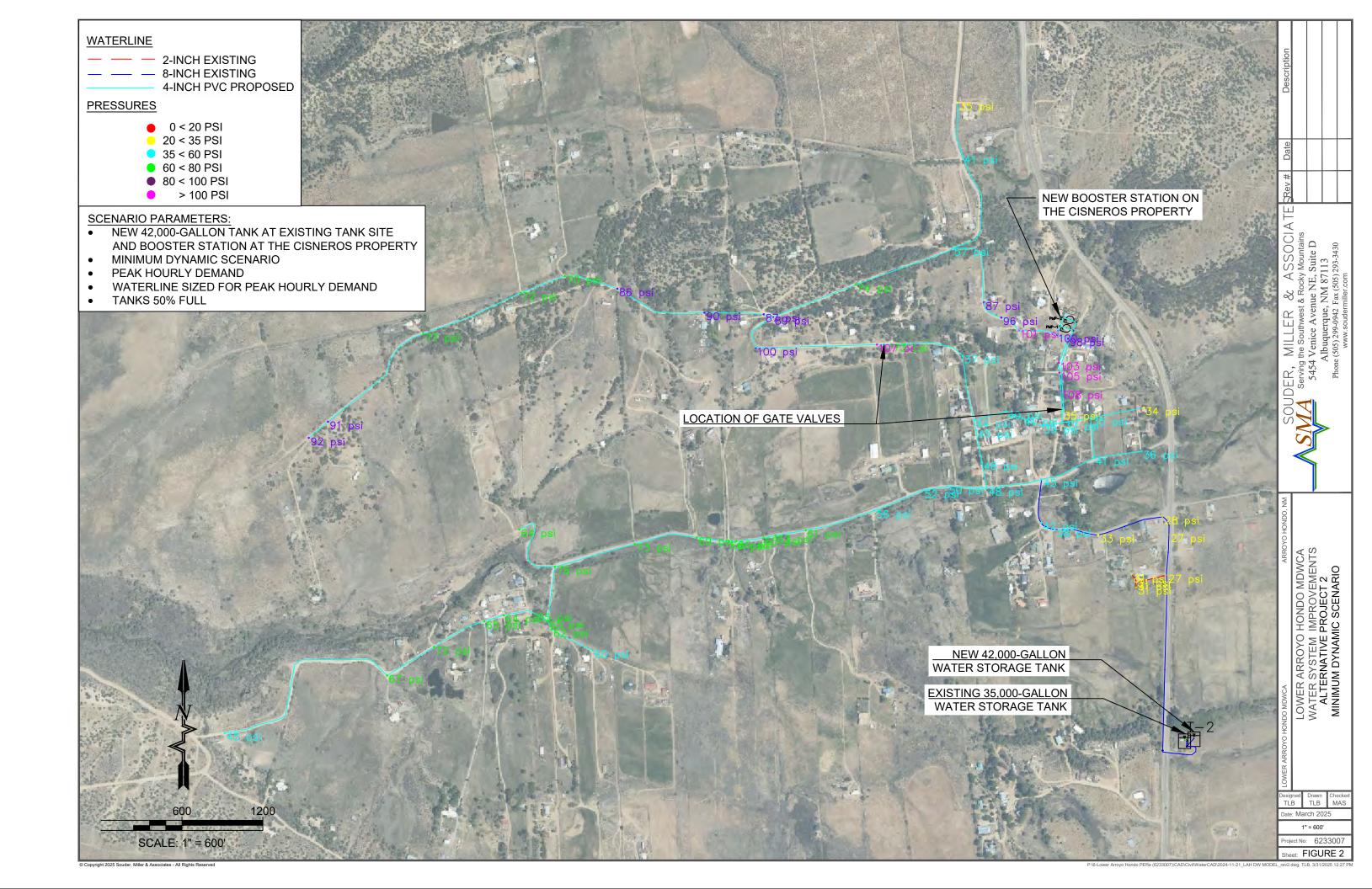
OPERATING INCOME	FY 2022	FY 2023	F	Y 2024	А١	VERAGE
Late Fees	\$ 200.00	\$ 375.00	\$	100.00	\$	225.00
Water Sales	\$ 41,174.11	\$ 42,424.11	\$	28,158.16	\$	37,252.13
Water Sales - Other	\$ 115.00	\$ -	\$	-	\$	38.33
Utilities Reconnect Fees	\$ -	\$ -	\$	-	\$	-
Transfer Fee Income	\$ 100.00	\$ 500.00	\$	-	\$	200.00
Bounced Check Fee		\$ 9.00				
Lien Fees Charged to Customers	\$ -	\$ 1	\$	-	\$	-
Membership Fees	\$ -	\$ 1	\$	-	\$	-
Other Fines and Forfeits - Other	\$ -	\$ ı	\$	-	\$	-
Interest Income	\$ 23.36	\$ 6.22	\$	3.31	\$	10.96
Capital Outlay Income	\$ -	\$ 511,589.98	\$	30,728.30	\$	180,772.76
TOTAL OPERATING INCOME	\$ 41,612.47	\$ 554,904.31	\$	58,989.77	\$	218,499.18

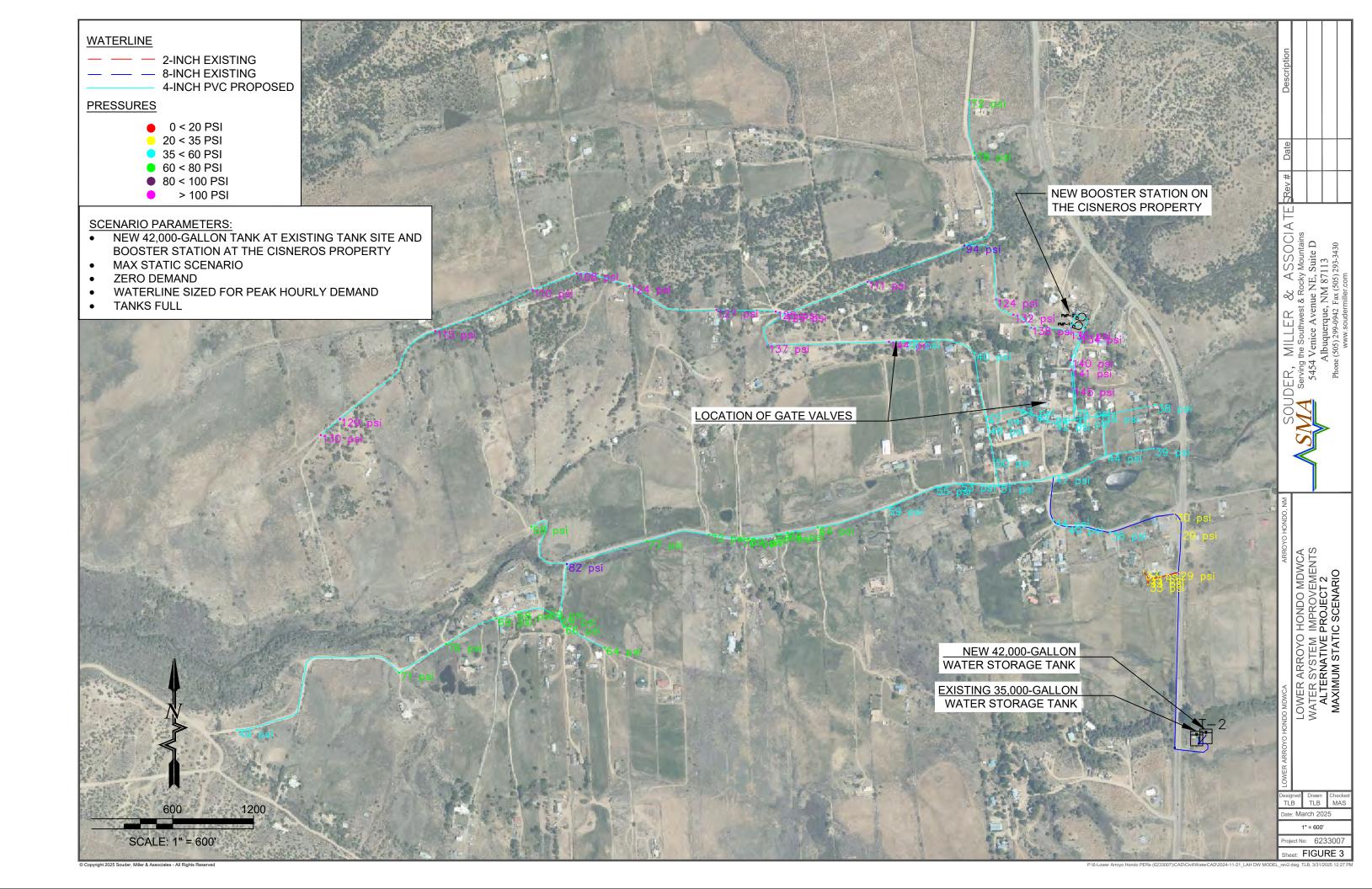
Expenses	FY 2022	FY 2023	F	FY 2024		AVERAGE	
Domain Networks	\$ 289.00	\$ -	\$	-	\$	96.33	
State Engineer Admin Fees	\$ 200.00	\$ -	\$	-	\$	66.67	
Miscellaneous	\$ -	\$ (38.45)	\$	-	\$	(12.82)	
Repairs & Maintenance Equipment	\$ 2,189.25	\$ 6,443.06	\$	4,165.09	\$	4,265.80	
Bookkeeping	\$ 8,385.41	\$ 7,411.11	\$	9,173.75	\$	8,323.42	
Operator Extras	\$ 2,088.12	\$ 543.38	\$	326.03	\$	985.84	
Water Operator	\$ 5,960.92	\$ 7,168.88	\$	5,216.40	\$	6,115.40	
Contract - Other Services	\$ -	\$ 2,951.79	\$	-	\$	983.93	
Software & Website Expenses	\$ 742.44	\$ 281.48	\$	503.55	\$	509.16	
Supplies - General Office	\$ 548.36	\$ 344.31	\$	105.63	\$	332.77	
Supplies - Furn/Fixt/Equip	\$ 222.47	\$ 200.12	\$	-	\$	140.86	
Supplies - Other	\$ -	\$ 249.12	\$	-	\$	83.04	
Insurance - General Liability/Property	\$ 3,277.00	\$ -	\$	100.00	\$	1,125.67	
Postage	\$ 429.00	\$ 525.66	\$	396.73	\$	450.46	
NM Rural Water Association Dues	\$ 157.00	\$ -	\$	314.00	\$	157.00	
Subscriptions & Dues - Other	\$ 140.00	\$ 98.00	\$	100.00	\$	112.67	
Electricity	\$ 1,731.12	\$ 1,324.80	\$	1,211.05	\$	1,422.32	
Bank Charges	\$ 328.93	\$ 121.63	\$	9.83	\$	153.46	
Board Stipends	\$ 2,819.25	\$ 3,293.85	\$	1,801.80	\$	2,638.30	
Board Training	\$ 289.20	\$ -	\$	-	\$	96.40	
Room Rental	\$ -	\$ 50.00	\$	250.00	\$	100.00	
Water Conservation Fees	\$ 50.92	\$ 111.43	\$	29.64	\$	64.00	
Miscellaneous G&A	\$ -	\$ 20.00	\$	-	\$	6.67	
Storage Unit	\$ 814.00	\$ 722.00	\$	420.00	\$	652.00	
Reconciliation Discrepancies	\$ (165.08)	81.56	\$	2.52	\$	(27.00)	
Sales Tax Paid	\$ 3,510.55	\$ 3,071.41	\$	1,069.93	\$	2,550.63	
RIP Loan Interest	\$ 2,530.99	\$ 2,530.99	\$	2,530.99	\$	2,530.99	
Other Operating Expenses	\$ 10.00	\$ -	\$	-	\$	3.33	
Other Expenses - Fixed Asset Acquisition	\$ -	\$ -	\$	2,998.34	\$	999.45	
Construction Expense - Other	\$ 1,779.90	\$ 584.76	\$	-	\$	788.22	
Other Expenses - Infrastructure	\$ -	\$ -	\$	10,283.86	\$	3,427.95	
Project Contractor	\$ -	\$ 471,362.43	\$	-	\$	157,120.81	
Engineering & Insp. Fees	\$ -	\$ 45,151.36	\$	-	\$	15,050.45	
TOTAL OPERATING EXPENSES	\$ 38,328.75	\$ 554,604.68	\$	41,009.14	\$	211,314.19	

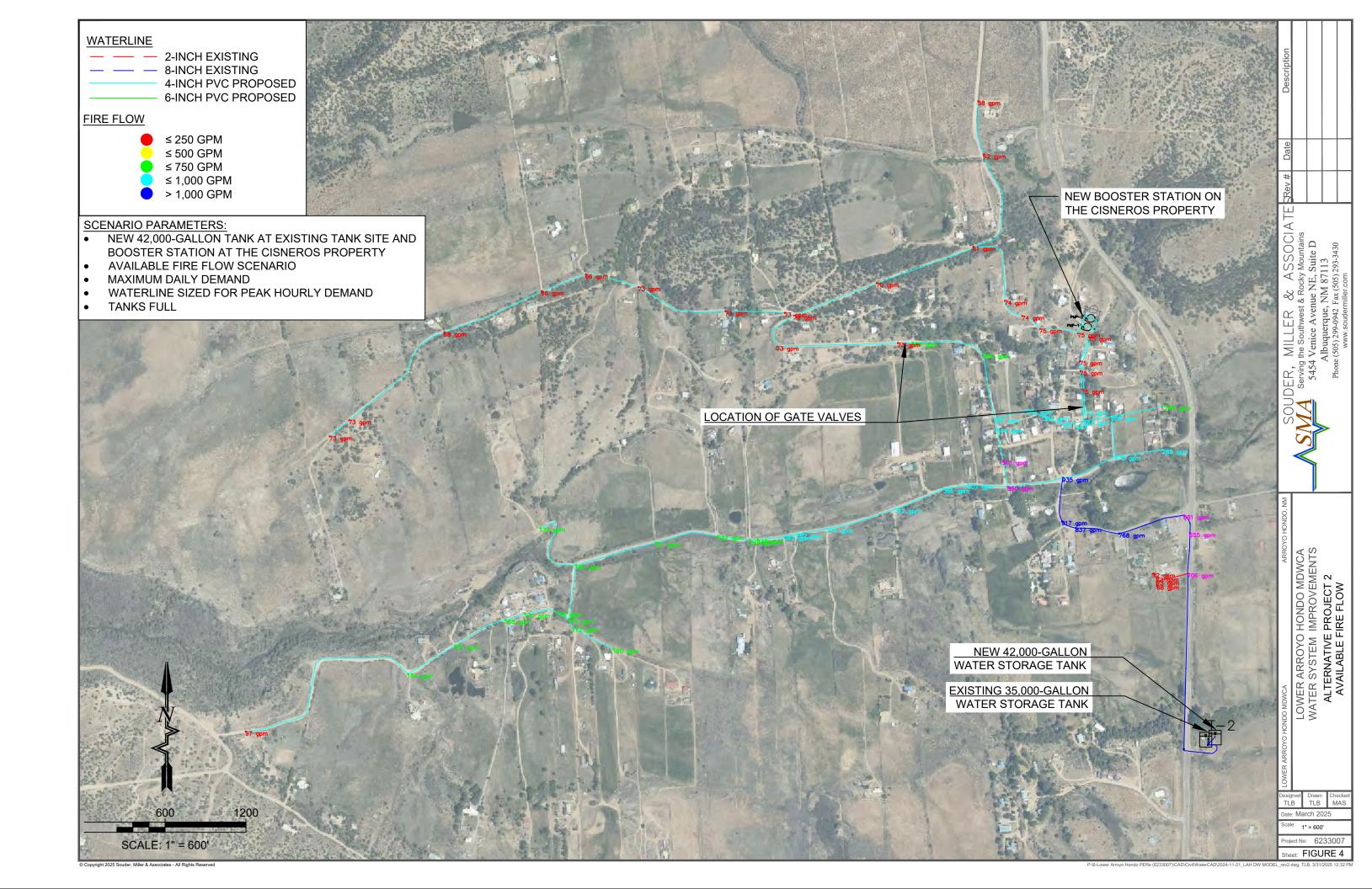
NET INCOME	\$ 3,283.72 \$	\$ 299.63	\$ 17,980.63	\$ 7,184.99
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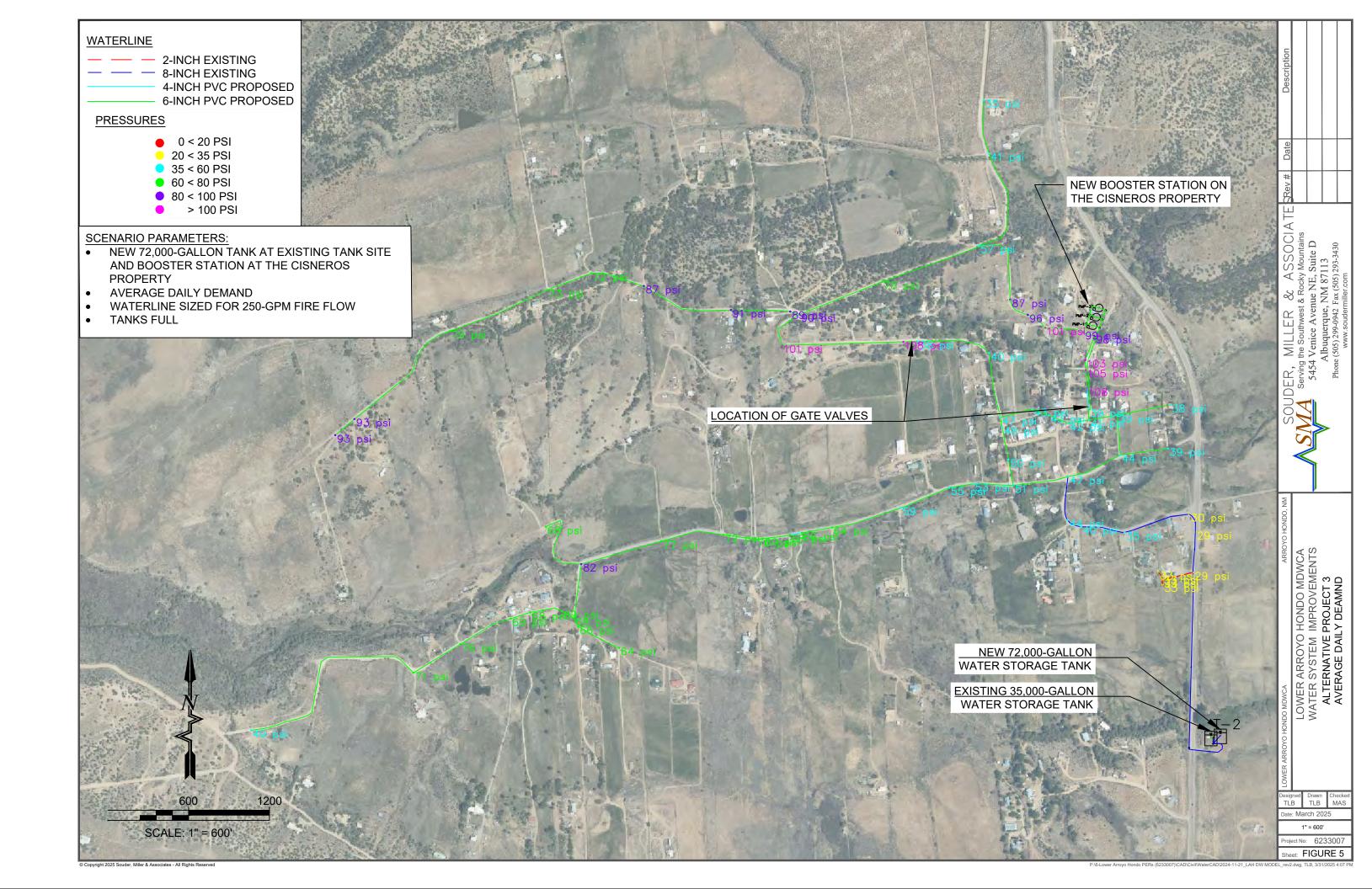


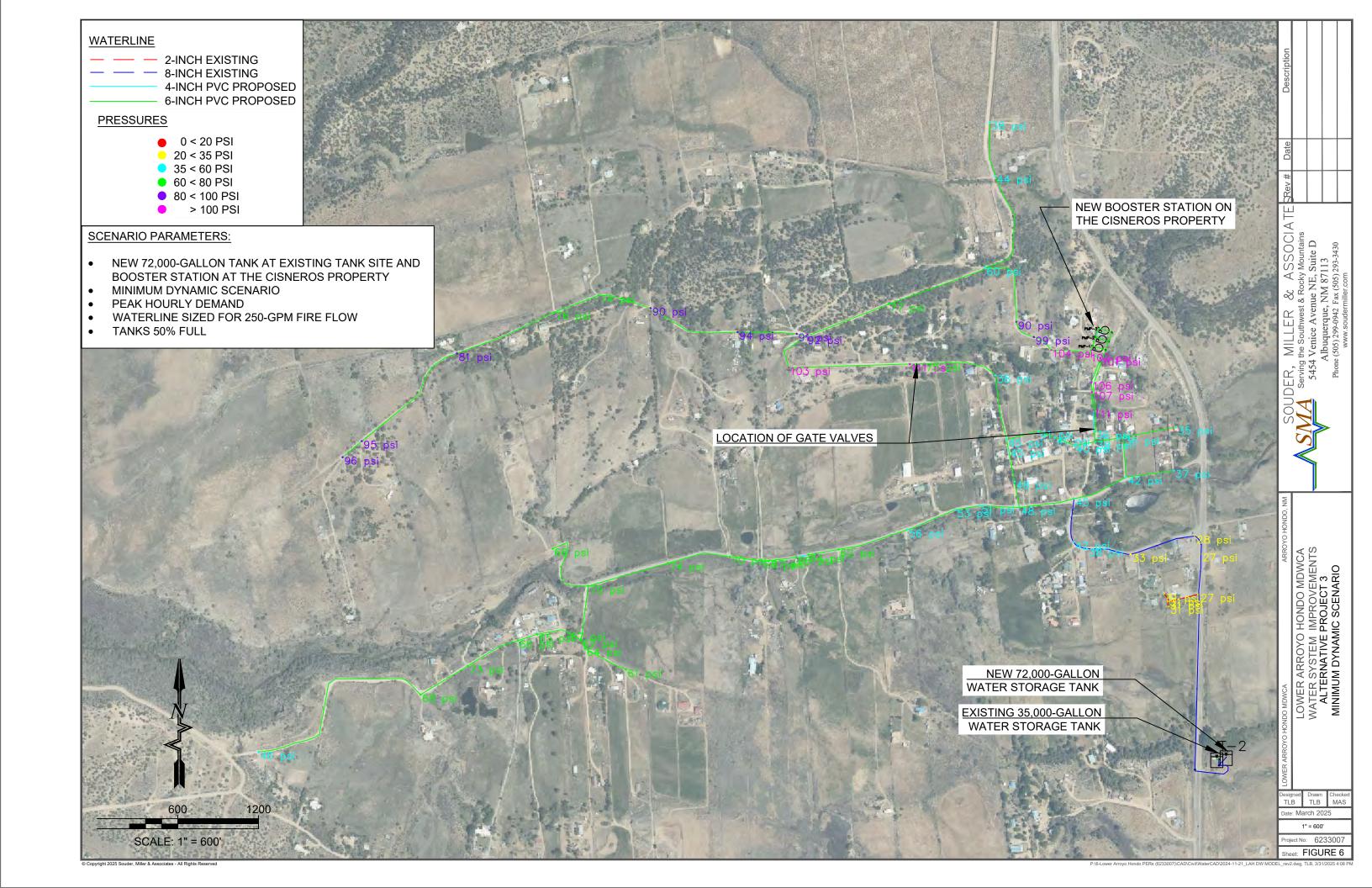


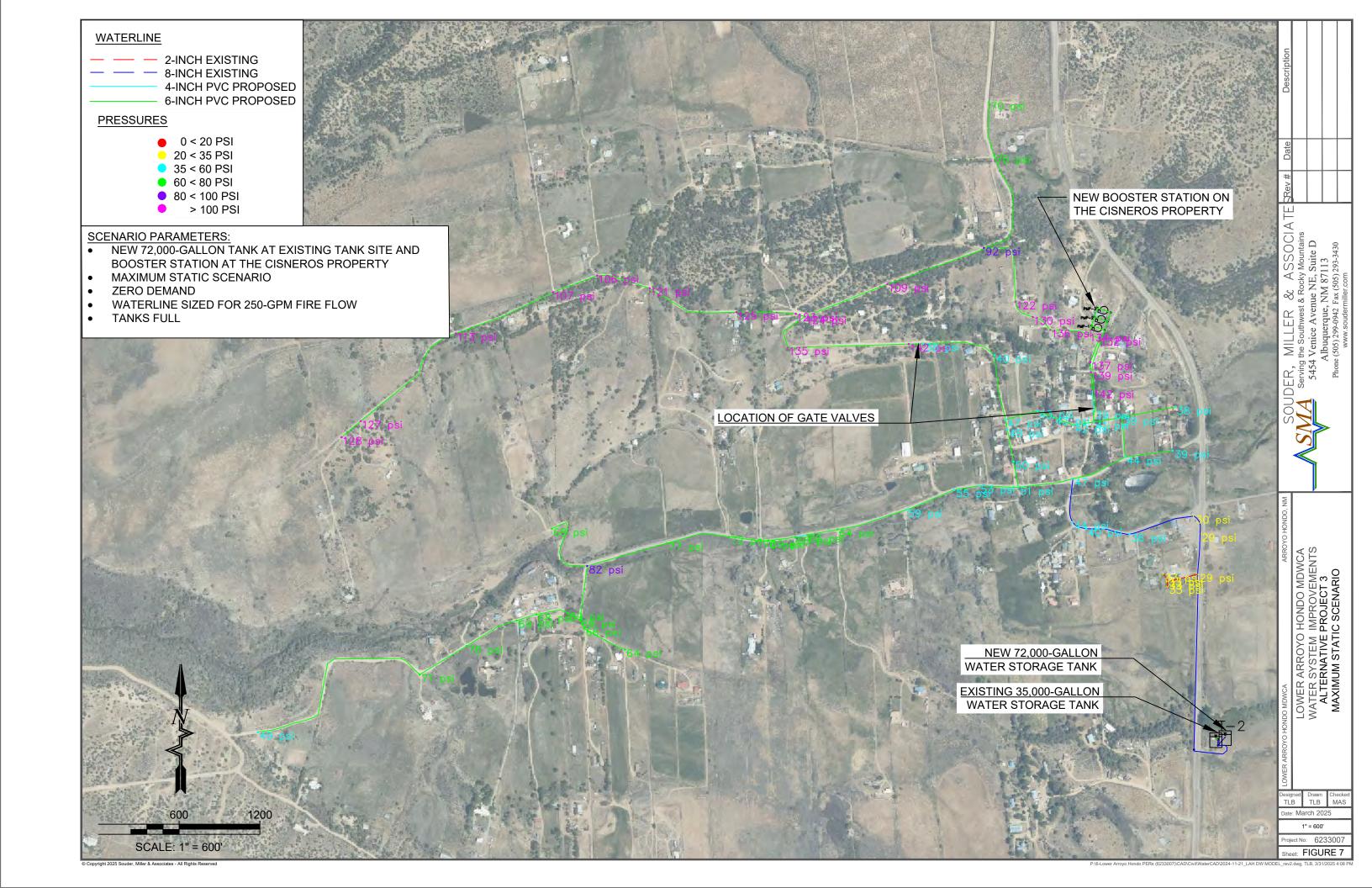


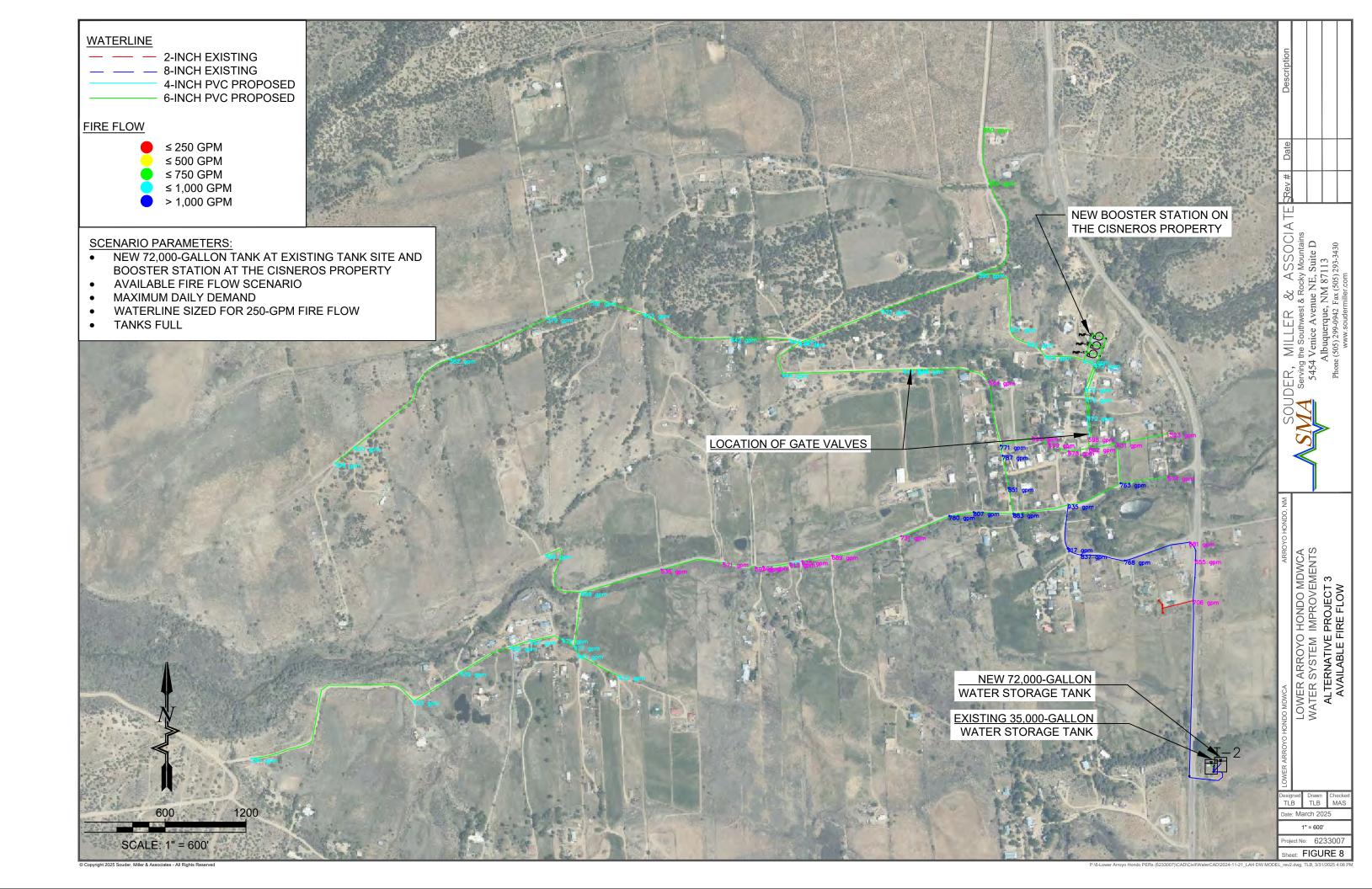


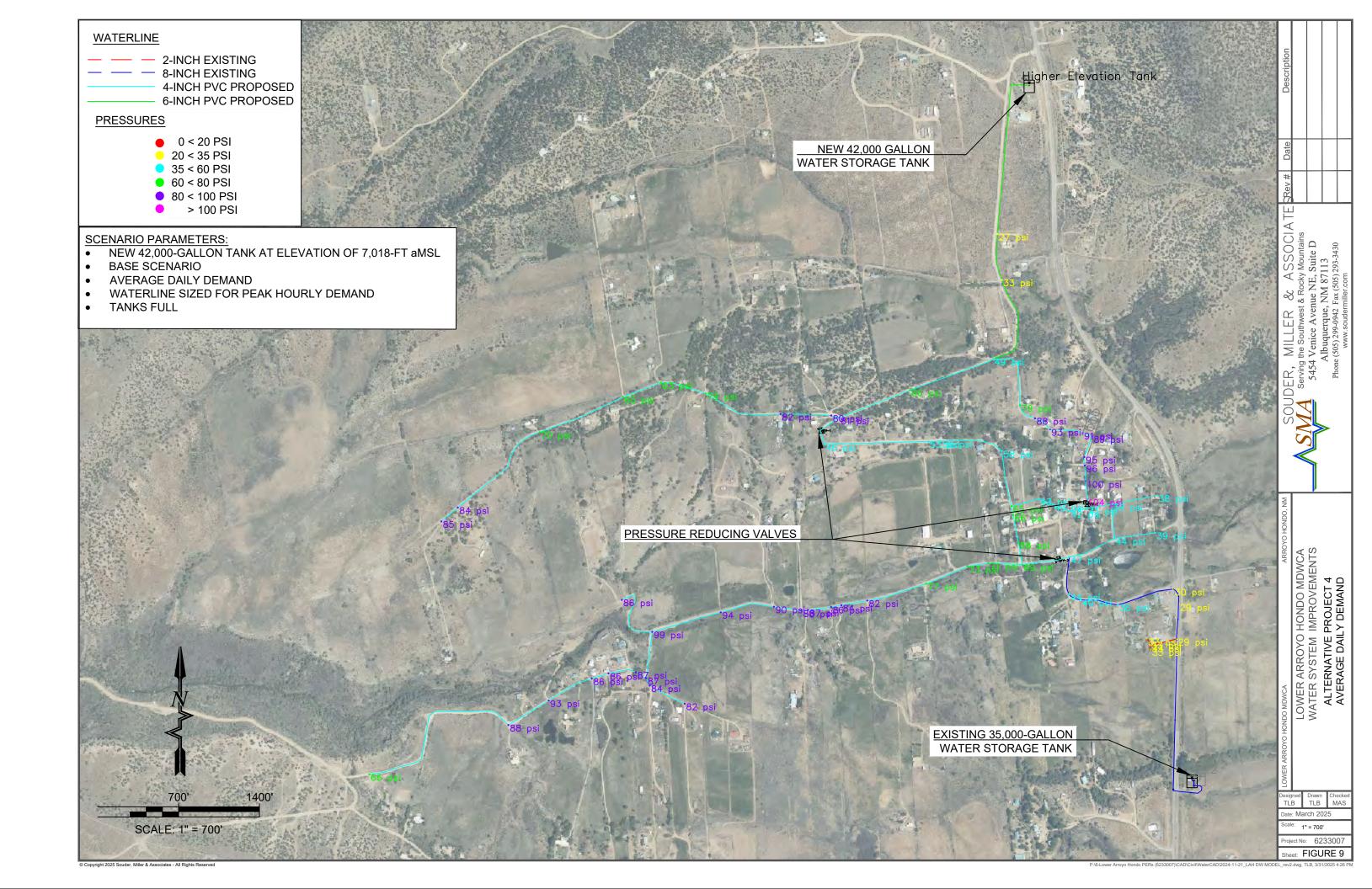


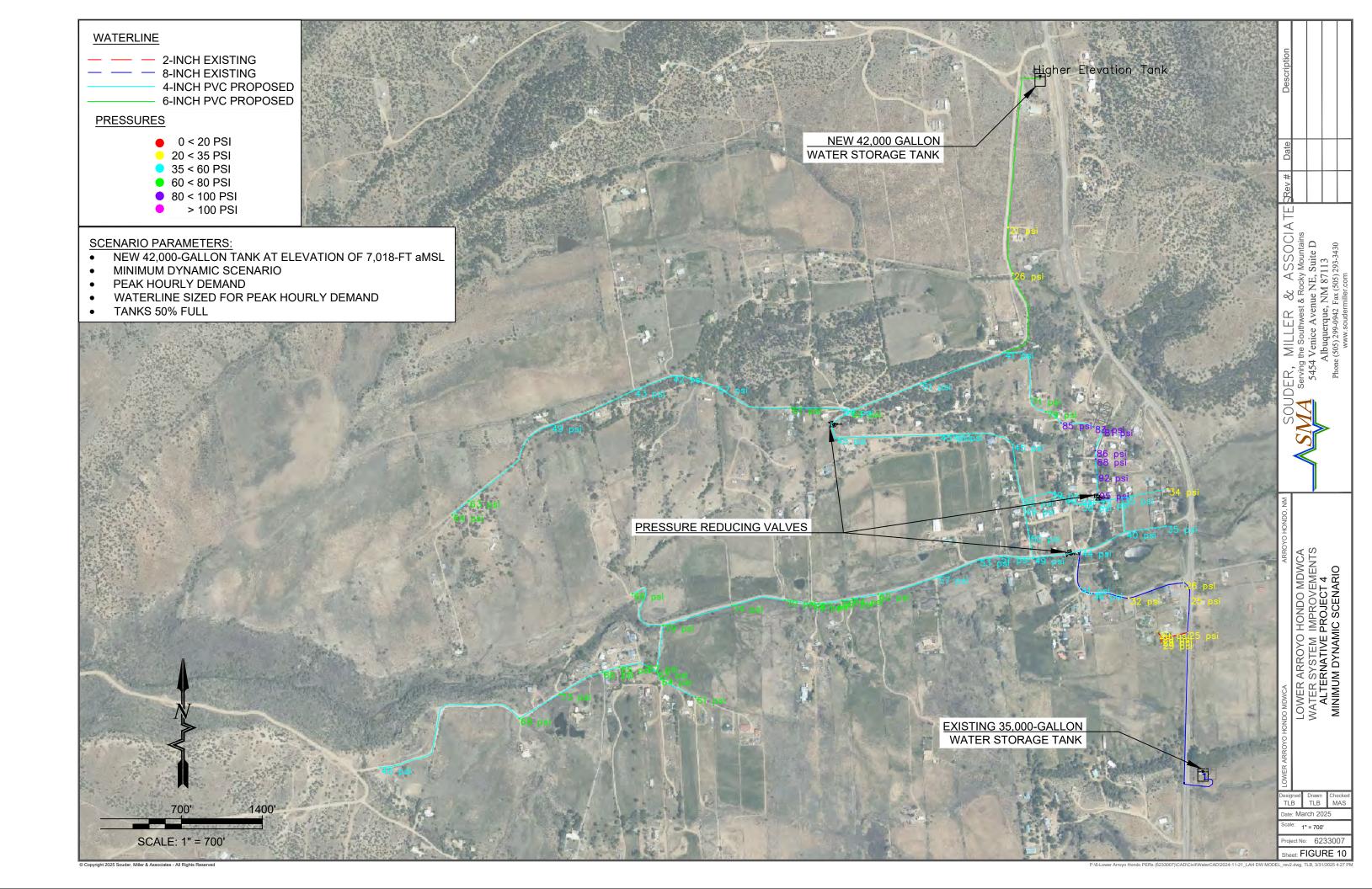


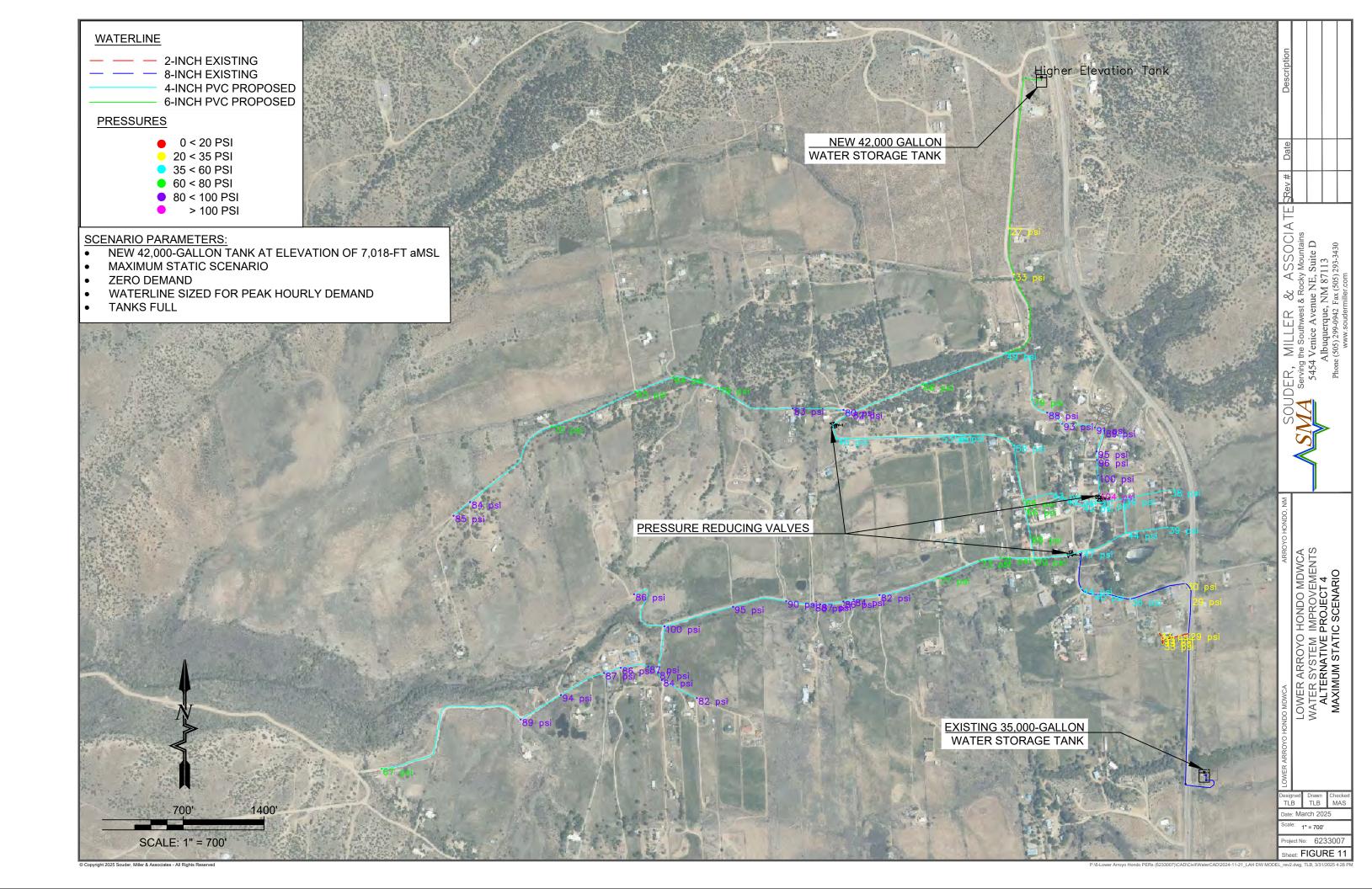


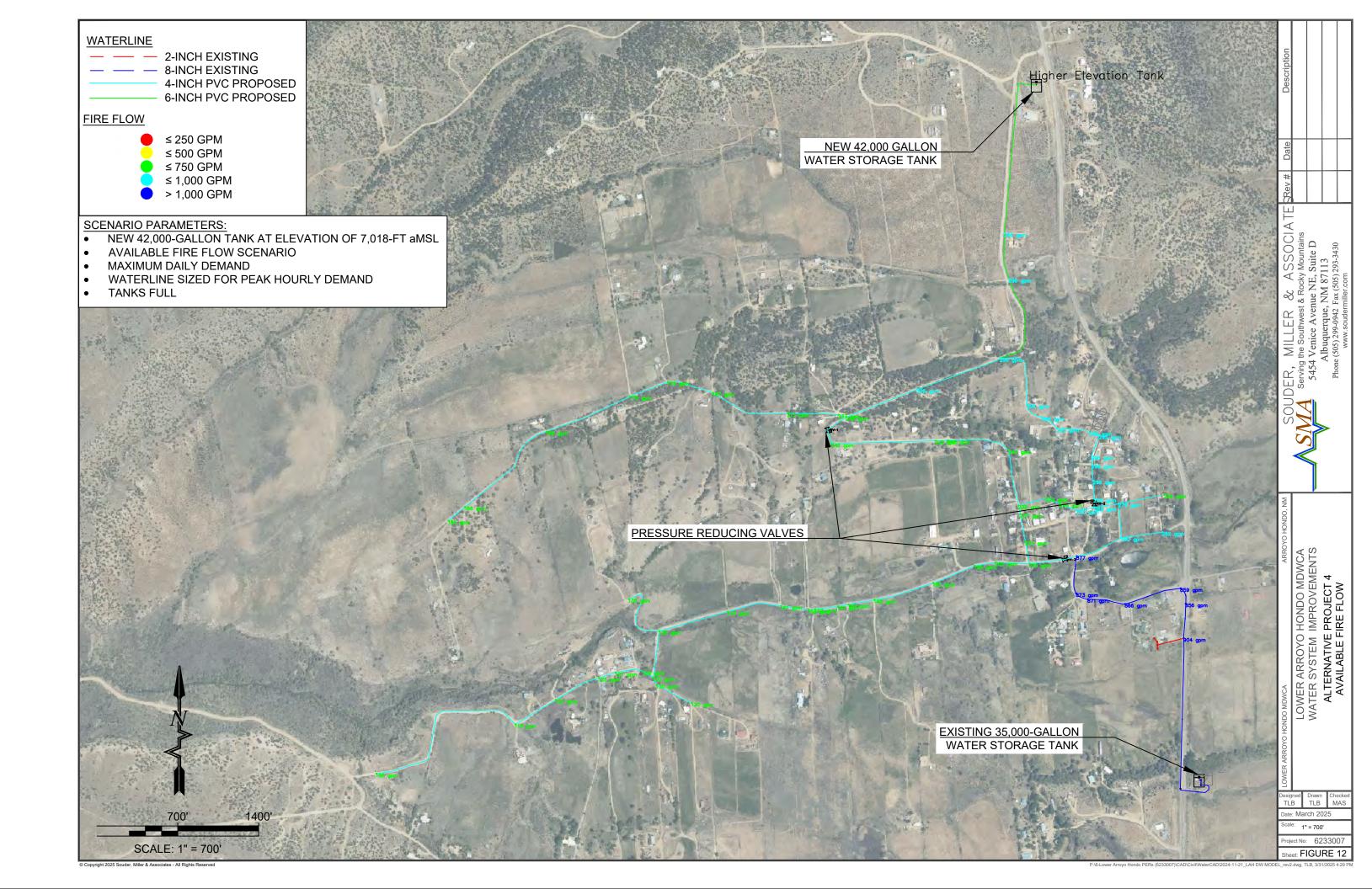


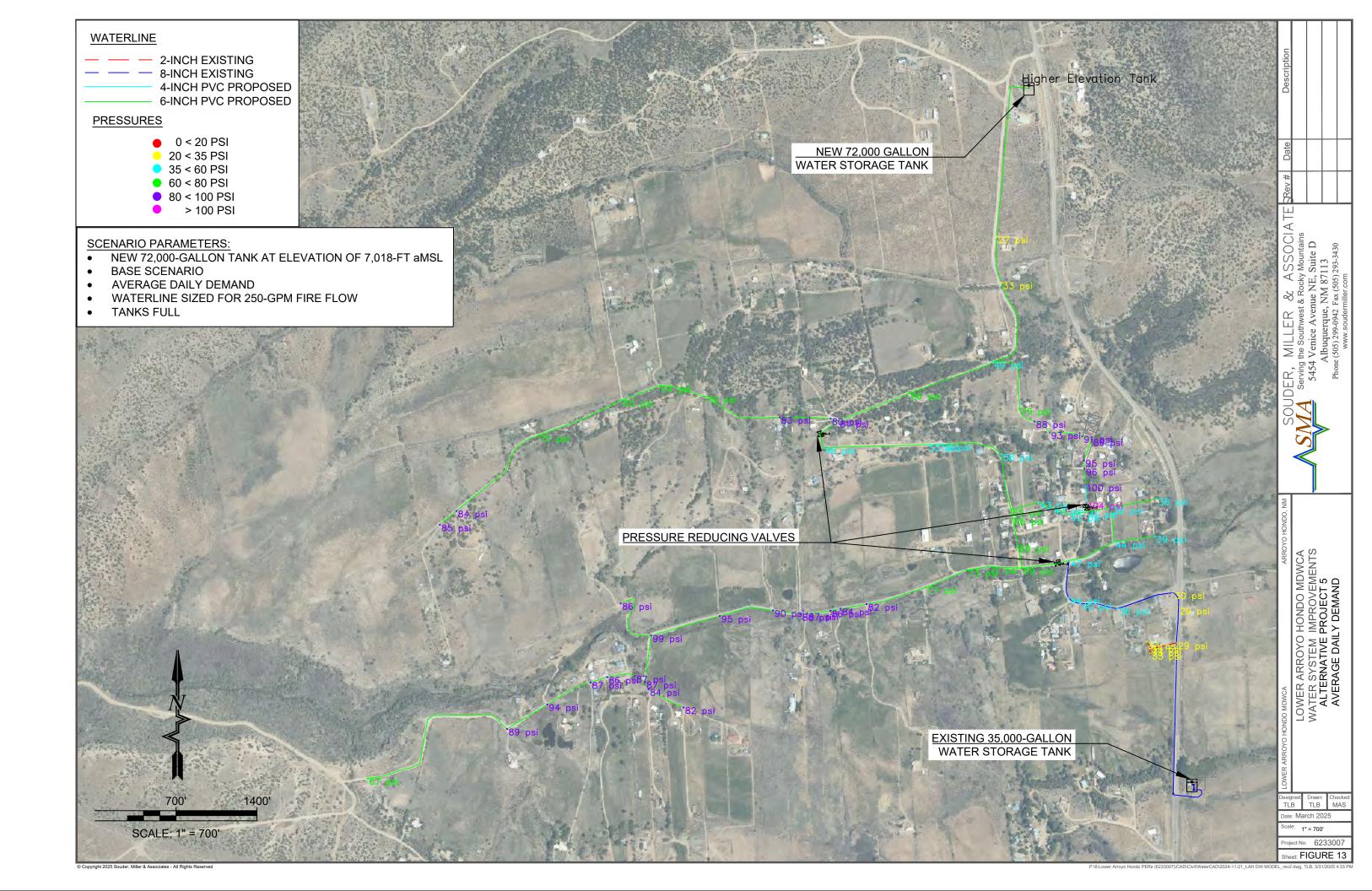


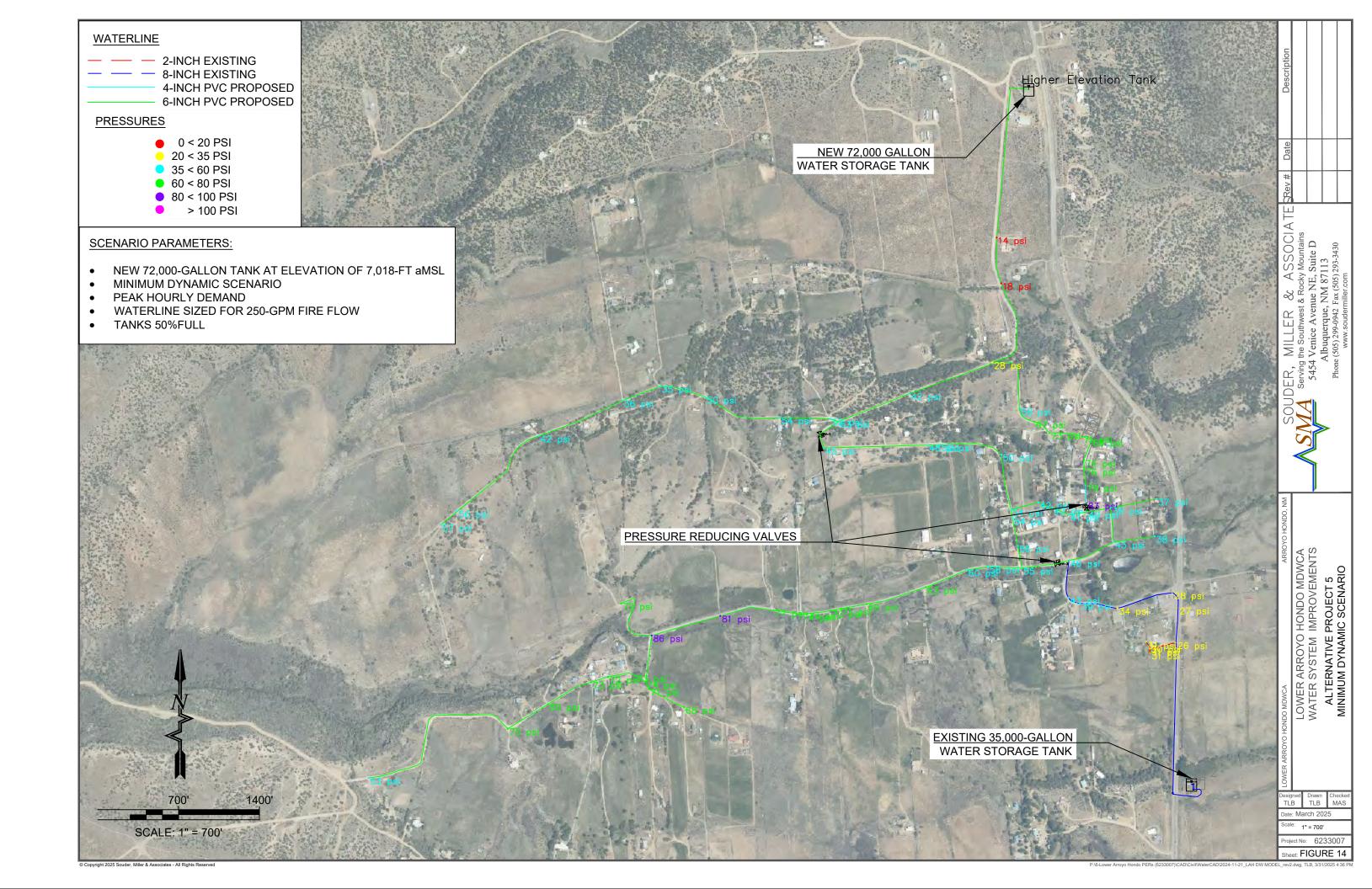


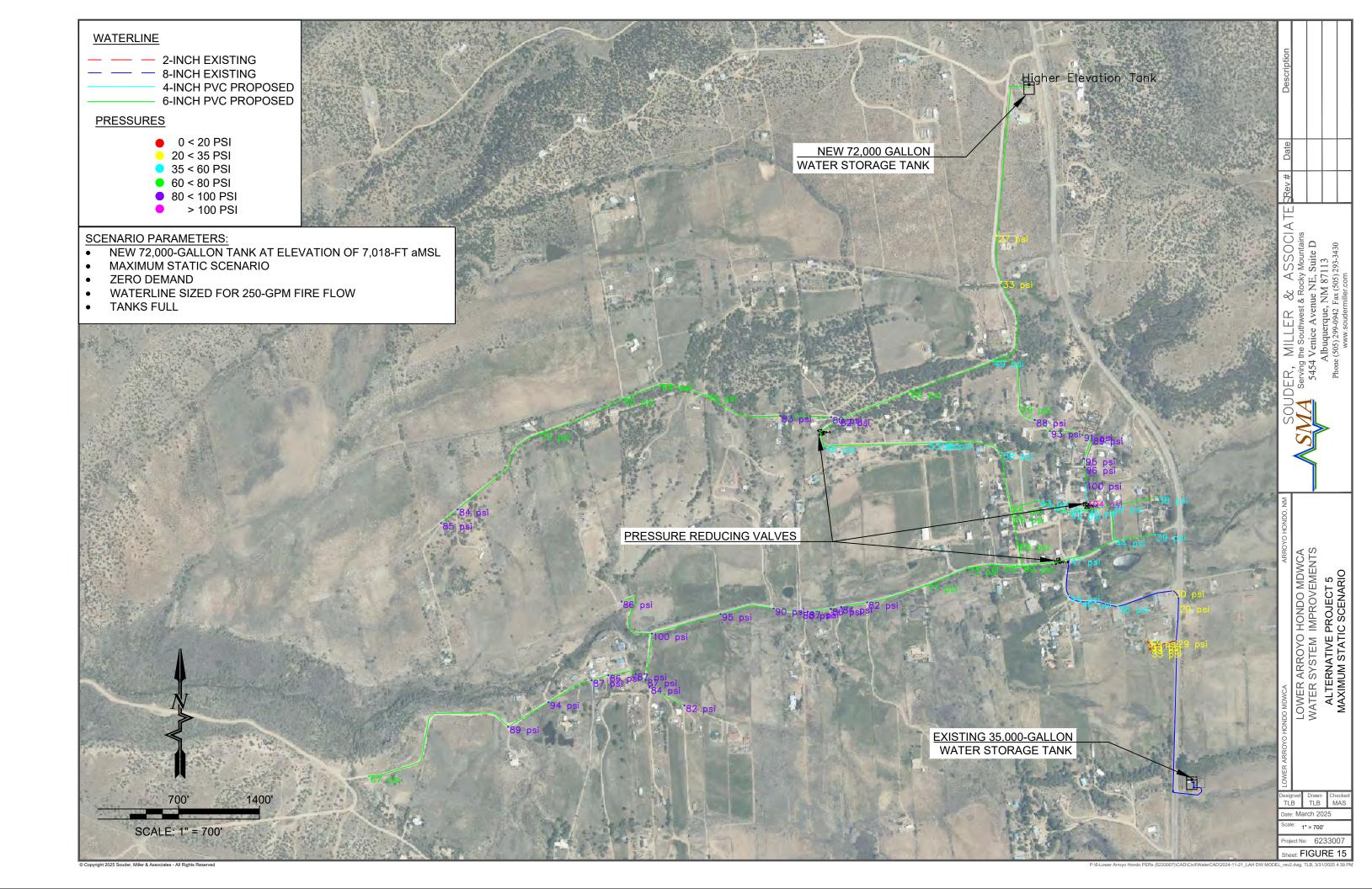


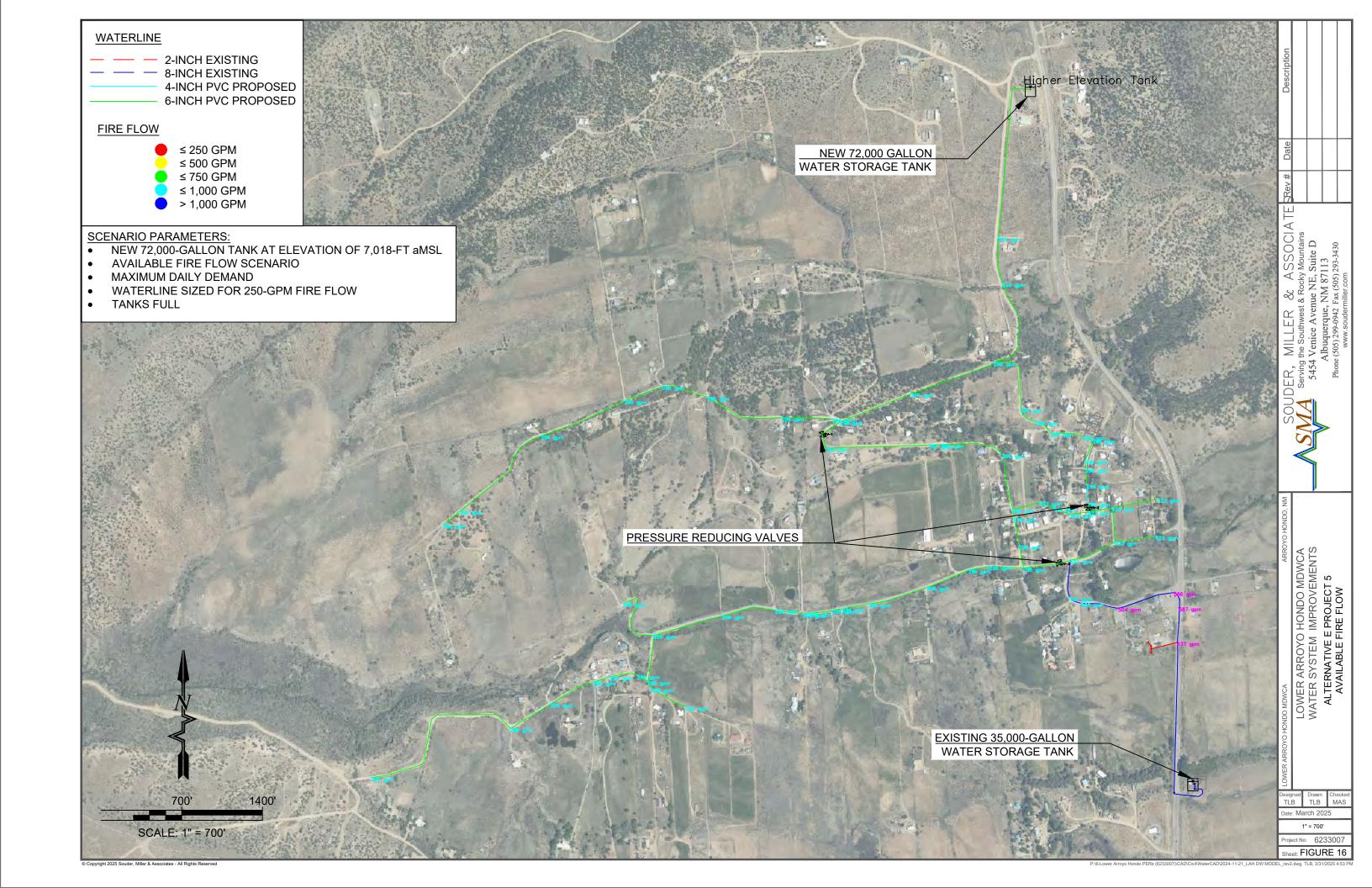




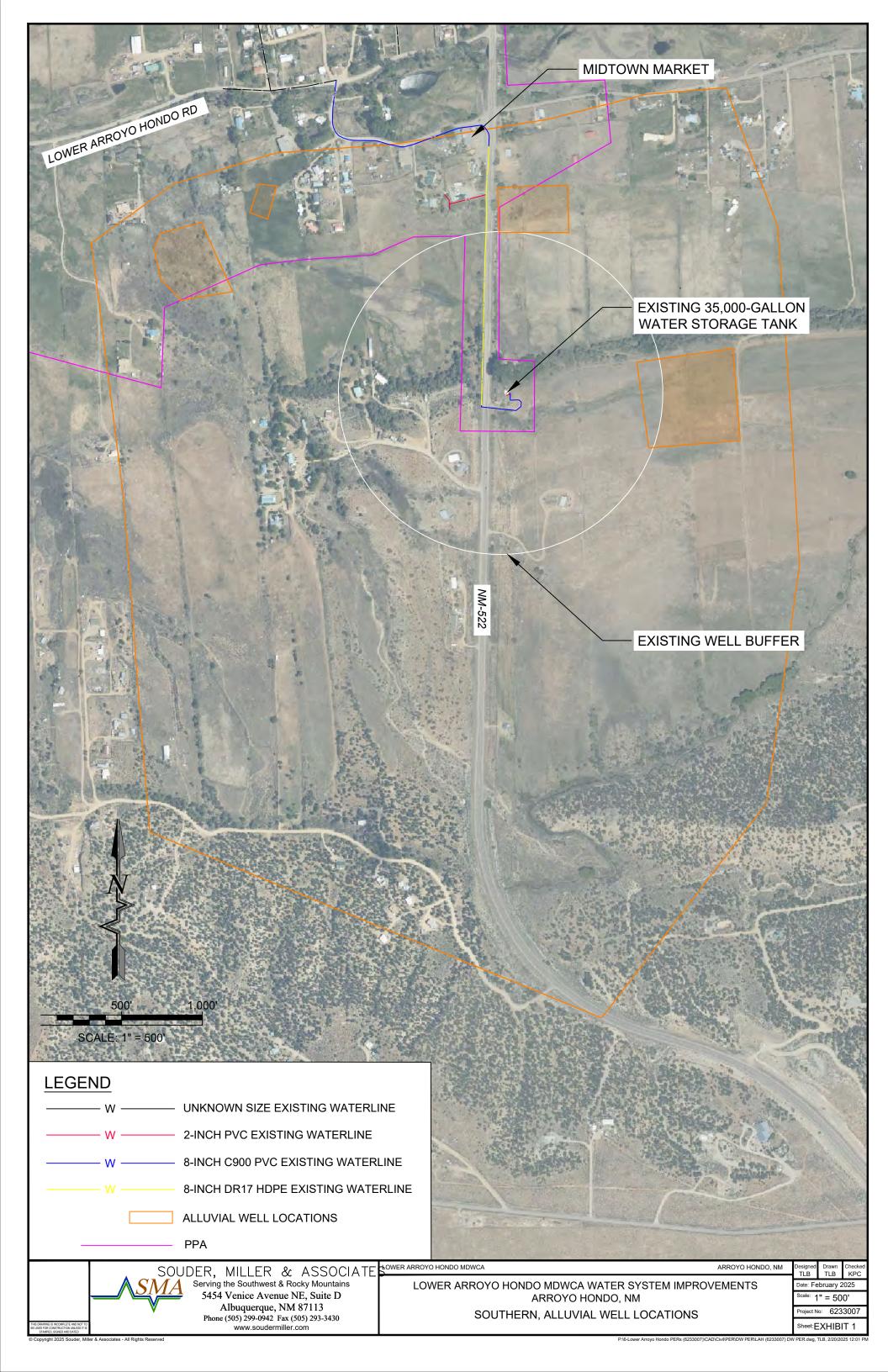


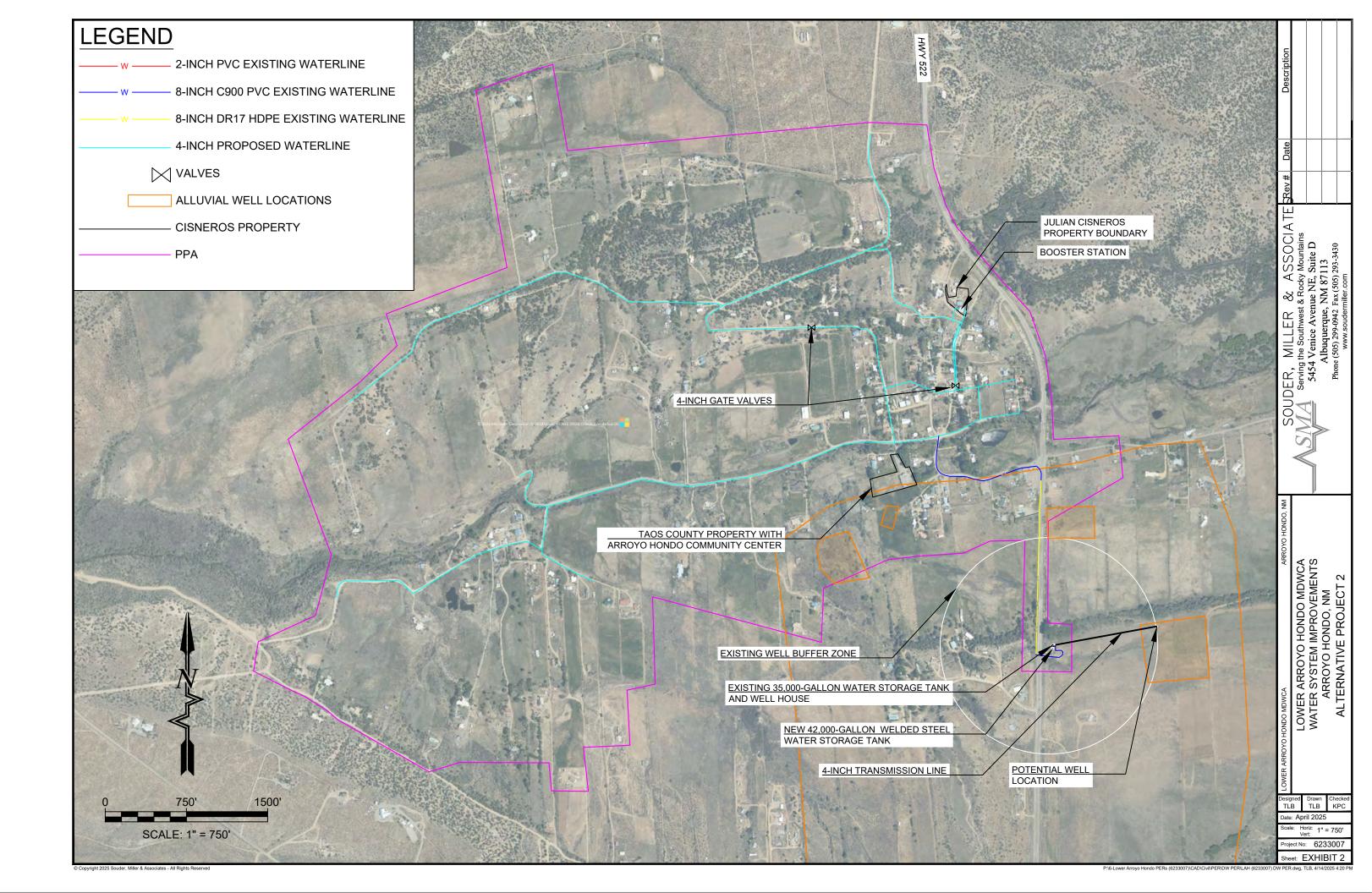


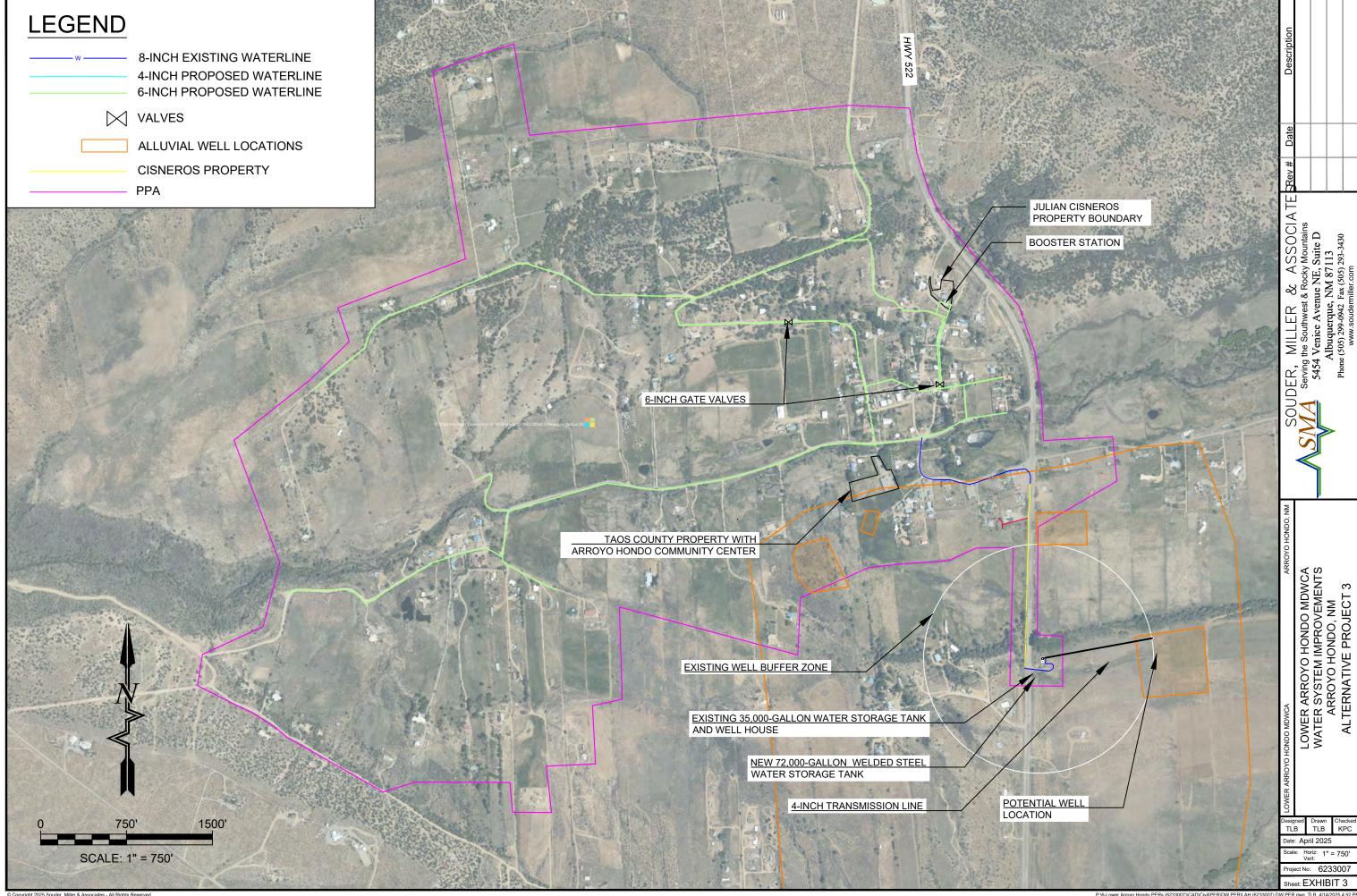


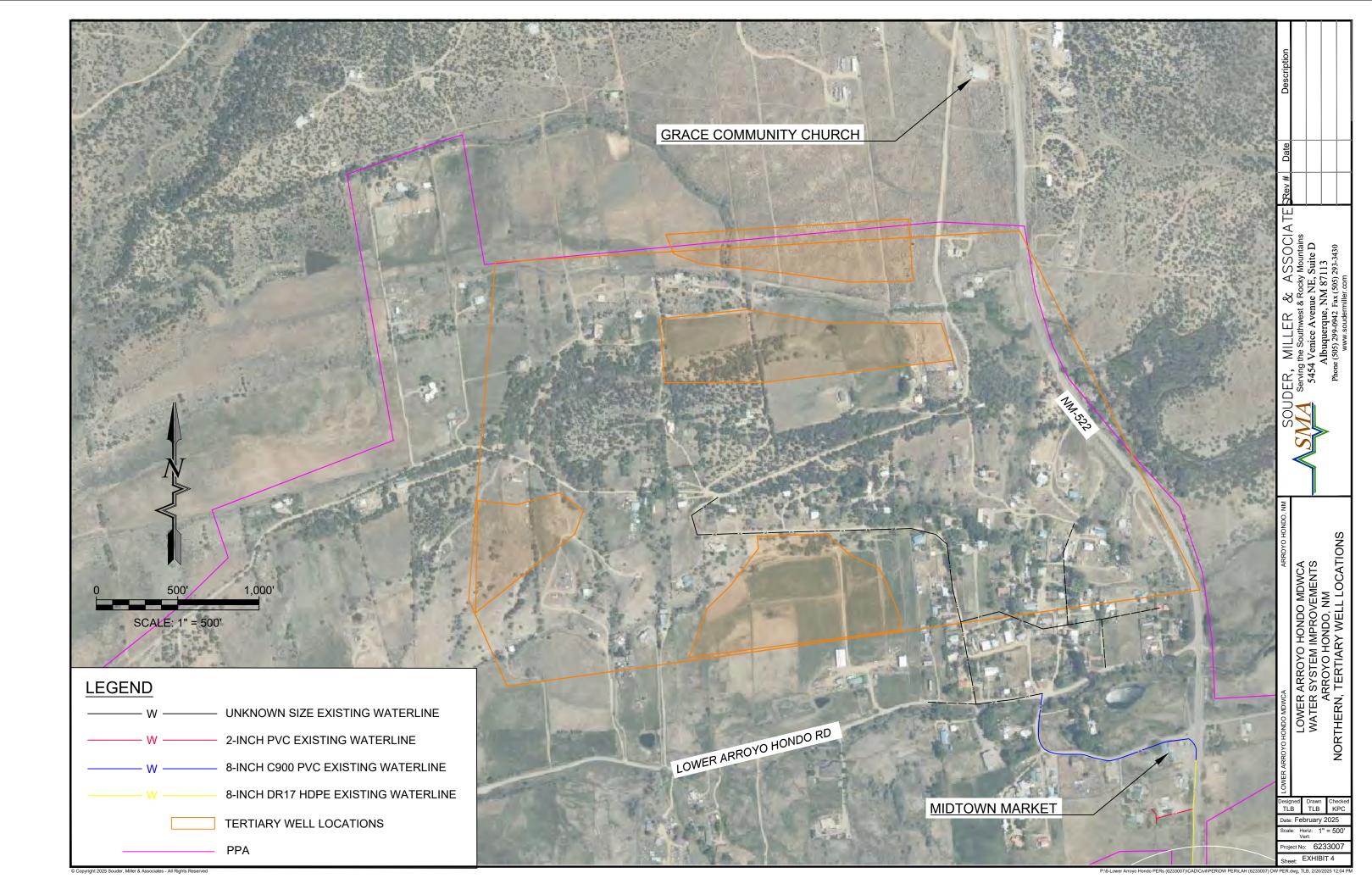


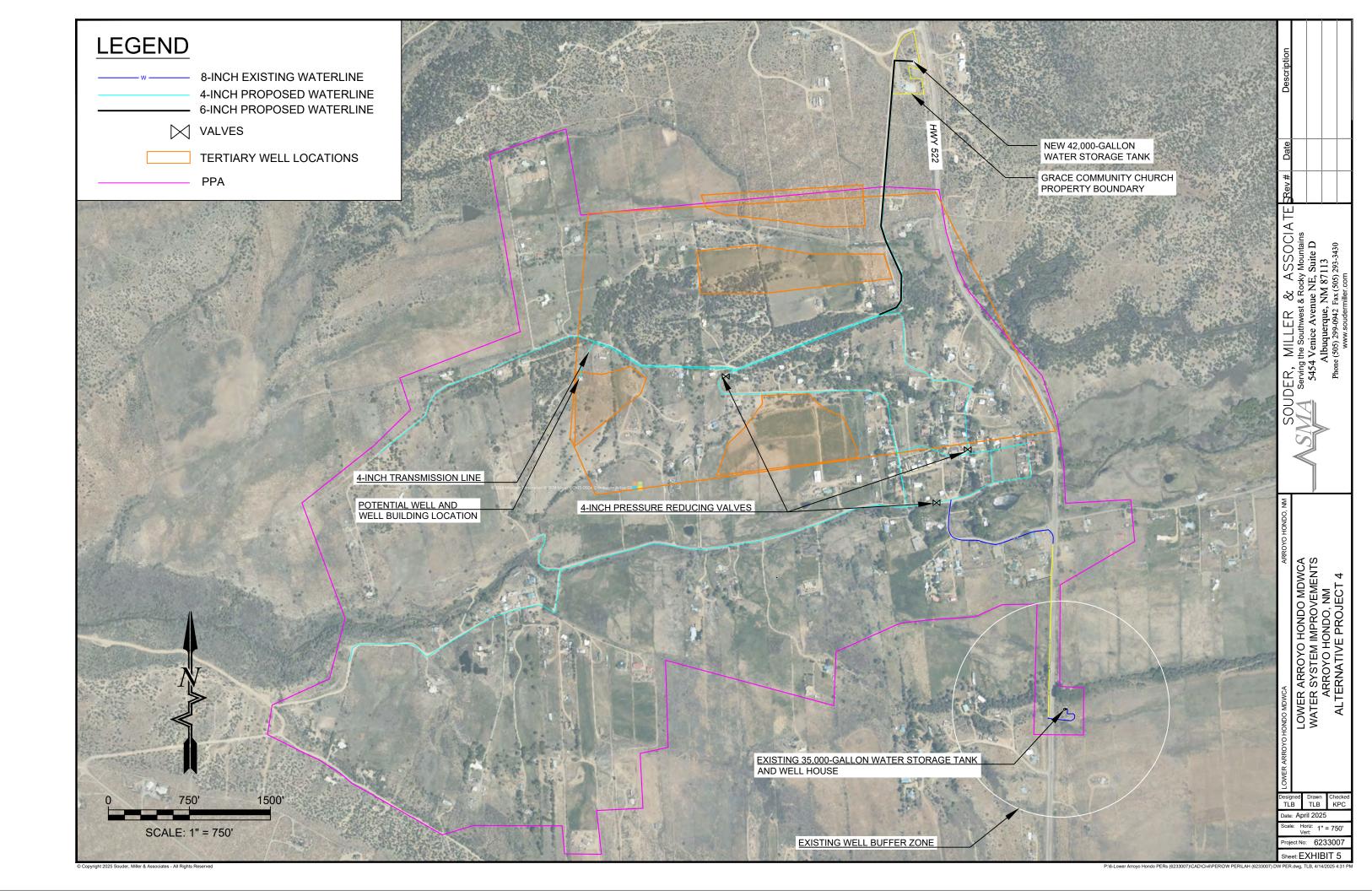


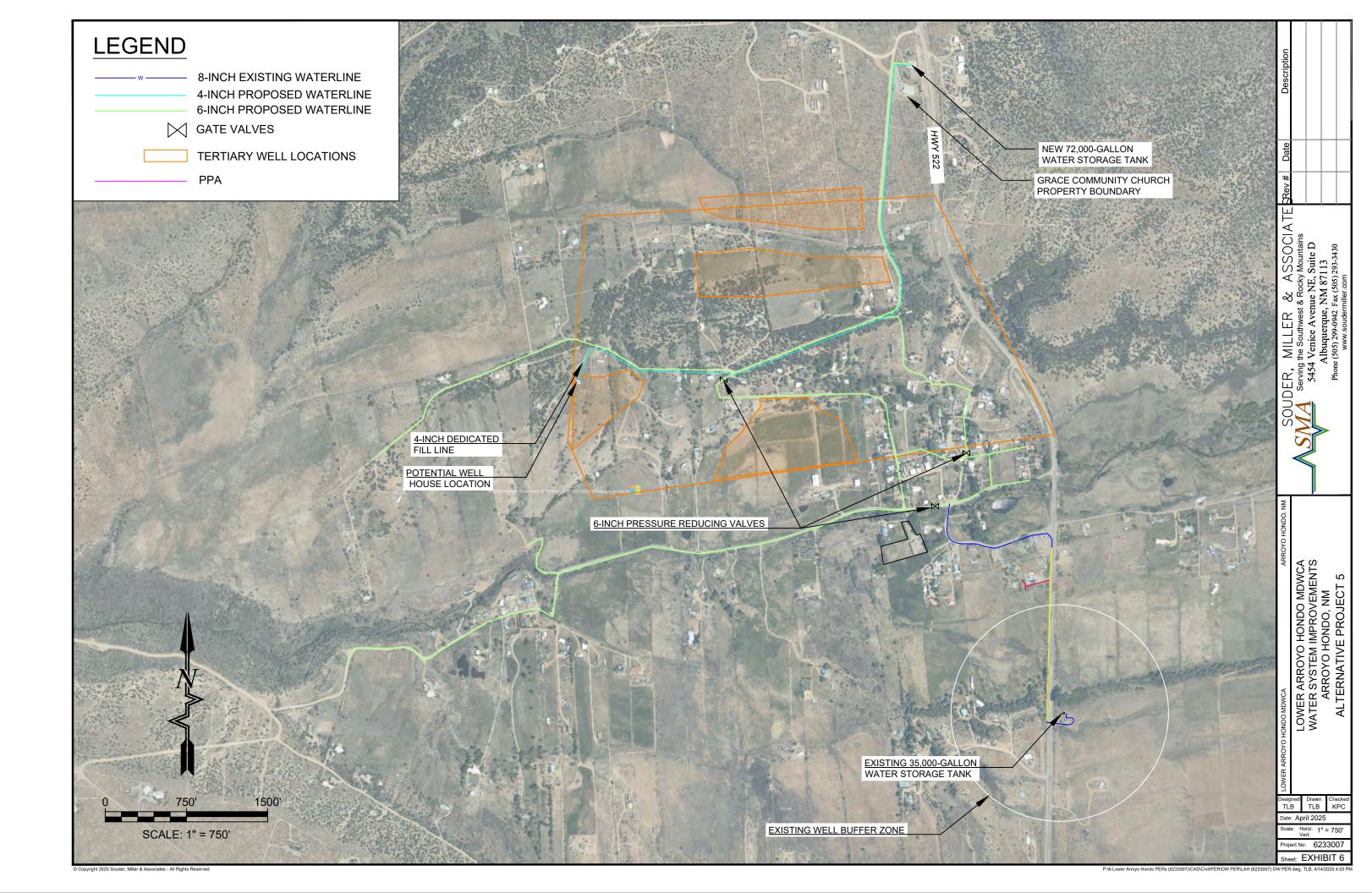


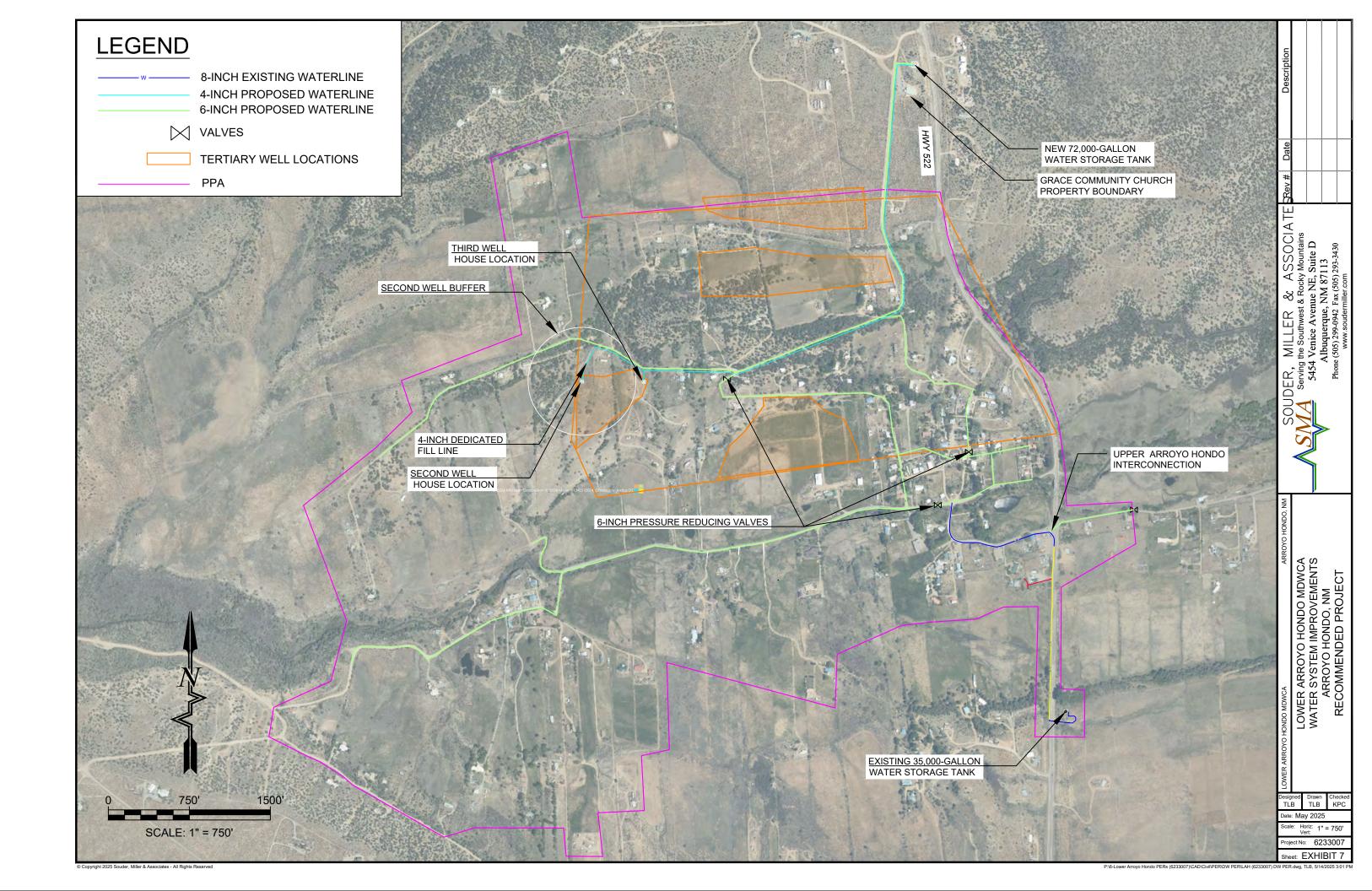


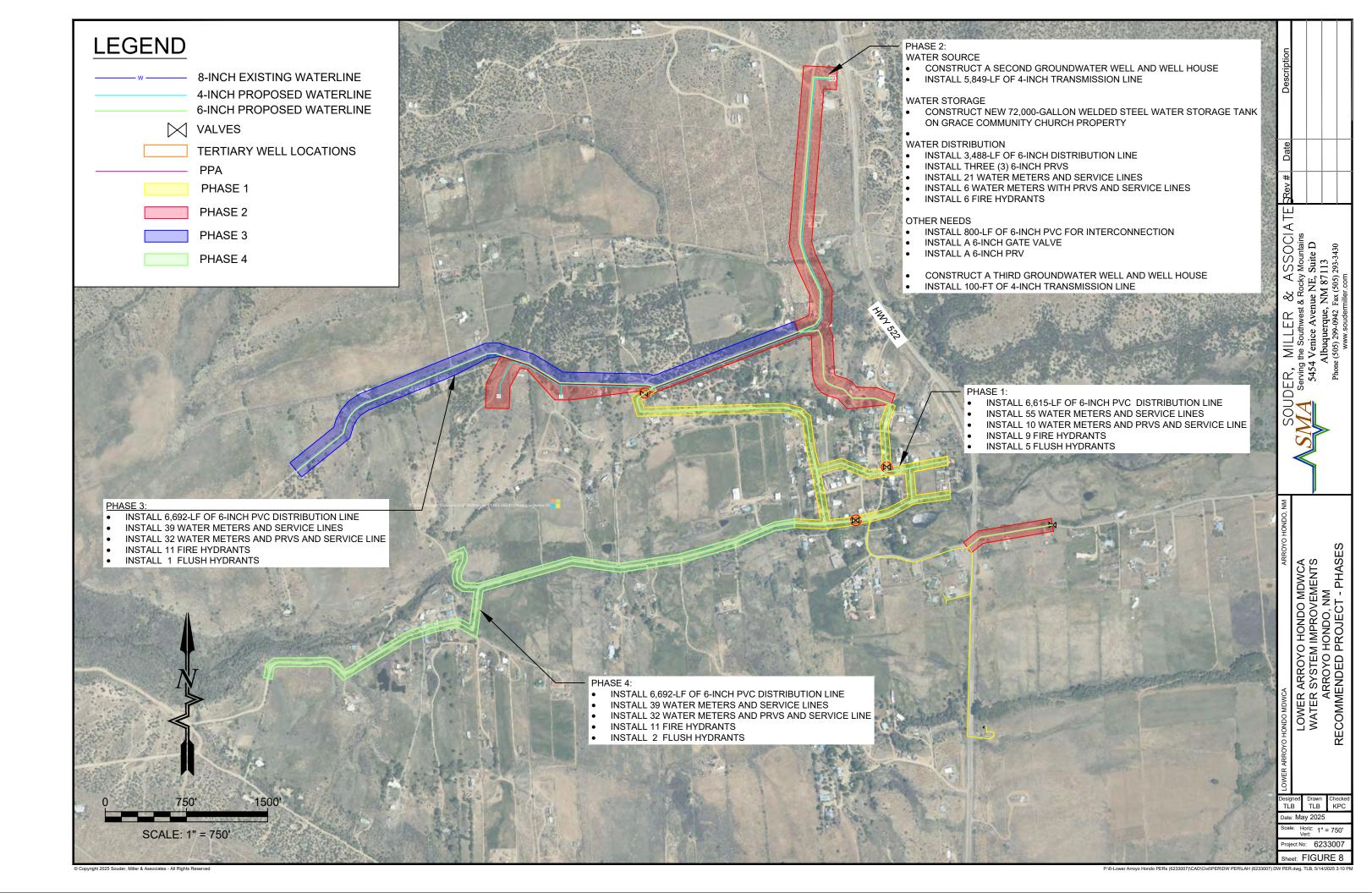














### Lower Arroyo Hondo MDWCA Water System Improvements Project Recommended Project

PHASE 1						
	Summary of Constru	ction Costs				
Item	Description	Unit	Qty		Unit Price	Amount
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	91,120.00	\$ 91,120.00
2	Testing allowance	Allow	1	\$	19,800.00	\$ 19,800.00
3	Traffic control plan	LS	1	\$	35,400.00	\$ 35,400.00
4	Preparation and implementation of SWPPP  Rock excavation required for installation of new waterline, including rock removal,	LS	1	\$	15,800.00	\$ 15,800.00
5	disposal of material, and labor, CIP.	CY	1	\$	708,200.00	\$ 708,200.00
6	Construction Staking	LS	1	\$	20,500.00	\$ 20,500.00
Water Distri	btion - Replace Existing System Area [Furnish and Install 6-inch PVC C900 DR18 waterline, Including labor, material,		1			
7	potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP	LF	6615	\$	65.00	\$ 429,975.00
8	Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP	EA	7	\$	5,270.00	\$ 34,320.72
9	Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP	EA	55	\$	3,125.00	\$ 171,875.00
10	Furnish and install 3/4" x 5/8" Water Meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP	EA	10	\$	3,800.00	\$ 38,000.00
11	Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP	LF	3250	\$	65.00	\$ 211,250.00
12	Furnish and install new fire hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP	EA	9	\$	11,470.00	\$ 99,597.37
13	Furnish and install Flush Hydrant Assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP	EA	5	\$	7,525.00	\$ 37,625.00
Constructi	ion Subtotal					\$ 1,913,463.09
Contingen	су				20%	\$ 382,692.62
Constructi	ion Total					\$ 2,296,155.71
NMGRT (T	Toas County)				7.5000%	\$ 172,211.68
Total Cons	struction Costs					\$ 2,468,367.39
PHASE 1 T	OTAL CONSTRUCTION COST (W/O TAX)					\$ 2,296,155.71
PHASE 1 T	OTAL CONSTRUCTION COST (W/ TAX)					\$ 2,468,367.39
	Summary of Non-Const	ruction Costs	;			
	and Design:					
	ase- Basic Engineering Services				10%	\$ 229,615.57
	ase- Survey and Topo			<u> </u>		\$ 168,700.00
	ase- Permitting			<u> </u>		\$ 800.00
	ase- Geotechnical Investigation			<u> </u>		\$ 61,300.00
	ase- Cultural Survey					\$ 5,000.00
	ase- Additional Services					\$ 6,000.00
Subtotal						\$ 471,415.57
	Foas County)				7.5000%	\$ 35,356.17
	nning and Design					\$ 506,771.74
	ng During Construction: iistration- Basic Engineering Services					\$ 35.000.00
	ion Phase- Basic Engineering Services				20%	\$ 35,000.00 \$ 493,673.48
	ion Phase- Additional Engineering Services (150 Days Construction Observation	n)			20/0	\$ 212,247.75
Subtotal	3 3,,			1		\$ 740,921.23
	Foas County)				7.5000%	\$ 55,569.09
	ineering during Construction					\$ 796,490.32
	TOTAL NON-CONSTRUCTION COST					\$ 1,303,262.06
PAHSE 1	TOTAL PROJECT CAPITAL COST					\$ 3,771,629.45
DUACE 2						

PHASE 2

141   Mobilization and demobilization not be exceed 510 of total bied   15   1   5   171,540.00   5   171,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,540.00   5   172,		Summary of Constru	ction Costs				
13   Tailing allowence	Item	Description	Unit	Qty		Unit Price	Amount
15   1   5   6,500.00   5   13,600.00	14	Mobilization and demobilization (not to exceed 5% of total bid)	LS		\$	171,540.00	\$ 171,540.00
17   Propositions and implementation of SWPPP	15	Testing allowance	Allow	1	\$	19,200.00	\$ 19,200.00
20   Section of the control of the	16	Traffic control plan	LS	1	\$	66,900.00	\$ 66,900.00
19	17	Preparation and implementation of SWPPP	LS	1	\$	15,400.00	\$ 15,400.00
1	18	Rock excavation required for installation of new waterline, including rock removal,	CY	1	\$	688 200 00	\$ 688 200 00
					<u> </u>		·
Servich and final in even conceive foundation. CP   Service and final final market meters, pressure gauges valves, sample coak, 3 meh piping to 5 feet sould not structure, page supports, well surface, ranging from lines to display, firings, appartmenance, and existing pipe dispost. CP   Furnish and install new sodium hypochhorize metering pump, solution tamis, spill   LS   1   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00   \$ 8,700.00		· · · · · · · · · · · · · · · · · · ·	LS	1	Ş	51,800.00	\$ 51,800.00
swinsh and install new well house, including x-inch moster merics, pressure guiges, valves, sample cost, 2 and pigning to 5 feet costed for structure, pre-surge guiges, surface casing, drain line to daylight, fittings, appurtenances, and existing pipe disposal, control of the structure of the surface casing, drain line to daylight, fittings, appurtenances, and existing pipe disposal, control of the structure of the surface casing, drain line to daylight, fittings, and controls, including pump control panels, combination disconnects, control of the structure of					Ι.		
wiles, sample code, 2 mich paing to 5 feet noiside of structure, pipe supports, well surface costing drain line to daylight, fittines, appurtenances, and existing pipe disposed, CP  21 Furnish and install new sodium hypochlorite metering pump, solution tank, spill 15 1 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,700.0 5 8,70	19	Furnish and install new concrete foundation, CIP	LS	1	\$	30,000.00	\$ 30,000.00
Electrical and controls, including pump portrol panel, combination disconnects, manual transfer switch, surge protection devices, fusible disconnect, antenna, radio telemetry, trenching and backfill, equipment rac heater, went fans, grounding, lighting, and conduct 8 writing, CIP received power to new well site, including blabor, and conduct 8 writing, CIP received power to new well site, including Allow 1 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15,700.00 \$ 15	20	valves, sample cock, 2-inch piping to 5-feet ouside of structure, pipe supports, well surface casing, drain line to daylight, fittings, appurtenances, and existing pipe	LS	1	\$	210,000.00	\$ 210,000.00
manual transfer witch, surge protection devices, fisable disconnect, antenna, radio to demotive, trenching and baddill, equipment are heater, verther final, grounding, lighting, and conduit & wring, CIP  2 Gordinate with Electric Company to extend power to new well sile, including poles, overhead line, and transformer, CIP  2 Furnish and install al-inch PVC C900 DB18 transmission line, including labor, materials, probabiling, trenching, bedding, removed of waste execution, loint restraints, Fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, silve restoration, hydrostate pressure testing and all other appurtenances, CIP  Online geuipment mobilization (75%) (demobilization (25%), includes all equipment, labor and materials not separately listed necessary to construct, develop, test and equip new left in the project rest, condination, protection of each well throughout project, driller's logs, as builts, and site restoration, complete in allow CID.  26 develop, test and equip one well in the project rest, coordination, protection of depth with next coment grout, CIP. Collect drill cutting samples every 10 ft. or as directed by Engineer.  27 anticipated 200 ft total depth, with minimum 5 ft of overdill below proposed total cased depth, CIP. Collect drill cutting samples every 10 ft. or as anticipated 200 ft total depth, with minimum 5 ft of overdill below proposed total cased depth, CIP. Collect full cutting samples every 10 ft. or as depth of the collection of the coll	21	Furnish and install new sodium hypochlorite metering pump, solution tank, spill	LS	1	\$	8,700.00	\$ 8,700.00
poles, overhead line, and transformer, CIP  Allow 1 1 5 15,700.0 5 15,700.0  24 Furnish and install a Horn protable generator	22	manual transfer switch, surge protection devices, fusible disconnect, antenna, radio telemetry, trenching and backfill, equipment rac heater, vent fans, grounding, lighting, and conduit & wiring, CIP	LS	1	\$	87,000.00	\$ 87,000.00
Furnish and install a new portable generator  Finnish and install a new portable generator  Finnish and install a new portable generator  Furnish and install a new portable generators. Furnish and install a new portable generators. Furnish generators in the process of the	23	1	Allow	1	\$	15,700.00	\$ 15,700.00
Furnish and install 4-inch PVC C900 DR18 transmission line , including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restain, potholing, trenching, bedding, removal of waste excavation, joint restains, fittings, warning tape, tracer wise, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtnensons, CP.  Drilling equipment mobilization (755%), includes all equipment, above and materials not separately listed necessary to construct, develop, test and equipment mobilization (755%), includes all equipment, above and materials not separately listed necessary to construct, develop, test and equipment with the project area, coordination, protection of each well throughout project, driller's logs, as bulbs, and site restoration, complete in place (CIP).  Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft or as directed by Engineer.  Drill 12-75-inch production well borehole, from bottom of surface casing to construct a construction of the production will casing, including incidental 2-foot stickup and cased depth, CIP. Collect drill cutting samples every 10 feet.  Allowance for Down-Hole Geophysics in Test Borehole  Allowance for Down-Hole Geophysics in Test Borehole  Grinch SDR-17 PVC production well casing, including incidental 2-foot stickup and constructions of the construction of the	24		FA	1	Ś	5.000.00	\$ 5,000.00
equipment, labor and materials not separately listed necessary to construct,  5 deedpot, test and equip one well in the project area, coordination, protection of each well throughout project, driller's logs, as-builts, and site restoration, complete in place (CP).  Drill 20-inch borehole and cement grout, CIP. Collect drill cutting samples every 10 ft. or as directed by Engineer.  Drill 12.79-inch production well borehole, from bottom of surface casing to anticated by Engineer.  Drill 12.79-inch production well borehole, from bottom of surface casing to anticated 200-ft total depth, with minum 5-th of overdill below proposed total cased depth, CIP. Collect drill cutting samples every 10 feet.  Allowance for Down-Hole Geophysics in Test Borehole  Generalizers, CIP  Generalizers, CIP  Generalizers, CIP  Filter pack, including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Grout between borehole and surface casing/production casing and between  washouts, etc., includes materials and placement with tremie pipe, CIP  Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Grout between borehole and surface casing/production casing and between  surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes any labor, materials and equipment needed that are not separately listed on bild form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bild form.	25	Furnish and install 4-inch PVC C900 DR18 transmission line, including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing		5849			·
depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as directed by Engineer.  Drill 12 75-inch production well borehole, from bottom of surface casing to anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased and cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased and cased depth, cip. CIP. Collect drill cutting samples every 10 feet.  Experimental cased and samples depth samples cased and cased depth of the cased and cased and cased and cased depth, CIP. Collect drill cutting samples every 10 feet.  Experimental cased and samples depth samples cased and cased depth samples cased and placement with tremie pipe, CIP. CF 15 \$ 70.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,050.00 \$ 1,	25	equipment, labor and materials not separately listed necessary to construct, develop, test and equip one well in the project area, coordination, protection of each well throughout project, driller's logs, as-builts, and site restoration, complete	LS	1	\$	20,000.00	\$ 20,000.00
anticipated 200-fit total depth, with minimum 5-ft of overdrill below proposed total cased depth, CIP. Collect drill cutting samples every 10 feet.  28 Allowance for Down-Hole Geophysics in Test Borehole  29 Genich SDR-17 PVC production well casing, including incidental 2-foot stickup and centralizers, CIP  30 Genich SDR-17 PVC screen (40° est. qty.), includes incidental end cap and centralizers, CIP  31 Efilter pack, including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  31 Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  32 Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  33 Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  34 Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  35 Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  36 Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  36 Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  37 Pumping development includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  38 Well disinfection and bacteriological testing, includes disinfe	26	depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as	LF	20	\$	310.00	\$ 6,200.00
G-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and centralizers, CIP  G-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and centralizers, CIP  Filter pack, including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Bumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and ba	27	anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total	LF	205	\$	85.00	\$ 17,425.00
centralizers, CIP  6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and cap and colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  8-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  8-inch SDR-17 PVC screen (40' est. qty.), includes materials, disinfection and placement with tremie pipe, CIP  8-inch SDR-17 PVC screen (40' est. qty.), includes materials, disinfection and placement with tremie pipe, CIP  8-inch SDR-17 PVC screen (40' est. qty.), includes materials, disinfection and placement with tremie pipe, CIP  8-inch SDR-17 PVC screen (40' est. qty.), includes materials and placement with tremie pipe, CIP  9-inch SDR-17 PVC screen (40' est. qty.), includes materials and placement with tremie pipe, CIP  9-inch SDR-17 PVC screen (40' est. qty.), includes materials and placement with tremie pipe, CIP  9-inch SDR-17 PVC screen (40' est. qty.), includes materials and equipment needed that are not separately listed on bid form.  9-inch SDR-17 PVC screen (40' est. qty.), includes any labor, materials and equipment needed that are not separately listed on bid form.  9-inch SDR-17 PVC screen (40' est. qty.), includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  9-inch SDR-17 PVC screen (40' est. qty.), includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  9-inch SDR-17 PVC screen (40' est. qty.), includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  9-inch SDR-17 PVC screen (40' est. qty.), includes any labor, materials and equipment needed that are not separately listed on b	28	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$	5,000.00	\$ 5,000.00
6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and centralizers, CIP  Filter pack, including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  32 Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  33 Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  34 Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, included sinfection of equipment and materials placed in the well, and collection and delivery of bacteriological EA 1 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,	29	, , , , , , , , , , , , , , , , , , , ,	LF	160	\$	45.00	\$ 7,200.00
Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP  Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological EA 1 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00	30	6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and	LF	40	\$	100.00	\$ 4,000.00
washouts, etc., includes materials and placement with tremie pipe, CIP  Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.	31	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials,	CF	46	\$	75.00	\$ 3,450.00
surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  HR 4 \$ 475.00 \$ 1,900.00  Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological EA 1 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,000.00 \$ 5,	32	1	CF	15	\$	70.00	\$ 1,050.00
equipment needed that are not separately listed on bid form.  Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.	33	surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe,	CF	120	\$	50.00	\$ 6,000.00
that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.	34		HR	4	\$	475.00	\$ 1,900.00
are not separately listed on bid form. Required recovery periods after pumping are incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological EA 1 \$ 5,000.00 \$ 5,000.00 \$	35	that are not separately listed on bid form.	HR	4	\$	550.00	\$ 2,200.00
step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.  HR  24  \$ 475.00  \$ 11,400.00  \$ 5,000.00	36	are not separately listed on bid form. Required recovery periods after pumping are	HR	16	\$	475.00	\$ 7,600.00
38 and materials placed in the well, and collection and delivery of bacteriological EA 1 \$ 5,000.00 \$ 5,000.00 samples to laboratory.	37	step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery	HR	24	\$	475.00	\$ 11,400.00
	38	and materials placed in the well, and collection and delivery of bacteriological	EA	1	\$	5,000.00	\$ 5,000.00
	39		LF	160	\$	18.00	\$ 2,880.00

<b>1</b>		1	1		
40	Furnish 1.5-inch check valve	EA	2	\$ 400.00	\$ 800.00
41	Furnish and install 4-inch master meter, , including all material, labor, meter, and all related appurtenances not separately listed on the bid form), CIP	EA	1	\$ 13,435.00	\$ 13,435.00
41	Furnish #12 pump wire	LF	180	\$ 10.00	\$ 1,800.00
42	Furnish 1 1/4" Sch 80 PVC Sounding Tube	LF	160	\$ 12.00	\$ 1,920.00
43	Furnish and install 5 HP Grundfos 25S50-26 (OAE) submersible production pump, motor, and all downhole appurtenances not separately listed. Pump size and model above is estimated. Final size and model to be determined by Engineer based on Pump Test results.	EA	1	\$ 12,000.00	\$ 12,000.00
44	Surface completion of wellhead, including pitless adapter, well cap, connection to drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal, teeposts, appurtenances not separately listed, earthwork and compaction, CIP	EA	1	\$ 15,000.00	\$ 15,000.00
45	Testing allowance, includes reimbursement of 3rd party costs for water quality laboratory analysis, material testing and passing bacteriological test analysis samples.	ALLOW	1	\$ 5,000.00	\$ 5,000.00
46	Contractor labor, equipment and materials to support and coordination of geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging invoices which are elegible for payment from the testing allowance.	EA	1	\$ 2,000.00	\$ 2,000.00
47	Standby at the written request of Owner or Engineer.	HR	8	\$ 550.00	\$ 4,400.00
Water Supp	oly - Third Well to the North	T	1		
47	Furnish and install new concrete foundation, CIP	LS	1	\$ 30,000.00	\$ 30,000.00
48	Furnish and install new well house, including 2-inch master meter, pressure gauges, valves, sample cock, 2-inch piping to 5-feet ouside of structure, pipe supports, well surface casing, drain line to daylight, fittings, appurtenances, and existing pipe disposal, CIP	LS	1	\$ 210,000.00	\$ 210,000.00
49	Furnish and install new sodium hypochlorite metering pump, solution tank, spill containment, tubing, fittings and appurtenances, CIP	LS	1	\$ 8,700.00	\$ 8,700.00
50	Electrical and controls, including pump control panel, combination disconnects, manual transfer switch, surge protection devices, fusible disconnect, antenna, radio telemetry, trenching and backfill, equipment rac heater, vent fans, grounding, lighting, and conduit & wiring, CIP	LS	1	\$ 87,000.00	\$ 87,000.00
51	Coordinate with Electric Company to extend power to new well site, including	Allow	1	\$ 15,700.00	\$ 15,700.00
	poles, overhead line, and transformer, CIP			·	
52	Furnish and install a new portable generator	EA	1	\$ 5,000.00	\$ 5,000.00
53	Furnish and install 4-inch PVC C900 DR18 transmission line , including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP	LF	100	\$ 50.00	\$ 5,000.00
53	Drilling equipment mobilization (75%)/demobilization (25%), includes all equipment, labor and materials not separately listed necessary to construct, develop, test and equip one well in the project area, coordination, protection of each well throughout project, driller's logs, as-builts, and site restoration, complete in place (CIP).	LS	1	\$ 20,000.00	\$ 20,000.00
54	Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as directed by Engineer.	LF	20	\$ 310.00	\$ 6,200.00
55	Drill 12.75-inch production well borehole, from bottom of surface casing to anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total cased depth, CIP. Collect drill cutting samples every 10 feet.	LF	205	\$ 85.00	\$ 17,425.00
56	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$ 5,000.00	\$ 5,000.00
57	6-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and centralizers, CIP	LF	160	\$ 45.00	\$ 7,200.00
58	6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and centralizers, CIP	LF	40	\$ 100.00	\$ 4,000.00
59	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP	CF	46	\$ 75.00	\$ 3,450.00
60	Bentonite seal above filter pack, min. 20-ft thickness, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP	CF	15	\$ 70.00	\$ 1,050.00
61	Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP	CF	120	\$ 50.00	\$ 6,000.00
62	Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.	HR	4	\$ 475.00	\$ 1,900.00

	Air-lift pumping development, includes any labor, materials and equipment needed			Ι.		
63	that are not separately listed on bid form.	HR	4	\$	550.00	\$ 2,200.00
64	Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.	HR	16	\$	475.00	\$ 7,600.00
65	Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.	HR	24	\$	475.00	\$ 11,400.00
66	Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.	EA	1	\$	5,000.00	\$ 5,000.00
67 68	Furnish 1.5-inch galvanized drop pipe.  Furnish 1.5-inch check valve	LF EA	160 2	\$	18.00 400.00	\$ 2,880.00 800.00
69	Furnish and install 4-inch master meter, , including all material, labor, meter, and all related appurtenances not separately listed on the bid form), CIP	EA	1	\$	13,435.00	\$ 13,435.00
69	Furnish #12 pump wire	LF	180	\$	10.00	\$ 1,800.00
70	Furnish 1 1/4" Sch 80 PVC Sounding Tube	LF	160	\$	12.00	\$ 1,920.00
71	Furnish and install 5 HP Grundfos 25S50-26 (OAE) submersible production pump, motor, and all downhole appurtenances not separately listed. Pump size and model above is estimated. Final size and model to be determined by Engineer based on Pump Test results.	EA	1	\$	12,000.00	\$ 12,000.00
72	Surface completion of wellhead, including pitless adapter, well cap, connection to drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal, teeposts, appurtenances not separately listed, earthwork and compaction, CIP	EA	1	\$	15,000.00	\$ 15,000.00
73	Testing allowance, includes reimbursement of 3rd party costs for water quality laboratory analysis, material testing and passing bacteriological test analysis samples.	ALLOW	1	\$	5,000.00	\$ 5,000.00
74	Contractor labor, equipment and materials to support and coordination of geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging invoices which are elegible for payment from the testing allowance.	EA	1	\$	2,000.00	\$ 2,000.00
75	Standby at the written request of Owner or Engineer.	HR	8	\$	550.00	\$ 4,400.00
Water Stora	age - New Northen Storage Tank			ı		
48	New 72,000-gallon welded steel water storage tank, including all labor, materials, tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections, disinfection, excluding gate valves, CIP	LS	1	\$	332,300.00	\$ 332,300.00
49	Tank foundation and sub-foundation, including earthwork, site grading drainage, imported fill material per plans and Geotechnical Report, all labor, materials, excavation, backfill, reinforcement, and concrete, CIP	LS	1	\$	105,840.00	\$ 105,840.00
50	Sacrificial anode type cathodic protection for storage tank, including labor and	EA	1	\$	18,580.00	\$ 18,580.00
Vater Distr	materials, CIP ribtion - Waterline to Connect Tank and Interconnection to UAH					
51	Furnish and install 6-inch PVC C900 DR18 waterline, including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP	LF	3488	\$	65.00	\$ 226,720.00
52	Furnish and install 6-inch gate valv , including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP	EA	5	\$	5,270.00	\$ 28,247.20
53	Furnish and install 6-inch pressure reducing valve assembly, including all materials, labor, 2-inch pressure relief valve, valves, pressure gauge, concrete vault, fittings, accessories, and all related appurtenances not separately listed on the bid form), CIP	EA	4	\$	96,095.00	\$ 384,380.00
53	Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP	EA	21	\$	3,125.00	\$ 65,625.00
54	Furnish and install 3/4" x 5/8" Water Meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP	EA	5	\$	3,800.00	\$ 19,000.00
55	Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP	LF	250	\$	65.00	\$ 16,250.00
56	Furnish and install new fire hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP	EA	6	\$	11,470.00	\$ 66,678.93
	on Subtotal			_		\$ 3,602,231.13
Contingen	•				20%	\$ 720,446.23
Constructi						\$ 4,322,677.36
VMGRT (T	oas County)			1	7.5000%	\$ 324,200.80

Total Cons	struction Costs					\$	4,646,878.16
	OTAL CONSTRUCTION COST (W/O TAX)					\$	4,322,677.36
	OTAL CONSTRUCTION COST (W/ TAX)					\$	4,646,878.16
	Summary of Non-Cons	truction Costs	;			·	
	and Design:						
	ase- Basic Engineering Services				10%	\$	432,267.74
	ase- Survey and Topo					\$	164,000.00
	ase- Permitting					\$	1,000.00
	ase- Geotechnical Investigation					÷	61,300.00 5.000.00
	ase- Cultural Survey ase- Additional Services					\$	-,
	ase- Additional Services					\$	6,000.00 669,567.74
Subtotal	oas County)				7.5000%	\$	
	ning and Design				7.3000%	\$ \$	50,217.58 <b>719,785.32</b>
	ng During Construction:					٦	713,763.32
	istration- Basic Engineering Services					\$	35,000.00
Constructi	on Phase- Basic Engineering Services				20%	\$	929,375.63
Constructi	on Phase- Additional Engineering Services (200 Days Construction Observation	n)				\$	282,997.00
Subtotal						\$	1,247,372.63
	oas County)				7.5000%	\$	93,552.95
	neering during Construction					\$	1,340,925.58
	TOTAL NON-CONSTRUCTION COST					\$	2,060,710.90
PHASE Z	TOTAL PROJECT CAPITAL COST					Þ	6,707,589.06
PHASE 3							
I IIASE S	Summary of Constru	ction Costs					
Item	Description	Unit	Qty		Unit Price		Amount
57	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	90,930.00	\$	90,930.00
58	Testing allowance	Allow	1	\$	19,600.00	\$	19,600.00
59	Traffic control plan	LS	1	\$	35,300.00	\$	35,300.00
60	Preparation and implementation of SWPPP  Rock excavation required for installation of new waterline, including rock removal,	LS	1	\$	15,700.00	\$	15,700.00
61	disposal of material, and labor, CIP.	CY	1	\$	703,200.00	\$	703,200.00
62	Construction Staking	LS	1	\$	20,500.00	\$	20,500.00
Water Dist	ribtion - Waterline to Extend Water System to the North [Furnish and install 6-inch PVC C900 DR18 waterline, including labor, material,		l	Т			
	potholing, trenching, bedding, removal of waste excavation, joint restraints,						
63	fittings, warning tape, tracer wire, above ground pipe markers, backfilling,	LF	6496	\$	65.00	\$	422,240.00
	compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP						
	appartenances, en						
64	Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve	EA	8	\$	5,270.00	\$	42,792.40
	riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation), CIP	27.		ľ	5,2. 5.55	Ψ	12,732.10
65	Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP	EA	56	\$	3,125.00	\$	175,000.00
	Furnish and install 3/4" x 5/8" Water Meter with PRV, including excavation, backfill,						
66	meter pit, tandem meter setter, fittings, connection to existing service, and all	EA	10	\$	3,800.00	\$	38,000.00
	appurtenances, CIP Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench						
	Method, including all material, labor, connection to new water main, connection to						
67	water meter assembly, service line, saddle, corp stop, site restoration and all	LF	3300	\$	65.00	\$	214,500.00
	related appurtenances, CIP Furnish and install new fire hydrant, including all material, labor, PVC pipe required						
	from mainline to assembly, contractor furnished fittings, gate valve, site						
68	restoration, and all other appurtenances required for a complete working	EA	11	\$	11,470.00	\$	124,181.87
	installation, CIP						
	Furnish and install Flush Hydrant Assembly, including labor, materials, gate valve,						
69	tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all	EA	1	\$	7,525.00	\$	7,525.00
Co. 1	other appurtenances needed for a complete installation, CIP			<u> </u>			4 000 100 5
	ion Subtotal			1	200/	<b>\$</b>	<b>1,909,469.27</b>
Contingen Constructi	•			<u> </u>	20%	\$ <b>\$</b>	381,893.85 <b>2,291,363.12</b>
				1	7 50000/	<b>\$</b> \$	
	oas County)			<u> </u>	7.5000%	\$	171,852.23 2 463 215 35
	Struction Costs OTAL CONSTRUCTION COST (W/O TAX)					\$	2,463,215.35
	OTAL CONSTRUCTION COST (W/ TAX)					\$	2,291,363.12 2,463,215.35
	Summary of Non-Cons	truction Costs				Ÿ	2,403,213.33

Plannina o	nd Design:						
	ase- Basic Engineering Services				10%	\$	229,136.31
	ase- Survey and Topo				10/0	\$	167,600.00
Design Ph	ase- Permitting					\$	500.00
	ase- Geotechnical Investigation					\$	61,300.00
	ase- Cultural Survey					\$	5,000.00
	ase- Additional Services					\$	6,000.00
Subtotal	ase Additional Services					\$	469,536.31
	oas County)				7.5000%	\$	35,215.22
	ning and Design				7.300070	\$	504,751.54
	g During Construction:					7	304,731.3-
Bid Admin	istration- Basic Engineering Services					\$	35,000.00
Constructi	on Phase- Basic Engineering Services				20%	\$	492,643.0
Constructi	on Phase- Additional Engineering Services (150 Days Construction Observatio	n)				\$	212,247.7
ubtotal						\$	739,890.82
NMGRT (T	oas County)				7.5000%	\$	55,491.83
Total Engi	neering during Construction					\$	795,382.63
	OTAL NON-CONSTRUCTION COST					\$	1,300,134.17
PHASE 3	TOTAL PROJECT CAPITAL COST					\$	3,763,349.52
PHASE 4							
	Summary of Constru			1			
70	Description	Unit LS	Qty 1	\$	98,620.00	\$	98,620.00
70	Mobilization and demobilization (not to exceed 5% of total bid)  Testing allowance	Allow	1	\$	20.700.00	\$	20,700.00
72	Traffic control plan	LS	1	\$	38,300.00	\$	38,300.00
73	Preparation and implementation of SWPPP	LS	1	\$	16,600.00	\$	16,600.00
74	Rock excavation required for installation of new waterline, including rock removal,	CY	1	\$	742,400.00	\$	742,400.00
75	disposal of material, and labor, CIP.	LS	1	\$	22,700.00	\$	22,700.00
	Construction Staking ribtion - Waterline to Extend the Water System to the Southwest	L3	1 1	ş	22,700.00	ş	22,700.00
vater Dist	Furnish and install 6-inch PVC C900 DR18 waterline, including labor, material,		1	Π			
	potholing, trenching, bedding, removal of waste excavation, joint restraints,						
76	fittings, warning tape, tracer wire, above ground pipe markers, backfilling,	LF	6692	\$	65.00	\$	434,980.00
	compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP						
	Furnish and install 6-inch HDPE DR11 waterline for river crossing by horizontal						
77	directional drilling (HDD), including all materials, labor, transition fittings,	LF	100	\$	205.00	\$	20.500.0
	restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP		200	,	203.00	Ÿ	20,500.00
	restriction, Cir						
78	Furnish and install 6-inch gate valve , including excavation, valve, valve box, valve	ΕΛ	8	\$	5,270.00	ć	44,083.55
78	riser and collar, test station, accessories, tests, backfill and compaction, and all	EA	٥	Ş	5,270.00	\$	44,083.53
	other appurtenances required for a complete working installation, CIP						
79	Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter	EA	39	\$	3,125.00	\$	121,875.00
	pit, meter setter, fittings, connection to service, and all appurtenances, CIP						
80	Furnish and install 3/4" x 5/8" water meter with PRV,, including excavation, backfill,	۲,	22	\$	3 800 00	ċ	124 600 00
80	meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP	EA	32	<b>\$</b>	3,800.00	\$	121,600.00
	Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench						
81	Method, , including all material, labor, connection to new water main, connection	LF	3302	\$	65.00	\$	214,630.0
	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP					·	,
	Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction						
82	drilling (HDD), including all material, labor, fittings, associated appurtenances,	LF	248	\$	125.00	\$	31,000.00
	trenching, bedding, backfilling and site restoration, CIP Furnish and install new fire hydrant, including all material, labor, PVC pipe required			-			
_	from mainline to assembly, contractor furnished fittings, gate valve, site	_		1.			
83	restoration, and all other appurtenances required for a complete working	EA	11	\$	11,470.00	\$	127,928.7
	installation, CIP			1			
	Furnish and install flush hydrant assembly, including labor, materials, gate valve,						
48	tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all	EA	2	\$	7,525.00	\$	15,050.00
	other appurtenances needed for a complete installation, CIP						
	on Subtotal					\$	2,070,967.28
ontingen					20%	\$	414,193.4
onstructi	on Total					\$	2,485,160.7
MGRT (T	oas County)				7.5000%	\$	186,387.06
	struction Costs					\$	2,671,547.80
HASE 4 T	OTAL CONSTRUCTION COST (W/O TAX)					\$	2,485,160.74
	OTAL CONSTRUCTION COST (W/ TAX)					\$	2,671,547.80

Summary of Non-Construction Costs			
Planning and Design:			
Design Phase- Basic Engineering Services	10%	\$	248,516.07
Design Phase- Survey and Topo		\$	176,900.00
Design Phase- Permitting		\$	500.00
Design Phase- Geotechnical Investigation		\$	61,300.00
Design Phase- Cultural Survey		\$	5,000.00
Design Phase- Additional Services		\$	6,000.00
Subtotal		\$	498,216.07
NMGRT (Toas County)	7.5000%	\$	37,366.21
Total Planning and Design		\$	535,582.28
Engineering During Construction:			
Bid Administration- Basic Engineering Services		\$	35,000.00
Construction Phase- Basic Engineering Services	20%	\$	534,309.56
Construction Phase- Additional Engineering Services (150 Days Construction Observation)		\$	212,247.75
Subtotal		\$	781,557.31
NMGRT (Toas County)	7.5000%	\$	58,616.80
Total Engineering during Construction		<u>\$</u>	840,174.11
PHASE 4 TOTAL NON-CONSTRUCTION COST		\$	1,375,756.39
PHASE 4 TOTAL PROJECT CAPITAL COST		\$	4,047,304.18
TOTAL NON-CONSTRUCTION COST FOR ALL PHASES		\$	6,039,863.51
TOTAL PROJECT CONSTRUCTION COST FOR ALL PHASES (W/O TAX)		\$	11,395,356.93
TOTAL PROJECT CONSTRUCTION COST FOR ALL PHASES (W/TAX)		\$	12,250,008.70

TAL P	ROJECT CAPITAL COST FOR ALL PHASES				\$ 18,289,872.21
	Sumn	nary of O&M Costs			
Item	Description	Unit	Qty	Unit Price	Amoun
1	Miscellaneous	LS	1	\$ 2.1	2.17
2	Exempt Status - IRS Application	LS	1	\$ 200.0	200.00
3	Repairs & Maintenance Equipment	LS	1	\$ 314.0	1 \$ 314.01
4	Contract - Attorny Fees	LS	1	\$ 475.5	\$ 475.59
5	Bookkeeping	LS	1	\$ 6,729.0	7 \$ 6,729.07
6	Operator Extras	LS	1	\$ 443.0	5 \$ 443.06
7	Water Operator - Other	LS	1	\$ 12,870.3	2 \$ 12,870.32
8	Software	LS	1	\$ 1.00	\$ 1.00
9	Supplies - General Office	LS	1	\$ 397.2	3 \$ 397.23
10	Supplies - Furn/Fixt/Equip	LS	1	\$ 10.6	10.61
11	Insurance - Gen Liability/Prop	LS	1	\$ 66.6	7 \$ 66.67
12	Postage	LS	1	\$ 465.4	3 \$ 465.43
13	Printing Publishing	LS	1	\$ 12.6	7 \$ 12.67
14	NM Rural Water Association Dues	LS	1	\$ 63.5	) \$ 63.50
15	Subscriptions & Dues	LS	1	\$ 171.2	2 \$ 171.22
16	Utilities - Electricity	LS	1	\$ 2,197.3	5 \$ 2,197.35
17	Bank Charges	LS	1	\$ 1.30	) \$ 1.30
18	Board Stipends	LS	1	\$ 3,575.8	1 \$ 3,575.83
19	Board Training	LS	1	\$ 61.3	3 \$ 61.33
20	Room Rental	LS	1	\$ 285.1	3 \$ 285.18
21	PRC Fees	LS	1	\$ 10.6	5 \$ 10.69
22	Water Conservation Fees	LS	1	\$ 101.6	1 \$ 101.64
23	Miscellaneous G&A	LS	1	\$ 3.3	3 \$ 3.33
24	Storage Unit	LS	1	\$ 650.3	3 \$ 650.33
25	Small Fees Paid to NM T&R	LS	1	\$ 293.3	9 \$ 293.39
26	Sales Tax Adjustments	LS	1	\$ 405.5	
27	RIP Loan	LS	1	\$ 4,040.7	9 \$ 4,040.79
28	Reconcilliation Discrepancies	LS	1	\$ 358.4	
29	Water Conservation Fees	LS	1	\$ 101.6	1 \$ 101.64
30	Miscellaneous G&A	LS	1	\$ 3.3	3.33
31	Storage Unit	LS	1	\$ 650.3	
32	Small Fees Paid to NM T&R	LS	1	\$ 293.3	
33	Sales Tax Adjustments	LS	1	\$ 405.5	'
34	RIP Loan	LS	1	\$ 4,040.7	· ·
35	Reconcilliation Discrepancies	LS	1	\$ 358.4	· · · · · · · · · · · · · · · · · · ·
36	Debt Service- Interest payment	LS	1	\$ 798.2	<u> </u>
37	Tank Rehab	LS	1	\$ 4,500.0	_
38	Short Lived Asset Reserve- Well Pump Replacements	LS	1	\$ 1,200.0	
39	Short lived Asset Reserve - Gate Valves	LS	1	\$ 5,961.6	

40	Short lived Asset Reserve - Pressure Reducing Valves	LS	1	\$	14,414.25	\$	19,219.00
41	Short lived Asset Reserve - Master Meter	LS	1	\$	1,343.50	\$	2,687.00
42	Short lived Asset Reserve - Water Meters	LS	1	\$	47,658.00	\$	75,097.50
43	Short lived Asset Reserve - Hydrants	LS	1	\$	19,838.75	\$	23,929.35
44	Short lived Asset Reserve - Disinfection Equipment	LS	1	\$	870.00	\$	1,740.00
ANNUAL	O&M COSTS					\$	177,904.38
20-YEAR NET PRESENT VALUE O&M COSTS (Real Federal Interest Rate: 2.5%)						ċ	2,773,380.24
ZO ILAN	NET PRESENT VALUE OXIVI COSTS (Real Pederal Interest Rate. 2.5%)				2.5%	Ą	2,773,360.24
	PRESENT WORTH OF SALVAGE VALUE (Real Federal Interest Nate: 2.5%)	6)			2.5%	•	5,383,999.16

<sup>\*</sup>https://www.whitehouse.gov/omb/information-for-agencies/circulars/

Appendix C: Discount Rates for Cost-Effectiveness, Lease-Purchase, and Related Analyses for OMB Circular No. A-94

## Lower Arroyo Hondo MDWCA Water System Improvements Project Alternative Project 1 - No Action

	Alternative Project 1 - No					
	Summary of Annual Operations and Ma	aintenance Cost	s			
Item	Item Description	Unit	Qty	Unit Price		Total
1	Miscellaneous	LS	1	\$ 2.17	\$	2.17
2	Exempt Status - IRS Application	LS	1	\$ 200.00	\$	200.00
3	Repairs & Maintenance Equipment	LS	1	\$ 314.01	\$	314.01
4	Contract - Attorny Fees	LS	1	\$ 475.59	\$	475.59
5	Bookkeeping	LS	1	\$ 6,729.07	\$	6,729.07
6	Operator Extras	LS	1	\$ 443.06	\$	443.06
7	Water Operator - Other	LS	1	\$ 5,720.15	\$	5,720.15
8	Software	LS	1	\$ 20.00	\$	20.00
9	Supplies - General Office	LS	1	\$ 397.23	\$	397.23
10	Supplies - Furn/Fixt/Equip	LS	1	\$ 10.61	\$	10.61
11	Insurance - Gen Liability/Prop	LS	1	\$ 66.67	\$	66.67
12	Postage	LS	1	\$ 465.43	\$	465.43
13	Printing Publishing	LS	1	\$ 12.67	\$	12.67
14	NM Rural Water Association Dues	LS	1	\$ 63.50	\$	63.50
15	Subscriptions & Dues	LS	1	\$ 171.22	\$	171.22
16	Utilities - Electricity	LS	1	\$ 2,197.35	\$	2,197.35
17	Bank Charges	LS	1	\$ 1.30	\$	1.30
18	Board Stipends	LS	1	\$ 3,575.81	\$	3,575.81
19	Board Training	LS	1	\$ 61.33	\$	61.33
20	Room Rental	LS	1	\$ 285.18	\$	285.18
21	PRC Fees	LS	1	\$ 10.65	\$	10.65
15	Water Conservation Fees	LS	1	\$ 101.64	\$	101.64
16	Miscellaneous G&A	LS	1	\$ 3.33	\$	3.33
17	Storage Unit	LS	1	\$ 650.33	\$	650.33
18	Small Fees Paid to NM T&R	LS	1	\$ 293.39	\$	293.39
19	Sales Tax Adjustments	LS	1	\$ 405.58	\$	405.58
20	RIP Loan	LS	1	\$ 4,040.79	\$	4,040.79
21	Reconcilliation Discrepancies	LS	1	\$ 358.42	\$	358.42
22	Water Conservation Fees	LS	1	\$ 101.64	\$	101.64
23	Miscellaneous G&A	LS	1	\$ 3.33	\$	3.33
24	Storage Unit	LS	1	\$ 650.33	\$	650.33
25	Small Fees Paid to NM T&R	LS	1	\$ 293.39	\$	293.39
26	Sales Tax Adjustments	LS	1	\$ 405.58	\$	405.58
27	RIP Loan	LS	1	\$ 4,040.79	\$	4,040.79
28	Reconcilliation Discrepancies	LS	1	\$ 358.42	\$	358.42
29	Debt Service- Interest payment	LS	1	\$ 798.20	\$	798.20
Total Anr	nual Costs	· ·			\$	33,728.16
Discount	Rate 20-year (2.5%)				Ť	2.5%
	Period (years)				1	20
	and the second				+-	

525,793.81

Net Present Value (NPV)

## Lower Arroyo Hondo MDWCA Water System Improvements Project Alternative Project 2

	Summary of Construction						
Item	Description	Unit	Qty		Unit Price		Amount
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	285,320.00	\$	285,320.00
2	Testing allowance	Allow	1	\$	69,100.00	\$	69,100.00
3	Traffic control plan	LS	1	\$	110,600.00	\$	110,600.00
4	Preparation and implementation of SWPPP	LS	1	\$	37,100.00	\$	37,100.00
5	Rock excavation required for installation of new waterline and tank, including rock	CY	1	\$	1,662,700.00	\$	1,662,700.00
	removal, disposal of material, and labor, CIP.						, ,
6	Construction Staking	LS	1	\$	75,100.00	\$	75,100.00
Water Supp							
	Furnish and install new concrete foundation, CIP Furnish and install new well house manifold, including 2-inch master meter,	LS	1	\$	30,000.00	\$	30,000.00
	pressure gauges, valves, sample cock, 2-inch piping to 5-feet ouside of structure,						
8	pipe supports, well surface casing, drain line to daylight, fittings, appurtenances,	LS	1	\$	210,000.00	\$	210,000.00
	and existing pipe disposal, CIP						
	Furnish and install new sodium hypochlorite metering pump, solution tank, spill						
9	containment, tubing, fittings and appurtenances, CIP	LS	1	\$	8,700.00	\$	8,700.00
	Electrical and controls, including pump control panel, combination disconnects,						
	manual transfer switch, surge protection devices, fusible disconnect, antenna,			١.			
10	radio telemetry, trenching and backfill, equipment rac heater, vent fans,	LS	1	\$	87,000.00	\$	87,000.00
	grounding, lighting, and conduit & wiring, CIP						
11	Furnish and install a new portable generator	EA	1	\$	5,000.00	\$	5,000.00
	Furnish and install 4-inch PVC C900 DR18 transmission line, including labor,						·
	material, potholing, trenching, bedding, removal of waste excavation, joint						
12	restraints, fittings, warning tape, tracer wire, above ground pipe markers,	LF	952	\$	50.00	\$	47,600.00
	backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing						
	and all other appurtenances, CIP						
	Drilling equipment mobilization (75%)/demobilization (25%), includes all						
	equipment, labor and materials not separately listed necessary to construct,			١.			
13	develop, test and equip one well in the project area, coordination, protection of	LS	1	\$	20,000.00	\$	20,000.00
	each well throughout project, driller's logs, as-builts, and site restoration, complete						
-	in place (CIP).  Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft			-			
14	depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as	LF	20	\$	310.00	\$	6,200.00
14	directed by Engineer.	LF	20	٦	310.00	Ą	0,200.00
	Drill 12.75-inch production well borehole, from bottom of surface casing to						
15	anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total	LF	205	\$	85.00	\$	17,425.00
13	cased depth, CIP. Collect drill cutting samples every 10 feet.	L,	203	7	05.00	7	17,423.00
16	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$	5,000.00	\$	5,000.00
- 10	. ,	ALLOW	1	۲	3,000.00	Ą	3,000.00
17	6-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and	LF	160	\$	45.00	\$	7,200.00
	centralizers, CIP 6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and						
18	centralizers, CIP	LF	40	\$	100.00	\$	4,000.00
	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12						
19	colorado silica sand, final size to be determined by Engineer, includes materials,	CF	46	\$	75.00	\$	3,450.00
	disinfection and placement with tremie pipe, CIP			l '		, i	,
	Bentonite seal above filter pack, min. 20-ft thickness , including 20% contingency						
20	for washouts, etc.), includes materials and placement with tremie pipe, CIP	CF	15	\$	70.00	\$	1,050.00
	Grout between borehole and surface casing/production casing and between						
21	surface casing and production casing, as indicated in drawings , including 20%	CF	120	\$	50.00	\$	6,000.00
	contingency for washouts, etc.), includes materials and placement with tremie						
	pipe, CIP						
22	Swabbing and/or bailing development, includes any labor, materials and	HR	4	\$	475.00	\$	1,900.00
-	equipment needed that are not separately listed on bid form.  Air-lift pumping development, includes any labor, materials and equipment			-			
23	needed that are not separately listed on bid form.	HR	4	\$	550.00	\$	2,200.00
	Pumping development, includes any labor, materials and equipment needed that						
24	are not separately listed on bid form. Required recovery periods after pumping are	HR	16	\$	475.00	\$	7,600.00
	incidental.			_	., 5.00	Ψ.	,,000.00
	Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min						
25	step test and 18-hour constant rate test, includes any labor, materials and	115	34	ب ا	475.00	۲	14 400 00
25	equipment needed that are not separately listed on bid form. Required recovery	HR	24	\$	475.00	<b>\$</b>	11,400.00
	periods after pumping are incidental.						
I	Well disinfection and bacteriological testing, includes disinfection of equipment	· <del></del> _					
26	and materials placed in the well, and collection and delivery of bacteriological	EA	1	\$	5,000.00	\$	5,000.00
	samples to laboratory.						

27	T T		1				
	Furnish and install 4-inch master meter, , including all material, labor, meter, and all related appurtenances not separately listed on the bid form), CIP	EA	1	\$	13,435.00	\$	13,435.00
28	Furnish 1.5-inch galvanized drop pipe.	LF	160	\$	18.00	\$	2,880.00
29	Furnish 1.5-inch check valve	EA	2	\$	400.00		800.00
30	Furnish #12 pump wire	LF	180	\$	10.00	\$	1,800.00
31	Furnish 1 1/4" Sch 80 PVC Sounding Tube	LF	160	\$	12.00	\$	1,920.00
	Furnish and install 5 HP Grundfos 25S50-26 (OAE) submersible production pump,						
32	motor, and all downhole appurtenances not separately listed. Pump size and	EA	1	\$	12,000.00	\$	12,000.00
32	model above is estimated. Final size and model to be determined by Engineer	LA	1	٦	12,000.00	Ç	12,000.00
	based on Pump Test results.						
	Surface completion of wellhead, including pitless adapter, well cap, connection to						
33	drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal,	EA	1	\$	15,000.00	\$	15,000.00
33	teeposts, appurtenances not separately listed, earthwork and compaction, CIP	271	1	7	13,000.00	7	13,000.00
	Testing allowance, includes reimbursement of 3rd party costs for water quality						
34	laboratory analysis, material testing and passing bacteriological test analysis	ALLOW	1	\$	5,000.00	\$	5,000.00
	samples.						
	Contractor labor, equipment and materials to support and coordination of						
35	geophysical logging, if requested by Engineer. Excludes cost of 3rd party	EA	1	\$	2,000.00	\$	2,000.00
	geophysical logging invoices which are elegible for payment from the testing	271	1	7	2,000.00	7	2,000.00
	allowance.						
36	Standby at the written request of Owner or Engineer.	HR	8	\$	550.00	\$	4,400.00
Water Stor			T				
	New 42,000-gallon welded steel water storage tank, including all labor, materials,						
37	tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections,	LS	1	\$	232,700.00	\$	232,700.00
	disinfection, excluding gate valves, CIP						
	Tank foundation and sub-foundation, including earthwork, site grading drainage,						
38	imported fill material per plans and Geotechnical Report, all labor, materials,	LS	1	\$	61,800.00	\$	61,800.00
	excavation, backfill, reinforcement, and concrete, CIP						
39	Sacrificial anode type cathodic protection for storage tank, including labor and	EA	1	\$	18,580.00	\$	18,580.00
	materials, CIP				,		-,
Water Dist	Furnish and install 4-inch PVC C900 DR18 waterline, including labor, material,		T	1		1	
	potholing, trenching, bedding, removal of waste excavation, joint restraints,						
				_		_	
40	fittings, warning tape, tracer wire, above ground pipe markers, backfilling,	LF	22097	\$	50.00	\$	1,104,850.00
	compaction, disinfection, site restoration, hydrostatic pressure testing and all						
	other appurtenances, CIP Furnish and install 4-inch HDPE DR11 waterline for river crossing by horizontal						
	directional drilling (HDD), including all materials, labor, transition fittings,						
41		LF	100	\$	185.00	\$	18,500.00
	restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site						
	restoration, CIP						
	Furnish and install 4-inch gate valve, including excavation, valve, valve box, valve						
42	riser and collar, test station, accessories, tests, backfill and compaction, and all	EA	25	\$	3,465.00	\$	85,325.63
	other appurtenances required for a complete working installation, CIP			-			
	Furnish and install CMU, including foundation, electrical, HVAC, doors and						
43	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to	LS	100	\$	815.00	\$	81,500.00
43	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not	LS	100	\$	815.00	\$	81,500.00
43	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP	LS	100	\$	815.00	\$	81,500.00
	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel,						
43	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives,	LS LS	100	\$	815.00 65,100.00	\$	
	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel,						81,500.00 65,100.00
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives,	LS	1	\$	65,100.00	\$	65,100.00
	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP					\$	
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP	LS	1	\$	65,100.00	\$	65,100.00
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill,	LS EA	1 152	\$	65,100.00 2,895.00	\$	65,100.00
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all	LS	1	\$	65,100.00	\$	65,100.00
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP	LS EA	1 152	\$	65,100.00 2,895.00	\$	65,100.00
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench	LS EA	1 152	\$	65,100.00 2,895.00	\$	65,100.00
44	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection	LS EA	1 152	\$	65,100.00 2,895.00	\$	65,100.00 440,040.00 288,800.00
44 45 46	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all	LS EA	1 152 76	\$ \$	65,100.00 2,895.00 3,800.00	\$ \$	65,100.00 440,040.00 288,800.00
44 45 46	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP	LS EA	1 152 76	\$ \$	65,100.00 2,895.00 3,800.00	\$ \$	65,100.00 440,040.00 288,800.00
44 45 46 47	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction	EA EA LF	1 152 76 11152	\$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$	65,100.00 440,040.00 288,800.00 724,880.00
44 45 46	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances,	LS EA	1 152 76	\$ \$	65,100.00 2,895.00 3,800.00	\$ \$	65,100.00 440,040.00 288,800.00 724,880.00
44 45 46 47	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction	EA EA LF	1 152 76 11152	\$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$	65,100.00 440,040.00 288,800.00 724,880.00
44 45 46 47	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP	EA EA LF	1 152 76 11152 248	\$ \$ \$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$ \$	65,100.00 440,040.00 288,800.00 724,880.00
44 45 46 47	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP  install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP	EA EA LF	1 152 76 11152	\$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$	65,100.00 440,040.00 288,800.00
44 45 46 47 48	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP  install a duplex booster pump, including integration in the main booster panel, electrical ad control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all	EA EA LF	1 152 76 11152 248	\$ \$ \$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$ \$	65,100.00 440,040.00 288,800.00 724,880.00 31,000.00
44 45 46 47 48	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP  install a duplex booster pump, including integration in the main booster panel, electrical aduptex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP	EA EA LF	1 152 76 11152 248	\$ \$ \$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$ \$	65,100.00 440,040.00 288,800.00 724,880.00 31,000.00
44 45 46 47 48 48 <b>Construct</b>	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP  install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP	EA EA LF	1 152 76 11152 248	\$ \$ \$ \$ \$	65,100.00 2,895.00 3,800.00 65.00 125.00	\$ \$ \$ \$ \$ \$ \$	65,100.00 440,040.00 288,800.00 724,880.00 31,000.00 52,675.00
44 45 46 47 48	Furnish and install CMU, including foundation, electrical, HVAC, doors and hardware, interior control and isolation valves, pipe and fittings from skid unit to 5ft outside bldg. footprint, power connections, and all related appurtenances not separately listed on the Bid Form, CIP  install a duplex booster pump, including integration in the main booster panel, electrical and control panels, electrical connections, Variable Frequency Drives, and all materials, labor, and equipment, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP	EA EA LF	1 152 76 11152 248	\$ \$ \$ \$ \$	65,100.00 2,895.00 3,800.00 65.00	\$ \$ \$	65,100.00 440,040.00 288,800.00 724,880.00 31,000.00

NMGRT (T	Toas County)				7.5000%	\$	539,246.76
Total Cons	struction Costs					\$	7,729,203.51
TOTAL CO	INSTRUCTION COST (W/O TAX)					\$	7,189,956.75
TOTAL CO	DISTRUCTION COST (W/ TAX)					\$	7,729,203.51
	·	n-Construction Costs					
Planning a	and Design:			1			
Docian Dh	ass. Floatrical and Controls Decign				10%	\$	718,995.68 1,200.00
	ase- Electrical and Controls Design					\$	395,900.00
	ase- Survey and Topo					\$ \$	1,500.00
	ase- Permitting					\$ \$	· · · · · · · · · · · · · · · · · · ·
	ase- Geotechnical Investigation					\$ \$	61,300.00 5,000.00
	ase- Cultural Survey ase- Additional Services					\$	•
Subtotal	ase- Additional Services					\$	<b>6,000.00</b> 1,189,895.68
	Foas County)				7.5000%	\$	89,242.18
				<u> </u>	7.5000%	<u>۽</u> خ	
	nning and Design ng During Construction:					Ş	1,279,137.85
	nistration- Basic Engineering Services					\$	35,000.00
	ion Phase- Basic Engineering Services			$\vdash$	20%	\$	1,437,991.35
	ion Phase- Additional Engineering Services (510 Calendar Days Co	onstruction Observation)			20,0	\$	459,870.13
Subtotal				1		\$	1,932,861.48
	Foas County)			I	7.5000%	\$	144,964.61
-	ineering during Construction			1		\$	2,077,826.09
	DN-CONSTRUCTION COST					\$	3,356,963.94
	OJECT CAPITAL COST					\$	11,086,167.44
	Summary	of O&M Costs					
Item 1	Description Miscellaneous	Unit LS	Qty	\$	Unit Price 2.17	ć	Amount 2 17
	[IVII3CEIIdIIEUU3				7.17	\$	2.17
2			1			\$	200.00
	Exempt Status - IRS Application Repairs & Maintenance Equipment	LS LS	1 1	\$	200.00	\$ \$	200.00 314.01
2 3 4	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees	LS LS LS	1 1 1	\$ \$ \$	200.00 314.01 475.59	\$	314.01 475.59
2 3 4 5	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping	LS LS LS LS	1 1 1 1	\$ \$ \$ \$	200.00 314.01 475.59 6,729.07	\$ \$ \$	314.01 475.59 6,729.07
2 3 4	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees	LS LS LS LS LS	1 1 1	\$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06	\$ \$ \$	314.01 475.59 6,729.07 443.06
2 3 4 5 6 7 8	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software	LS LS LS LS LS LS	1 1 1 1 1 1 1	\$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00	\$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00
2 3 4 5 6 7 8	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office	LS	1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23	\$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23
2 3 4 5 6 7 8 9	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip	LS	1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61	\$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61
2 3 4 5 6 7 8 9 10	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop	LS L	1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67	\$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67
2 3 4 5 6 7 8 9	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip	LS	1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61	\$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61
2 3 4 5 6 7 8 9 10 11 12 13	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50
2 3 4 5 6 7 8 9 10 11 12 13 14	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22
2 3 4 5 6 7 8 9 10 11 12 13 14 15	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan	LS L		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Water Conservation Fees	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 31 31 31 31 31 31 31 31	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53 3.53
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 31 31 31 31 31 31 31 31	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments Small Fees Paid to NM T&R Sales Tax Adjustments	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 33 34 34 35 36 37 38 38 39 30 30 30 30 30 30 30 30 30 30	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan	LS		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 31 31 31 31 31 31 31 31	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments Small Fees Paid to NM T&R Sales Tax Adjustments	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 31 31 31 31 31 31 31 31	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Debt Service- Interest payment Tank Rehab	LS		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58		314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 38 38 38 38 38 38 38 38 38	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Debt Service- Interest payment Tank Rehab Short Lived Asset Reserve- Well Pump Replacements	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 31 31 31 31 31 31 31 31	Exempt Status - IRS Application Repairs & Maintenance Equipment Contract - Attorny Fees Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Debt Service- Interest payment Tank Rehab	LS		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$	314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,394.70 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33

42	Short lived Asset Reserve - Booster Pumps	LS	1	\$	3,255.00	\$	3,255.00
43	Short lived Asset Reserve - Hydrants	LS	1	\$	2,633.75	\$	2,633.75
44	Short lived Asset Reserve - Disinfection Equipment	LS	1	\$	870.00	\$	870.00
<b>ANNUAL</b>	ANNUAL O&M COSTS						134,318.34
20-YEAR NET PRESENT VALUE O&M COSTS (Real Federal Interest Rate: 2.5%)					2.5%	\$	2,093,910.37
20-YEAR	PRESENT WORTH OF SALVAGE VALUE (Real Federal Interest Rate: 2.59	6)			2.5%	\$	3,367,322.13
20-YEAR	NET PRESENT VALUE TOTAL COSTS (Real Federal Interest Rate: 2.5)				2.5%	\$	9,812,755.68
*https://ww	w.whitehouse.gov/omb/information-for-agencies/circulars/						
Appendix C:	Discount Rates for Cost-Effectiveness, Lease-Purchase, and Related Analyses for OMB Circular No	o. A-94					

## Lower Arroyo Hondo MDWCA Water System Improvements Project Alternative Project 3

	Summary of Construction						
Item	Description	Unit	Qty		Unit Price		Amount
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	330,140.00	\$	330,140.00
2	Testing allowance	Allow	1	\$	69,100.00	\$	69,100.00
3	Traffic control plan	LS	1	\$	129,500.00	\$	129,500.00
4	Preparation and implementation of SWPPP	LS	1	\$	37,100.00	\$	37,100.00
5	Rock excavation required for installation of new waterline and tank, including rock	CY	1	\$	1,663,700.00	\$	1,663,700.00
	removal, disposal of material, and labor, CIP.						
6	Construction Staking	LS	1	\$	92,300.00	\$	92,300.00
Water Sup		1.0		1 4	20.000.00	_	20.000.00
7	Furnish and install new concrete foundation, CIP Furnish and install new well house, including 2-inch master meter, pressure	LS	1	\$	30,000.00	\$	30,000.00
	gauges, valves, sample cock, 2-inch piping to 5-feet ouside of structure, pipe						
8	supports, well surface casing, drain line to daylight, fittings, appurtenances, and	LS	1	\$	210,000.00	\$	210,000.00
	existing pipe disposal, CIP						
	Furnish and install new sodium hypochlorite metering pump, solution tank, spill			_			
9	containment, tubing, fittings and appurtenances, CIP	LS	1	\$	8,700.00	\$	8,700.00
	Electrical and controls, including pump control panel, combination disconnects,						
10	manual transfer switch, surge protection devices, fusible disconnect, antenna,	LS	1	\$	87,000.00	\$	87,000.00
10	radio telemetry, trenching and backfill, equipment rac heater, vent fans,	LS	_	7	67,000.00	7	67,000.00
	grounding, lighting, and conduit & wiring, CIP						
11	Coordinate with Electric Company to extend power to new well site, including	Allow	1	\$	15,700.00	\$	15,700.00
	poles, overhead line, and transformer, CIP	F.A.	1				
12	Furnish and install a new portable generator Furnish and install 4-inch PVC C900 DR18 transmission line, including labor,	EA	1	\$	5,000.00	\$	5,000.00
	material, potholing, trenching, bedding, removal of waste excavation, joint						
13	restraints, fittings, warning tape, tracer wire, above ground pipe markers,	LF	952	\$	50.00	\$	47,600.00
	backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing			T .		,	,
	and all other appurtenances, CIP						
	Drilling equipment mobilization (75%)/demobilization (25%), includes all						
	equipment, labor and materials not separately listed necessary to construct,						
13	develop, test and equip one well in the project area, coordination, protection of	LS	1	\$	20,000.00	\$	20,000.00
	each well throughout project, driller's logs, as-builts, and site restoration, complete						
	in place (CIP).						
1.4	Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft	LF	20	ب	210.00	\$	6 200 00
14	depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as	LF	20	\$	310.00	Ş	6,200.00
	directed by Engineer.						
	Drill 12.75-inch production well borehole, from bottom of surface casing to						
15	anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total	LF	205	\$	85.00	\$	17,425.00
	cased depth, CIP. Collect drill cutting samples every 10 feet.						
16	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$	5,000.00	\$	5,000.00
	6-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and				,		
17	centralizers, CIP	LF	160	\$	45.00	\$	7,200.00
10	6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and			_			
18	centralizers, CIP	LF	40	\$	100.00	\$	4,000.00
	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12						
19	colorado silica sand, final size to be determined by Engineer, includes materials,	CF	46	\$	75.00	\$	3,450.00
	disinfection and placement with tremie pipe, CIP						
20	Bentonite seal above filter pack, min. 20-ft thickness , including 20% contingency	05	45	_	70.00	_	4 050 00
20	for washouts, etc.), includes materials and placement with tremie pipe, CIP	CF	15	\$	70.00	\$	1,050.00
	Grout between borehole and surface casing/production casing and between						
	surface casing and production casing, as indicated in drawings , including 20%						
21	contingency for washouts, etc.), includes materials and placement with tremie	CF	120	\$	50.00	\$	6,000.00
	pipe, CIP						
22	Swabbing and/or bailing development, includes any labor, materials and	HR	4	\$	475.00	\$	1,900.00
	equipment needed that are not separately listed on bid form.						
23	Air-lift pumping development, includes any labor, materials and equipment	HR	4	\$	550.00	\$	2,200.00
	needed that are not separately listed on bid form.		· .	-		-	2,200.00
34	Pumping development, includes any labor, materials and equipment needed that		4.0	_	475.00	,	7.000.00
24	are not separately listed on bid form. Required recovery periods after pumping are	HR	16	\$	475.00	\$	7,600.00
	incidental.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min			$\vdash$			
	step test and 18-hour constant rate test, includes any labor, materials and					١.	
25	equipment needed that are not separately listed on bid form. Required recovery	HR	24	\$	475.00	\$	11,400.00
	periods after pumping are incidental.						
-	The Property of the Control of the C			•			

	NAVAILADADA AND AND AND AND AND AND AND AND AN		1	1			
26	Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological	EA	1	\$	5,000.00	\$	5,000.00
20	samples to laboratory.	LA	1	٦	3,000.00	Ą	3,000.00
27	Furnish 1.5-inch galvanized drop pipe.	LF	160	\$	18.00	Ś	2,880.00
28	Furnish 1.5-inch check valve	EA	2	\$	400.00		800.00
29	Furnish and install 4-inch master meter, , including all material, labor, meter, and	EA	1	\$	13,435.00	\$	13,435.00
	all related appurtenances not separately listed on the bid form), CIP						
29	Furnish #12 pump wire	LF	180	\$	10.00		1,800.00
30	Furnish 1 1/4" Sch 80 PVC Sounding Tube  Furnish and install 5 HP Grundfos 25S50-26 (OAE) submersible production pump,	LF	160	\$	12.00	\$	1,920.00
1	motor, and all downhole appurtenances not separately listed. Pump size and						
31	model above is estimated. Final size and model to be determined by Engineer	EA	1	\$	12,000.00	\$	12,000.00
1	based on Pump Test results.						
	Surface completion of wellhead, including pitless adapter, well cap, connection to						
32	drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal,	EA	1	\$	15,000.00	\$	15,000.00
32	teeposts, appurtenances not separately listed, earthwork and compaction, CIP	271	-	*	13,000.00	Ÿ	13,000.00
				<u> </u>			
33	Testing allowance, includes reimbursement of 3rd party costs for water quality laboratory analysis, material testing and passing bacteriological test analysis	ALLOW	1	\$	5,000.00	\$	5,000.00
33	samples.	ALLOW	1	۶	3,000.00	Ş	5,000.00
	Contractor labor, equipment and materials to support and coordination of						
24	geophysical logging, if requested by Engineer. Excludes cost of 3rd party	<b>5</b> 4		,	2 000 00		2 000 00
34	geophysical logging invoices which are elegible for payment from the testing	EA	1	\$	2,000.00	\$	2,000.00
	allowance.			1			
35	Standby at the written request of Owner or Engineer.	HR	8	\$	550.00	\$	4,400.00
Water Sto	New 72,000-gallon welded steel water storage tank, including all labor, materials,		1	T			
36	tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections,	LS	1	\$	398,900.00	\$	398,900.00
30	disinfection, excluding gate valves, CIP	23	-		330,300.00	Ÿ	330,300.00
	Tank foundation and sub-foundation, including earthwork, site grading drainage,						
37	imported fill material per plans and Geotechnical Report, all labor, materials,	LS	1	\$	105,900.00	\$	105,900.00
	excavation, backfill, reinforcement, and concrete, CIP						
38	Sacrificial anode type cathodic protection for storage tank, including labor and	EA	1	\$	18,580.00	\$	18,580.00
Water Dis	materials, CIP			<u> </u>	·		<u> </u>
water Dis	Furnish and install 6-inch PVC C900 DR18 waterline, including labor, material,		T T	1			
	potholing, trenching, bedding, removal of waste excavation, joint restraints,						
39	fittings, warning tape, tracer wire, above ground pipe markers, backfilling,	LF	22097	\$	65.00	\$	1,436,305.00
	compaction, disinfection, site restoration, hydrostatic pressure testing and all						
	other appurtenances, CIP						
	Furnish and install 6-inch HDPE DR11 waterline for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings,						
40	restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site	LF	100	\$	205.00	\$	20,500.00
	restoration, CIP						
	restoration, en			1			
	Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve			١.			
41	riser and collar, test station, accessories, tests, backfill and compaction, and all	EA	25	\$	5,270.00	\$	129,773.75
	other appurtenances required for a complete working installation, CIP						
	Furnish and install CMU, including foundation, electrical, HVAC, doors and						
42	hardware, interior control and isolation valves, pipe and fittings from skid unit to	LS	100	\$	815.00	\$	81,500.00
	5ft outside bldg. footprint, power connections, and all related appurtenances not	23	100	Ť	013.00	Ψ.	02,500.00
	separately listed on the Bid Form, CIP install a triplex booster system, including integration in the main booster panel,			-			
43	electrical and control panels, electrical connections, Variable Frequency Drives,	LS	1	\$	119,995.00	\$	119,995.00
43	and all materials, labor, and equipment, CIP	L	1	,	119,995.00	Ţ	119,995.00
44	Furnish and install 3/4" x 5/8" water meter, , including excavation, backfill, meter	EA	128	\$	2,895.00	\$	370,560.00
	pit, meter setter, fittings, connection to service, and all appurtenances, CIP						
	Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill,						
45	meter pit, tandem meter setter, fittings, connection to existing service, and all	EA	100	\$	3,800.00	\$	380,000.00
	appurtenances, CIP Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench			-			
	Method, including all material, labor, connection to new water main, connection						
		LF	11152	\$	50.00	\$	557,600.00
46	to water meter assembly, service line, saddle, corp stop, site restoration and all		i				
46	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP						
	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction						
46	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances,	LF	248	\$	125.00	\$	31,000.00
	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances,	LF	248	\$	125.00	\$	31,000.00
	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install new fire hydrant, including all material, labor, PVC pipe required	LF	248	\$	125.00	\$	31,000.00
	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install new fire hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site	LF EA	248	\$	125.00	\$	31,000.00 346,011.67
	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances,	LF	248	\$	125.00	\$	31,000.0
47	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install new fire hydrant, including all material, labor, PVC pipe required						
47	to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install new fire hydrant, including all material, labor, PVC pipe required						

48	Furnish and install flush hydrant assembl, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all	EA	7	\$	7,525.00	\$	52,675.00		
	other appurtenances needed for a complete installation, CIP								
	on Subtotal			1		\$	6,932,800.42		
Contingen	-				20%	\$	1,386,560.08		
Constructi				1		\$	8,319,360.50		
-	oas County)				7.5000%	\$	623,952.04		
	struction Costs					\$	8,943,312.54		
	NSTRUCTION COST (W/O TAX)  NSTRUCTION COST (W/ TAX)					\$	8,319,360.50		
TOTAL CO	Summary of Non-Construction C	osts				\$	8,943,312.54		
Planning a	nd Design:								
Design Pha	ase- Basic Engineering Services				10%	\$	831,936.05		
_	ase- Electrical and Controls Design					\$	1,200.00		
Design Pha	ase- Survey and Topo					\$	395,900.00		
Design Pha	Design Phase- Permitting \$\frac{\xi}{2}\$								
Design Pha	ase- Geotechnical Investigation					\$	61,300.00		
_	ase- Cultural Survey					\$	5,000.00		
	ase- Additional Services					\$	6,000.00		
Subtotal				<u> </u>		\$	1,302,836.05		
	oas County)				7.5000%	\$	97,712.70		
	ning and Design					\$	1,400,548.75		
	g During Construction: istration- Basic Engineering Services			1	1	\$	35,000,00		
	on Phase- Basic Engineering Services				20%	\$	35,000.00 1,663,872.10		
	on Phase- Additional Engineering Services (460 Calendar Days Construction O	bservation)			20/0	\$	650,893.10		
Subtotal	511 1 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1		\$	2,349,765.20		
	oas County)				7.5000%	\$	176,232.39		
Total Engi	neering during Construction					\$	2,525,997.59		
Total Engineering during Construction									
TOTAL NO	N-CONSTRUCTION COST					\$	3,926,546.34		
	DJECT CAPITAL COST					\$ \$	3,926,546.34 12,869,858.88		
TOTAL PRO	DJECT CAPITAL COST Summary of O&M Costs	Unit	Oty	1	Unit Price	_	12,869,858.88		
	DJECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous	Unit LS	Qty 1	\$	Unit Price 2.17	<b>\$</b>			
Item 1 2	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application	LS LS	1 1	\$	2.17 200.00	<b>\$</b> \$	12,869,858.88 Amount 2.17 200.00		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment	LS LS LS	1 1 1	\$	2.17 200.00 314.01	\$ \$ \$ \$	12,869,858.88 Amount 2.17 200.00 314.01		
Item  1 2 3	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application	LS LS	1 1	\$ \$ \$ \$	2.17 200.00	\$ \$ \$ \$ \$	12,869,858.88 Amount 2.17 200.00		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras	LS LS LS LS LS	1 1 1 1 1 1	\$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06	\$ \$ \$ \$ \$	Amount 2.17 200.00 314.01 475.59 6,729.07 443.06		
1 2 3 4 5 6 7	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other	LS LS LS LS LS LS LS LS LS	1 1 1 1 1 1 1	\$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44	\$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office	LS LS LS LS LS	1 1 1 1 1 1	\$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00	\$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip	LS LS LS LS LS LS LS LS LS	1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop	LS	1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip	LS LS LS LS LS LS LS LS LS	1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67		
Name	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22		
Name	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount 2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 337.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental  PRC Fees	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 337.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 337.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental  PRC Fees  Water Conservation Fees  Miscellaneous G&A  Storage Unit	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental  PRC Fees  Water Conservation Fees  Miscellaneous G&A  Storage Unit  Small Fees Paid to NM T&R	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  ROOM Rental  PRC Fees  Water Conservation Fees  Miscellaneous G&A  Storage Unit  Small Fees Paid to NM T&R  Sales Tax Adjustments	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental  PRC Fees  Water Conservation Fees  Miscellaneous G&A  Storage Unit  Small Fees Paid to NM T&R	LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental  PRC Fees  Water Conservation Fees  Miscellaneous G&A  Storage Unit  Small Fees Paid to NM T&R  Sales Tax Adjustments  RIP Loan  Reconcilliation Discrepancies  Water Conservation Fees  Water Conservation Fees	LS     LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 337.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42		
Item	DIECT CAPITAL COST  Summary of O&M Costs  Description  Miscellaneous  Exempt Status - IRS Application  Repairs & Maintenance Equipment  Contract - Attorny Fees  Bookkeeping  Operator Extras  Water Operator - Other  Software  Supplies - General Office  Supplies - Furn/Fixt/Equip  Insurance - Gen Liability/Prop  Postage  Printing Publishing  NM Rural Water Association Dues  Subscriptions & Dues  Utilities - Electricity  Bank Charges  Board Stipends  Board Training  Room Rental  PRC Fees  Water Conservation Fees  Miscellaneous G&A  Storage Unit  Small Fees Paid to NM T&R  Sales Tax Adjustments  RIP Loan  Reconcilliation Discrepancies	LS     LS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64		12,869,858.88  Amount  2.17 200.00 314.01 475.59 6,729.07 443.06 17,160.44 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 4,944.04 1.30 3,575.81		

33	Sales Tax Adjustments	LS	1	\$	405.58	\$	405.58		
34	RIP Loan	LS	1	\$	4,040.79	\$	4,040.79		
35	Reconcilliation Discrepancies	LS	1	\$	358.42	\$	358.42		
36	Debt Service- Interest payment	LS	1	\$	798.20	\$	798.20		
37	Tank Rehab	LS	1	\$	4,500.00	\$	4,500.00		
38	Short Lived Asset Reserve- Well Pump Replacements	LS	1	\$	1,200.00	\$	1,200.00		
39	Short lived Asset Reserve - Gate Valves	LS	1	\$	6,488.69	\$	6,488.69		
40	Short lived Asset Reserve - Master Meter	LS	1	\$	1,343.50	\$	1,343.50		
41	Short lived Asset Reserve - Water Meters	LS	1	\$	75,056.00	\$	75,056.00		
42	Short lived Asset Reserve - Booster Pumps	LS	1	\$	5,999.75	\$	5,999.75		
43	Short lived Asset Reserve - Hydrants	LS	1	\$	19,934.33	\$	19,934.33		
44	Short lived Asset Reserve - Disinfection Equipment	LS	1	\$	870.00	\$	870.00		
ANNUAL	O&M COSTS					\$	163,307.42		
20-YEAR	NET PRESENT VALUE O&M COSTS (Real Federal Interest Rate: 2.5%)				2.5%	\$	2,545,825.79		
20-YEAR	PRESENT WORTH OF SALVAGE VALUE (Real Federal Interest Rate: 2.5%	6)			2.5%	\$	3,857,859.74		
20-YEAR	20-YEAR NET PRESENT VALUE TOTAL COSTS (Real Federal Interest Rate: 2.5)						11,557,824.93		
*https://www	https://www.whitehouse.gov/omb/information-for-agencies/circulars/								
Appendix C: Discount Rates for Cost-Effectiveness, Lease-Purchase, and Related Analyses for OMB Circular No. A-94									

### Lower Arroyo Hondo MDWCA Water System Improvements Project Alternative Project 4

	Alternative Pro Summary of Construc					
Item	Description Summary of construct	Unit	Qty		Unit Price	Amount
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	301,450.00	\$ 301,450.00
2	Testing allowance	Allow	1	\$	67,800.00	\$ 67,800.00
3	Traffic control plan	LS	1	\$	118,300.00	\$ 118,300.00
4	Preparation and implementation of SWPPP	LS	1	\$	36,000.00	\$ 36,000.00
_	Rock excavation required for installation of new waterline, including rock removal,	674	4			4 544 500 00
5	disposal of material, and labor, CIP.	CY	1	\$	1,614,500.00	\$ 1,614,500.00
6	Construction Staking	LS	1	\$	82,300.00	\$ 82,300.00
Water Supp		T	<u> </u>	1 4		
7	Furnish and install new concrete foundation, CIP Furnish and install new well house, including 2-inch master meter, pressure gauges,	LS	1	\$	30,000.00	\$ 30,000.00
8	valves, sample cock, 2-inch piping to 5-feet ouside of structure, pipe supports, well surface casing, drain line to daylight, fittings, appurtenances, and existing pipe disposal, CIP	LS	1	\$	210,000.00	\$ 210,000.00
9	Furnish and install new sodium hypochlorite metering pump, solution tank, spill	LS	1	\$	8,700.00	\$ 8,700.00
	containment, tubing, fittings and appurtenances, CIP Electrical and controls, including pump control panel, combination disconnects,					
10	manual transfer switch, surge protection devices, fusible disconnect, antenna, radio telemetry, trenching and backfill, equipment rac heater, vent fans, grounding, lighting, and conduit & wiring, CIP	LS	1	\$	87,000.00	\$ 87,000.00
11	Coordinate with Electric Company to extend power to new well site, including	Allow	1	\$	15,700.00	\$ 15,700.00
12	poles, overhead line, and transformer, CIP Furnish and install a new portable generator	EA	1	\$	5,000.00	\$ 5,000.00
13	Furnish and install 4-inch PVC C900 DR18 transmission line, including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP	LF	5849	\$	50.00	\$ 292,450.00
13	Drilling equipment mobilization (75%)/demobilization (25%), includes all equipment, labor and materials not separately listed necessary to construct, develop, test and equip one well in the project area, coordination, protection of each well throughout project, driller's logs, as-builts, and site restoration, complete in place (CIP).	LS	1	\$	20,000.00	\$ 20,000.00
14	Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as directed by Engineer.	LF	20	\$	310.00	\$ 6,200.00
15	Drill 12.75-inch production well borehole, from bottom of surface casing to anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total cased depth, CIP. Collect drill cutting samples every 10 feet.	LF	205	\$	85.00	\$ 17,425.00
16	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$	5,000.00	\$ 5,000.00
17	6-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and	LF	160	\$	45.00	\$ 7,200.00
	centralizers, CIP 6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and		40	_	400.00	4 000 00
18	centralizers, CIP	LF	40	\$	100.00	\$ 4,000.00
19	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12 colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP	CF	46	\$	75.00	\$ 3,450.00
20	Bentonite seal above filter pack, min. 20-ft thickness , including 20% contingency for washouts, etc.), includes materials and placement with tremie pipe, CIP	CF	15	\$	70.00	\$ 1,050.00
21	Grout between borehole and surface casing/production casing and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc.), includes materials and placement with tremie pipe, CIP	CF	120	\$	50.00	\$ 6,000.00
22	Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.	HR	4	\$	475.00	\$ 1,900.00
23	Air-lift pumping development, includes any labor, materials and equipment needed	HR	4	\$	550.00	\$ 2,200.00
24	that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.	HR	16	\$	475.00	\$ 7,600.00
25	Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are incidental.	HR	24	\$	475.00	\$ 11,400.00
26	Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.	EA	1	\$	5,000.00	\$ 5,000.00
27	Furnish 1.5-inch galvanized drop pipe.	LF	160	\$	18.00	\$ 2,880.00
28	Furnish 1.5-inch check valve	EA	2	\$	400.00	\$ 800.00

Period apporting to the part of the Dat Corning, Life   25				T				
Farmines 1 Life Schild PMC Seconding Tube   Farmines and collection   Farmines and collection pump.	29		EA	1	\$	13,435.00	\$	13,435.00
Furnish and install is PF Grundlo 25500-26 (ACE) submersible production pump, and all common in generations not supraintenance not supraintenance and submersible production pump, and allowers is estimated. This is 22,000.00 \$ 13,000. 200				1			_	1,800.00
and the selection of all downshole appartmenances not sequentarly lands. Pump size and model as above the selectional of model to be determined by Engineer Exclusion By Engineer Scale Completion of wellhead, including pibles adapter, well cap, connection to drop pipo, sub-out of of electrical condust, 44x from rate paid and well result separate pump size and provides and apparentments on the programmy size and apparentments on the programmy size and apparentments. The programmy size and apparentments on the programmy size and apparentments on the programmy size and apparentments. The programmy size and apparentments on the programmy size and apparentments on the programmy size and apparentments. The programmy size and apparentments on the size apparentments on the programmy size and apparentments on the size apparentments of the size apparentments on the size appa	30		LF	160	\$	12.00	\$	1,920.00
23   20   20   20   20   20   20   20	31	motor, and all downhole appurtenances not separately listed. Pump size and model above is estimated. Final size and model to be determined by Engineer based on	EA	1	\$	12,000.00	\$	12,000.00
Secondary analysis, material testing and possing bacteriological rest analysis   Secondary analysis, material testing and possing bacteriological rest analysis   Contractor labor, equipment and materials to support and coordination of   Secondary   Seconda	32	drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal,	EA	1	\$	15,000.00	\$	15,000.00
Secophysical logging in recipiested by Engineer. Excludes costs of 3rd party expenses of the property for payment from the testing allowance.   HiR	33	laboratory analysis, material testing and passing bacteriological test analysis	ALLOW	1	\$	5,000.00	\$	5,000.00
Water Stronge   New 42,000 pallon welded steel water storage tank, including all labor, materials, but ank appurtenances, piping within 5-feet of the tank, painting, NACE inspections, disfriction, excluding again valves, IP		geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging invoices which are elegible for payment from the testing allowance.	EA					2,000.00
New 42,000 gallon welded steel water storage tank, including all labor, materials, and propertienance, pilog within 5-feet of the ani, patingtin, MCLE inspections, LS			HR	8	\$	550.00	\$	4,400.00
Section   Sect	Water Stor			1	T T			
Imported fill material per plans and Geotechnical Report, all labor, materials, compaction, backfill; incliner servers, compaction, backfill; incliner servers, compaction, backfill; incliner with protection for storage tank, including labor and materials, cip.    Water Distribution	36	tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections, disinfection, excluding gate valves, CIP	LS	1	\$	254,900.00	\$	254,900.00
Materials, CP	37	imported fill material per plans and Geotechnical Report, all labor, materials,	LS	1	\$	61,800.00	\$	61,800.00
Materials, CIP   Furnish and install 4-inch PVC L900 DR18 waterline, including labor, material, portholing, trenching, bedding, removal of waste excavation, joint restraints, littings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurternances, CIP   Furnish and install 4-inch IMPE DR11 waterline for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, and cheer value, tracer wire, above ground pipe markers, backfilling, and the restoration, CIP   Furnish and install 4-inch IMPE DR11 waterline for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, patholing, remarking, bedding, removal of waste excavation, plott restraints, liftings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurternances. CIP   Furnish and install 4-inch gate valve, including excavation, valve, valve waste cavation, valve, valve sites, and all other appurternances required for a complete working installation, CIP   Furnish and install five xis years and years	38	,, , , , , ,	EA	1	\$	18,580.00	\$	18,580.00
Furnish and install -inch PVC C900 DR18 waterines, including labor, material, portioning, trenching, bedding, removal of waste excavation, joint restraints, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP   Furnish and install -inch PVPC C900 DR18 waterines for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, and an article inches port pit excavation, bedding, backfill, and site restoration. CIP   Furnish and install -inch PVC C900 DR18 waterines, including labor, material, portioning, trenching, bedding, removal of waste excavation, joint restraints, growth in the properties of the propertie								, ,
fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other apputreanances, C.P  Furnish and install 4-inch HDPE DR11 waterline for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, and control of the cont	Water Dist				1			
directional drilling (HDD), including all materials, labor, transition fittings, restraints, activation wile, brare true, bore pit excavation, bedding, backfill, and site extension. CIP  Furnish and install di-inch PVC C900 DR18 waterline, including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pite markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP  Furnish and install d-inch gate valve, including excavation, valve, valve box, valve rise and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP  Furnish and install and well-inch pressure reducing valve day valve. Including excavation, valit, pressure reducing valve, fittings and accessories, pressure gauges, strainer, dismanting joint, backfill and compaction, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install all and a scale, corp stop, site restoration and all related appurtenances, CIP  Furnish and install med 3/4-in HDPE SDR-7 waters service line by open trench  Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, darial rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Total  **Solution**  Solution**  Solution**  Solution**  Solution**  Solution**  So	39	fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP	LF	19803	\$	50.00	\$	990,150.00
otholing, trenching, bedding, removal of waste exavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurteannecs, CIP  42	40	directional drilling (HDD), including all materials, labor, transition fittings, restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP	LF	100	\$	185.00	\$	18,500.00
riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP  Furnish and install new 4-inch pressure reducing valve and vault, including excavation, vault, pressure reducing valve and vault, including exacavation, vault, pressure reducing valve, fittings and accessories, pressure gauges, strainer, dismantling joint, backfill and compaction, CIP  Furnish and install 3/4" x 5/8" water meter, including, excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4" in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, LIF  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  5 6,330,420.6  Contingency  5 7,596,504.7  TOTAL CONSTRUCTION COST (W/O TAX)  5 7,596,504.7  TOTAL CONSTRUCTION COST (W/O TAX)  5 7,596,504.7  TOTAL CONSTRUCTION COST (W/O TAX)	41	potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other	LF	2688	\$	65.00	\$	174,720.00
excavation, vault, pressure reducing valve, fittings and accessories, pressure gauges, strainer, dismantling joint, backfill and compaction, CIP  44 Furnish and install 3/4" x 5/8" water meter, including, excavation, backfill, meter jit, meter setter, fittings, connection to service, and all appurtenances, CIP  45 Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter jit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  46 Furnish and install and install appurtenances, CIP  47 Furnish and install and install appurtenances, CIP  48 Furnish and install and install appurtenances, CIP  48 Furnish and install and install appurtenances, CIP  5 Furnish and install and install appurtenances, CIP  65 Furnish and install appurtenances, CIP  66 Furnish and install appurtenances, CIP  67 Furnish and install appurtenances, CIP  68 Furnish and install appurtenances, CIP  69 Furnish and install appurtenances, CIP  60 Furnish and install appurtenances, CIP  61 Furnish and install appurtenances, CIP  61 Furnish and instal	42	riser and collar, test station, accessories, tests, backfill and compaction, and all	EA	23	\$	3,465.00	\$	78,395.63
pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4"-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Construction Total  NMGRT (Toas County)  Total Construction Cost  TOTAL CONSTRUCTION COST (W/O TAX)  \$ 3,125.00 \$ 38,100.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 724,880.00.  \$ 11152 \$ 65.00 \$ 724,880.00.  \$ 11152 \$ 65.00 \$ 724,880.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 3,800.00 \$ 38,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5,000.00.  \$ 5	43	excavation, vault, pressure reducing valve, fittings and accessories, pressure	EA	3	\$	39,320.00	\$	117,960.00
meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Construction Total  NMGRT (Toas County)  Total Construction COST (W/O TAX)  TOTAL CONSTRUCTION COST (W/O TAX)  Sa0,000.0  \$ 3,800.00 \$ 3,800.00 \$  \$ 1,126 5.00 \$  \$ 724,880.0  \$ 1,1152 \$ 65.00 \$  \$ 724,880.0  \$ 1,125.00 \$ 31,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5,000.0  \$ 5	44		EA	128	\$	3,125.00	\$	400,000.00
Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Construction Total  NMGRT (Toas County)  Total Construction Cost  Total CONSTRUCTION COST (W/O TAX)  TOTAL CONSTRUCTION COST (W/O TAX)  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 724,880.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 726,00.0  \$ 72	45	meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP	EA	100	\$	3,800.00	\$	380,000.00
drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  48 Furnish and install flush hydrant assembly,including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Construction Total  Construction Total  NMGRT (Toas County)  Total Construction Costs  TOTAL CONSTRUCTION COST (W/O TAX)  48 Furnish and install flush hydrant assembly,including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all on the restoration and all of the appurtenances needed for a complete installation, CIP  \$ 6,330,420.6  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7	46	Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all	LF	11152	\$	65.00	\$	724,880.00
48 on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Construction Total  NMGRT (Toas County)  Total Construction Costs  TOTAL CONSTRUCTION COST (W/O TAX)  TOTAL CONSTRUCTION COST (W/TAX)  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 7,596,504.7  \$ 8,166,242.6	47	drilling (HDD), including all material, labor, fittings, associated appurtenances,	LF	248	\$	125.00	\$	31,000.00
Contingency         20%         \$ 1,266,084.1           Construction Total         \$ 7,596,504.7           NMGRT (Toas County)         7.5000%         \$ 569,737.8           Total Construction Costs         \$ 8,166,242.6           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 7,596,504.7           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 8,166,242.6	48	Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all	EA	7	\$	7,525.00	\$	52,675.00
Construction Total         \$ 7,596,504.7           NMGRT (Toas County)         7.5000% \$ 569,737.8           Total Construction Costs         \$ 8,166,242.6           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 7,596,504.7           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 8,166,242.6	Constructi	on Subtotal					•	6,330,420.63
NMGRT (Toas County)         7.5000%         \$ 569,737.8           Total Construction Costs         \$ 8,166,242.6           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 7,596,504.7           TOTAL CONSTRUCTION COST (W/TAX)         \$ 8,166,242.6	Contingen	су				20%	\$	1,266,084.13
Total Construction Costs         \$ 8,166,242.6           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 7,596,504.7           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 8,166,242.6	Constructi	on Total					\$	7,596,504.75
Total Construction Costs         \$ 8,166,242.6           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 7,596,504.7           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 8,166,242.6	NMGRT (T	oas County)				7.5000%	\$	569,737.86
TOTAL CONSTRUCTION COST (W/O TAX)         \$ 7,596,504.7           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 8,166,242.6	Total Cons	struction Costs					\$	8,166,242.61
TOTAL CONSTRUCTION COST (W/ TAX) \$ 8,166,242.6	TOTAL CO	NSTRUCTION COST (W/O TAX)					\$	7,596,504.75
	TOTAL CO	NSTRUCTION COST (W/ TAX)					\$	8,166,242.61
		Summary of Non-Constr	uction Costs					

	and Design:				
Design Ph	nase- Basic Engineering Services			10%	
Design Ph	nase- Survey and Topo				\$ 486,400.00
Design Ph	nase- Permitting				\$ 1,500.00
Design Ph	nase- Geotechnical Investigation				\$ 61,300.00
Design Ph	nase- Cultural Survey				\$ 5,000.00
Design Ph	nase- Additional Services				\$ 6,000.00
Subtotal					\$ 1,319,850.48
NMGRT (1	Toas County)			7.5000%	\$ 98,988.79
Total Plar	nning and Design			•	\$ 1,418,839.20
Engineerii	ng During Construction:				
Bid Admir	nistration- Basic Engineering Services				\$ 35,000.00
	tion Phase- Basic Engineering Services			20%	\$ 1,633,248.53
Construct	tion Phase- Additional Engineering Services (410 Days Construction	n Observation)			\$ 580,143.8
Subtotal					\$ 2,248,392.37
NMGRT (1	Toas County)			7.5000%	\$ 168,629.43
Total Eng	ineering during Construction				\$ 2,417,021.80
TOTAL NO	ON-CONSTRUCTION COST				\$ 3,835,861.06
TOTAL P	ROJECT CAPITAL COST				\$ 12,002,103.67
		nmary of O&M Costs			ı
Item	Description	Unit	Qty	Unit Price	Amount
1	Miscellaneous	LS	1	\$ 2.17	\$ 2.1
2	Exempt Status - IRS Application	LS	1	\$ 200.00	\$ 200.00
3	Repairs & Maintenance Equipment	LS	1	\$ 314.01	\$ 314.00 \$ 475.59
5	Contract - Attorny Fees  Bookkeeping	LS LS	1	\$ 475.59 \$ 6,729.07	\$ 475.59 \$ 6,729.0°
6	Operator Extras	LS	1	\$ 443.06	\$ 443.0
7	Water Operator - Other	LS	1	\$ 11,440.29	\$ 11,440.29
8	Software	LS	1	\$ 20.00	\$ 20.0
9	Supplies - General Office	LS	1	\$ 397.23	\$ 397.23
10	Supplies - Furn/Fixt/Equip	LS	1	\$ 10.61	\$ 10.63
11	Insurance - Gen Liability/Prop	LS	1	\$ 66.67	\$ 66.67
12	Postage	LS	1	\$ 465.43	\$ 465.43
13	Printing Publishing	LS	1	\$ 12.67	\$ 12.67
14	NM Rural Water Association Dues	LS	1	\$ 63.50	\$ 63.50
15	Subscriptions & Dues	LS	1	\$ 171.22	\$ 171.2
16	Utilities - Electricity	LS	1	\$ 2,197.35	\$ 2,197.3
17	Bank Charges	LS	1	\$ 1.30	\$ 1.30
18	Board Stipends	LS	1	\$ 3,575.81	\$ 3,575.8
19	Board Training	LS	1	\$ 61.33	\$ 61.33
20	Room Rental PRC Fees	LS LS	1	\$ 285.18 \$ 10.65	\$ 285.13 \$ 10.69
22	Water Conservation Fees	LS	1	\$ 101.64	
23	Miscellaneous G&A	LS	1	\$ 3.33	
24	Storage Unit	LS	1	\$ 650.33	
25	Small Fees Paid to NM T&R	LS	1	\$ 293.39	
26	Sales Tax Adjustments	LS	1	\$ 405.58	
27	RIP Loan	LS	1	\$ 4,040.79	
28	Reconcilliation Discrepancies	LS	1	\$ 358.42	\$ 358.4
29	Water Conservation Fees	LS	1	\$ 101.64	
30	Miscellaneous G&A	LS	1	\$ 3.33	
31	Storage Unit	LS	1	\$ 650.33	\$ 650.33
32	Small Fees Paid to NM T&R	LS	1	\$ 293.39	
33	Sales Tax Adjustments	LS	1	\$ 405.58	
34	RIP Loan	LS	1	\$ 4,040.79	
35 36	Reconcilliation Discrepancies  Dobt Service- Interest payment	LS LS	1	\$ 358.42 \$ 798.20	
37	Debt Service- Interest payment Tank Rehab	LS	1	\$ 798.20	
38	Short Lived Asset Reserve- Well Pump Replacements	LS	1	\$ 15,766.00	
39	Short lived Asset Reserve - Gate Valves	LS	1	\$ 3,919.78	\$ 3,919.7
40 41	Short lived Asset Reserve - Pressure Reducing Valves	LS	1	\$ 5,898.00	
41	Short lived Asset Reserve - Master Meter Short lived Asset Reserve - Water Meters	LS LS	1	\$ 1,343.50 \$ 78,000.00	
43	Short lived Asset Reserve - Hydrants	LS	1	\$ 2,633.75	
44	Short lived Asset Reserve - Disinfection Equipment	LS	1	\$ 870.00	\$ 870.00
	. O&M COSTS			_	\$ 148,379.34
0-YEAR	NET PRESENT VALUE O&M COSTS (Real Federal Interest F	Rate: 2.5%)		2.5%	
0-YEAR	PRESENT WORTH OF SALVAGE VALUE (Real Federal Inter	est Rate: 2.5%)		2.5%	\$ 3,557,676.8

20-YEAR NET PRESENT VALUE TOTAL COSTS (Real Federal Interest Rate: 2.5)	2.5%	\$ 10,757,536.43
*https://www.whitehouse.gov/omb/information-for-agencies/circulars/		
Appendix C: Discount Rates for Cost-Effectiveness, Lease-Purchase, and Related Analyses for OMB Circular No. A-94		

# CAPITAL COST DETAIL Lower Arroyo Hondo MDWCA Water System Improvements Project

### **Alternative Project 5**

	Summary of Construction	Costs					
Item	Description	Unit	Qty		Unit Price		Amount
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	374,420.00	\$	374,420.00
2	Testing allowance	Allow	1	\$	79,700.00	\$	79,700.00
3	Traffic control plan	LS	1	\$	145,300.00	\$	145,300.00
4	Preparation and implementation of SWPPP	LS	1	\$	45,600.00	\$	45,600.00
5	Rock excavation required for installation of new waterline, including rock removal,	CY	1	\$	2,041,500.00	\$	2,041,500.00
6	disposal of material, and labor. CIP. Construction Staking	LS	1	\$	101,500.00	\$	101,500.00
Water Supp	· · · · · · · · · · · · · · · · · · ·			1 7			
7	Furnish and install new concrete foundation, CIP	LS	1	\$	30,000.00	\$	30,000.00
	Furnish and install new well house, including 2-inch master meter, pressure gauges,						
8	valves, sample cock, 2-inch piping to 5-feet ouside of structure, pipe supports, well surface casing, drain line to daylight, fittings, appurtenances, and existing pipe	LS	1	\$	210,000.00	\$	210,000.00
	disposal, CIP						
	Furnish and install new sodium hypochlorite metering pump, solution tank, spill	1.6		_	0.700.00	_	2 722 22
9	containment, tubing, fittings and appurtenances, CIP	LS	1	\$	8,700.00	\$	8,700.00
	Electrical and controls, including pump control panel, combination disconnects,						
10	manual transfer switch, surge protection devices, fusible disconnect, antenna, radio	LS	1	\$	87,000.00	\$	87,000.00
	telemetry, trenching and backfill, equipment rac heater, vent fans, grounding, lighting, and conduit & wiring, CIP						
	Coordinate with Electric Company to extend power to new well site, including			<b>.</b>			
11	poles, overhead line, and transformer, CIP	Allow	1	\$	15,700.00	\$	15,700.00
12	Furnish and install a new portable generator Furnish and install 4-inch PVC C900 DR18 transmission line, including labor,	EA	1	\$	5,000.00	\$	5,000.00
	material, potholing, trenching, bedding, removal of waste excavation, joint						
13	restraints, fittings, warning tape, tracer wire, above ground pipe markers,	LF	5849	\$	50.00	Ļ	202 450 00
15	backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing	LF	3649	Ş	30.00	\$	292,450.00
	and all other appurtenances, CIP						
	Drilling equipment mobilization (75%)/demobilization (25%), includes all						
	equipment, labor and materials not separately listed necessary to construct,						
13	develop, test and equip one well in the project area, coordination, protection of	LS	1	\$	20,000.00	\$	20,000.00
	each well throughout project, driller's logs, as-builts, and site restoration, complete						
	in place (CIP).  Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft						
14	depth with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as	LF	20	\$	310.00	\$	6,200.00
	directed by Engineer.			ľ		Ċ	,
	Drill 12.75-inch production well borehole, from bottom of surface casing to						
15	anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total	LF	205	\$	85.00	\$	17,425.00
13	cased depth, CIP. Collect drill cutting samples every 10 feet.	Li	203	7	65.00	Y	17,425.00
	desce departy our received arm detailing samples overly 20 receiv						
16	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$	5,000.00	\$	5,000.00
	6-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and						
17	centralizers. CIP	LF	160	\$	45.00	\$	7,200.00
18	6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and	LF	40	\$	100.00	\$	4,000.00
10	centralizers, CIP	Li	40	۲	100.00	۲	4,000.00
10	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12	CF	46	٨	75.00	۲.	2 450 00
19	colorado silica sand, final size to be determined by Engineer, includes materials, disinfection and placement with tremie pipe, CIP	CF	46	\$	75.00	Þ	3,450.00
20	Bentonite seal above filter pack, min. 20-ft thickness , including 20% contingency	CF	15	\$	70.00	\$	1,050.00
	for washouts, etc.), includes materials and placement with tremie pipe, CIP						
	Grout between borehole and surface casing/production casing and between						
21	surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc.), includes materials and placement with tremie pipe,	CF	120	\$	50.00	\$	6,000.00
	CIP						
	Swabbing and/or bailing development, includes any labor, materials and equipment						
22	needed that are not separately listed on bid form.	HR	4	\$	475.00	\$	1,900.00
	` '						
23	Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.	HR	4	\$	550.00	\$	2,200.00
	Pumping development, includes any labor, materials and equipment needed that						
24	are not separately listed on bid form. Required recovery periods after pumping are	HR	16	\$	475.00	\$	7,600.00
	incidental.						
	Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min						
25	step test and 18-hour constant rate test, includes any labor, materials and	HR	24	\$	475.00	\$	11,400.00
	equipment needed that are not separately listed on bid form. Required recovery						
<u> </u>	periods after pumping are incidental.	<u> </u>	<b>!</b>	ــــــ			

26		Well disinfection and bacteriological testing, includes disinfection of equipment and		1				
27	26	materials placed in the well, and collection and delivery of bacteriological samples	EA	1	\$	5,000.00	\$	5,000.00
April	27	·	LF	160	\$	18.00	\$	2,880.00
Facilitated appurtermances not separately listed on the bid form), CP	28	Furnish 1.5-inch check valve	EA	2	\$	400.00	\$	800.00
	29	=	EA	1	\$	13,435.00	\$	13,435.00
	29	Furnish #12 pump wire	LF	180	\$	10.00	\$	1,800.00
and protect and all downhole appurtnenances not separately listed. Pump size and model a above is estimated. Final size and model to be determined by Engineer based on Pump Test results.  Surface completion of well-head, including pittless adapter, well cap, connection to drop pipe, stud-bott of electrical conduit, 4x1 concrete pad around well seal, teeposts, appurtnenances note spearately listed, exhances and control of the pipe, stud-bott of electrical conduit, 4x1 concrete pad around well seal, teeposts, appurtnenances note spearately listed, exhances and all substances are spearately listed, exhances and all substances are spearately listed, exhances and all substances.  Contractor labor, equipment and materials to support and coordination of speophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging involves which are elegible for payment from the testing allowance.  35 Substances.  New 72,000-gailon welded steel water storage tank, including all labor, materials, that well-better to the substances are subsequently and the virtue request of Owner or Engineer.  New 72,000-gailon welded steel water storage tank, including all labor, materials, that we control is a substance of the substances and the substances are subsequently and the substances and the substances are subsequently and the substances are substances. It is a substance and the substances are substances and the substances are substances. It is a substance and the substances are substances. It is a substance and the substances are substances and the substances are substances. It is a substance and the substances are substances and the substances are substances. It is a substance and the substances are substances and the substances are substances. It is a substance and the substances are substances. It is a substance and the substances are substances and the substanc	30	Furnish 1 1/4" Sch 80 PVC Sounding Tube	LF	160	\$			1,920.00
above is estimated. Final size and model to be determined by Engineer based on Pumo Test Fessilis.  32 Surface completion of wellhoad, including pittess adapter, well cap, connection to the Completion of the Co		, , , , , , , , , , , , , , , , , , , ,						
drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal, teposts, appurtenances not separately listed, earthwork and competition, CIP  Testing allowance, includes reimburnement of 3rd party costs for water quality also also active and party analysis, material testing and passing bacteriological test analysis samples.  Contractor labor, equipment and materials to support and coordination of sepohysical logging, if requested by fignineer. Excludes cost of 3rd party sepohysical logging, if requested by fignineer. Excludes cost of 3rd party sepohysical logging, if requested by fignineer. Excludes cost of 3rd party sepohysical logging, if requested by fignineer. Excludes cost of 3rd party sepohysical logging without switch are designed for payment from the testing allowance.  35 Standay at the written request of Owner or Engineer.  46 In S. 2,000.00 \$ 2,000.00 \$ 2,000.00 \$ 2,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00 \$ 3,000.00	31	above is estimated. Final size and model to be determined by Engineer based on	EA	1	\$	12,000.00	\$	12,000.00
33 aboratory analysis, material testing and passing bacteriological test analysis  ALLOW 1 5 5,000.00 \$ 5,000.00 \$  Accordance of the control	32	drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal,	EA	1	\$	15,000.00	\$	15,000.00
geophysical logging, if requested by Engineer, Excludes cost of 3rd party geophysical logging invoices which are elegible for payment from the testing 35   Standby at the written request of Owner or Engineer.	33	laboratory analysis, material testing and passing bacteriological test analysis	ALLOW	1	\$	5,000.00	\$	5,000.00
Standby at the written request of Owner or Engineer.   HR   8   \$ 55.00   \$ 4.400.00	34	geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical logging invoices which are elegible for payment from the testing	EA	1	\$	2,000.00	\$	2,000.00
Nater Stronge  New 72,000-gallon welded steel water storage tank, including all labor, materials, tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections, disinfection, excluding alter avalves, CIP  Tank foundation and sub-foundation, including earthwork, site grading drainage, and an account of the proper plans and Geotechnical Report, all labor, materials, LS 1 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 105,840.00 \$ 10	35		HR	8	\$	550.00	\$	4,400.00
and tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections, disinfection, excluding aget valves, CIP  Tank Coundation and sub-Foundation, including earthwork, site grading drainage, accessoring the control of the control	Water Sto	<u>,</u>						
Tank foundation and sub-foundation, including earthwork, site grading drainage, 37 miprotent fill material per plans and Geotechnical Report, all labor, materials, 28 materials, CP 38 materials, CP 39 materials, CP 40 mitson and sub-foundation, including abor and gradient protection for storage tank, including labor and gradient protection.  40 mitson and install 6-inch protection for storage tank, including gradient protection, storage ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances. CP  40 purpose and install 6-inch BIPE DRI1 waterline for river crossing by horizontal directional drilling (Pholi), including all materials, labor, transition fittings, restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP  41 Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all experiments and install fi-inch gate valve, including excavation, valve, valve box, valve gradient protection, and all experiments and install fi-inch gate valve, including excavation, valve, valve and valve, including excavation, valve protection, and all experiments and install fi-inch gate valve, including excavation, backfill, meter pit, and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, tank and install 3/4" x 5/8" water meter including excavation, backfill, meter pit, tank material, labor, connection to existing service, and all appurtenances, CP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfil	36	tank appurtenances, piping within 5-feet of the tank, painting, NACE inspections,	LS	1	\$	350,700.00	\$	350,700.00
Sacrificial anode type cathodic protection for storage tank, including labor and BA 1 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18,580.00 \$ 18	37	Tank foundation and sub-foundation, including earthwork, site grading drainage, imported fill material per plans and Geotechnical Report, all labor, materials,	LS	1	\$	105,840.00	\$	105,840.00
Materials, CIP Furnish and install 6-inch PVC C900 DR18 waterine, including labor, material, potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP Furnish and install 6-inch HDPE DR11 waterime for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration. CIP Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve risonal collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP Furnish and install inch Pressure Neducing Valve and vault, including excavation, valve, valve working installation, CIP Furnish and install inch Pressure Neducing Valve and vault, including excavation, valve, valve working installation, CIP Furnish and install inch Pressure Neducing Valve and vault, including excavation, valve, valve working installation, CIP Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, and the valve, valve box, valve and vault, including excavation, valve, valve box, valve and valve, valve box, valve and valve, valve box, valve and valve, including excavation, valve, valve box, valve and valve, valve box, valve and valve, including excavation, valve, valve box, valve and valve, including excavation, valve, valve box, valve and valve, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to service, and all appurtenances, CIP Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill in	20		ΕΛ	1	ć	10 500 00	ċ	19 590 00
Furnish and install or inch PVC C900 DK1s waterine, including labor, material, potholing, trenching, bedding, removal of wsate sexavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP   Furnish and install or inch HDPE DK11 waterine for river crossing by horizontal direction and filling (HDD), including all materials, labor, transition fittings, restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP   Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP   Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP   Furnish and install new 6-inch Pressure Reducing Valve and vault, including excavation, valut, pressure reducing valve, fittings and accessories, pressure ead excavation, valve, valve box, valve result in the properties of the pr	36	materials, CIP	EA		Þ	16,580.00	Ş	16,580.00
potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling, compaction, disinfection, site restoration, hydrostatic pressure testing and all other appurtenances, CIP  Furnish and install 0-inch HDPE DR1 waterline for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP  Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve itser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP  Furnish and install i	Water Dist			1				
appurtenances, CIP Furnish and install 6-inch HDPE DN11 waterline for river crossing by horizontal directional drilling (HDD), including all materials, labor, transition fittings, restraints, anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP  Furnish and install rew fire reducing valve, fittings and accessories, pressure gauges, strainer, dismantling joint, backfill and compaction (IP)  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, appurtenances, CIP  Furnish and install appurtenances, CIP  Furnish and install meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install meter appurtenances, CIP  Furnish and install appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including all material, labor, pvC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation	39	potholing, trenching, bedding, removal of waste excavation, joint restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling,	LF	22491	\$	65.00	\$	1,461,915.00
anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site restoration, CIP  Furnish and install 6-inch gate valve, including excavation, valve, valve box, valve riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP  Furnish and install all new 6-inch Pressure Reducing Valve and vault, including excavation, vault, pressure reducing valve, fittings and accessories, pressure gauges, strainer, dismantling joint, backfill and compaction, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install inew 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to well meter pit, tandem meter setter, fittings, associated appurtenances,  Furnish and install inew 3/4-in HDPE SDR-7 water service lines by horizontal direction related appurtenances, CIP  Furnish and install inew 3/4-in HDPE SDR-7 water service lines by horizontal direction related appurtenances, CIP  Furnish and install inew ire hydrant, including all material, labor, connection to make the provided for mainline to assembly, contractor furnished fittings, gate valve, site  Furnish and install inew ire hydrant, including all material, labor, connection to assembly contractor furnished fittings, gate valve, site  Furnish and install flush hydrant assembly, including labor, materials, gate valve, site  Furnish and install flush hydrant assembly, including labor, materials, gate valve, site  Furnish and install flush hydrant assembly, including labor, materials, gate valve, site  Furnish and install flush hydrant assembly, including labor, materials, gate valve		appurtenances, CIP						
riser and collar, test station, accessories, tests, backfill and compaction, and all other appurtenances required for a complete working installation, CIP  Furnish and install new 6-inch Pressure Reducing Valve, fittings and accessories, pressure gauges, strainer, dismantling joint, backfill and compaction, CIP  Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install alobr, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install flush hydrant assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP	40	anchor walls, tracer wire, bore pit excavation, bedding, backfill, and site	LF	100	\$	205.00	\$	20,500.00
Furnish and install new 6-inch Pressure Reducing Valve and vault, including excavation, vault, pressure reducing valve, fittings and accessories, pressure gauges, strainer, dismantling joint, backfill and compaction, CIP  43 Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install new lire hydrant, including all material, labor, pVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, the on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all particular papurtenances needed for a complete installation, CIP  Construction Subtotal  Furnish and install flush hydrant assembly, including labor, materials, gate valve, the on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all papurtenances needed for a complete installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, the on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all papurtenances needed for a complete installation, CIP  Fur	41	riser and collar, test station, accessories, tests, backfill and compaction, and all	EA	23	\$	5,270.00	\$	119,233.75
Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit, meter setter, fittings, connection to service, and all appurtenances, CIP  Furnish and install 3/4" x 5/8" water meter with PRV, including excavation, backfill, meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, LF  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, LF  Furnish and install meter in hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  EA  128  2,895.00  \$ 37,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00  \$ 370,560.00	42	Furnish and install new 6-inch Pressure Reducing Valve and vault, including excavation, vault, pressure reducing valve, fittings and accessories, pressure	EA	3	\$	96,095.00	\$	288,285.00
meter pit, tandem meter setter, fittings, connection to existing service, and all appurtenances, CIP  Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP  Furnish and install new Tire hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, ite restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Table 11152  EA 100 \$ 3,800.00 \$ 380,000.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00 \$ 724,880.00	43	Furnish and install 3/4" x 5/8" water meter, including excavation, backfill, meter pit,	EA	128	\$	2,895.00	\$	370,560.00
Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all related appurtenances, CIP  Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP Furnish and install new fire hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  LF  11152  \$  11152  \$  65.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  724,880.00  \$  31,000.00  \$  \$  11,470.00  \$  31,000.00  \$  31,000.00  \$  47  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal	44	meter pit, tandem meter setter, fittings, connection to existing service, and all	EA	100	\$	3,800.00	\$	380,000.00
Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances, trenching, bedding, backfilling and site restoration, CIP Furnish and install new fire hydrant, including all material, labor, PVC pipe required from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all the appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all the pure tenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all the pure tenances needed for a complete installation, CIP  Construction Subtotal  Contingency	45	Furnish and install new 3/4-in HDPE SDR-7 waters service line by open trench Method, including all material, labor, connection to new water main, connection to water meter assembly, service line, saddle, corp stop, site restoration and all	LF	11152	\$	65.00	\$	724,880.00
from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working installation, CIP  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  \$ 7,862,798.75	46	Furnish and install 3/4-in HDPE SDR-7 water service lines by horizontal direction drilling (HDD), including all material, labor, fittings, associated appurtenances,	LF	248	\$	125.00	\$	31,000.00
Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all other appurtenances needed for a complete installation, CIP  Construction Subtotal  Contingency  Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all EA 7 \$ 7,525.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$ 52,675.00 \$	47	from mainline to assembly, contractor furnished fittings, gate valve, site restoration, and all other appurtenances required for a complete working	EA	30	\$	11,470.00	\$	344,100.00
Construction Subtotal         \$ 7,862,798.75           Contingency         20%         \$ 1,572,559.75	48	Furnish and install flush hydrant assembly, including labor, materials, gate valve, tee on mainline, pipe, excavation, drain rock, backfill, collar, site restoration and all	EA	7	\$	7,525.00	\$	52,675.00
Contingency 20% \$ 1,572,559.75	Construct			1	1		Ś	7.862.798.75
						20%	-	
					1	20/0	_	9,435,358.50

	pas County)				7.5000%	\$	707,651.89
Total Const	truction Costs			1		\$	10,143,010.39
TOTAL CON		\$	9,435,358.50				
TOTAL CON	NSTRUCTION COST (W/ TAX)					\$	10,143,010.39
	Summary of Non-Construction	on Costs					
Planning ar							
	se- Basic Engineering Services				10%		943,535.85
	se- Survey and Topo					\$	486,400.00
	se- Permitting					\$	1,500.00
	se- Geotechnical Investigation					\$	61,300.00
Design Pha	se- Cultural Survey					\$	5,000.00
Design Pha	se- Additional Services					\$	6,000.00
Subtotal						\$	1,503,735.85
NMGRT (To					7.5000%	\$	112,780.19
	ning and Design					\$	1,616,516.04
	g During Construction:			1			
	stration- Basic Engineering Services				2001	\$	35,000.00
	on Phase- Basic Engineering Services	.1			20%	\$	2,028,602.08
	on Phase- Additional Engineering Services (485 Days Construction Observation	1)				\$	686,267.73
Subtotal NMGRT (To	ogs County)				7.5000%	<b>\$</b> \$	<b>2,749,869.80</b> 206,240.24
					7.5000%	١÷	
	neering during Construction					\$	2,956,110.04
	N-CONSTRUCTION COST  OJECT CAPITAL COST					\$	4,572,626.08 14,715,636.46
TOTAL PR	Summary of O&M Cos	ts				Ş	14,715,050.40
Item	Description Description	Unit	Qty	l	Unit Price		Amount
1	Miscellaneous	LS	1	\$	2.17	\$	2.17
2	Exempt Status - IRS Application	LS	1	\$	200.00	\$	200.00
3	Repairs & Maintenance Equipment	LS	1	\$	314.01	\$	314.01
	Contract - Attorny Fees		_	\$	475.50	\$	475.59
4	Contract - Attorny Fees	LS	1		475.59		473.33
5	Bookkeeping	LS	1	\$	6,729.07	\$	6,729.07
5 6	Bookkeeping Operator Extras	LS LS	1	\$	6,729.07 443.06	\$	6,729.07 443.06
5 6 7	Bookkeeping Operator Extras Water Operator - Other	LS LS LS	1 1 1	\$ \$ \$	6,729.07 443.06 11,440.29	\$ \$	6,729.07 443.06 11,440.29
5 6 7 8	Bookkeeping Operator Extras Water Operator - Other Software	LS LS LS	1 1 1 1	\$ \$ \$	6,729.07 443.06 11,440.29 20.00	\$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00
5 6 7 8 9	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office	LS LS LS	1 1 1	\$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23	\$ \$ \$ \$	6,729.07 443.06 11,440.29
5 6 7 8 9	Bookkeeping Operator Extras Water Operator - Other Software	LS LS LS LS	1 1 1 1	\$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00	\$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23
5 6 7 8 9	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip	LS LS LS LS LS LS LS	1 1 1 1 1	\$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61	\$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61
5 6 7 8 9 10 11 12	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing	LS	1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67	\$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43
5 6 7 8 9 10 11 12 13	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues	LS L	1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50	\$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50
5 6 7 8 9 10 11 12 13 14	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues	LS L	1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22	\$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50
5 6 7 8 9 10 11 12 13 14 15	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35	\$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35
5 6 7 8 9 10 11 12 13 14 15 16	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30
5 6 7 8 9 10 11 12 13 14 15 16	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30 3,575.81	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30 3,575.81
5 6 7 8 9 10 11 12 13 14 15 16 17	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30
5 6 7 8 9 10 11 12 13 14 15 16 17 18	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30 3,575.81 61.33	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30 3,575.81 61.33
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5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	Bookkeeping Operator Extras Water Operator - Other Software Supplies - General Office Supplies - Furn/Fixt/Equip Insurance - Gen Liability/Prop Postage Printing Publishing NM Rural Water Association Dues Subscriptions & Dues Utilities - Electricity Bank Charges Board Stipends Board Training Room Rental PRC Fees Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R Sales Tax Adjustments RIP Loan Reconcilliation Discrepancies Water Conservation Fees Miscellaneous G&A Storage Unit Small Fees Paid to NM T&R	LS L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 405.58 4,040.79 358.42 101.64 3.33 650.33 293.39 405.58	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	6,729.07 443.06 11,440.29 20.00 397.23 10.61 66.67 465.43 12.67 63.50 171.22 2,197.35 1.30 3,575.81 61.33 285.18 10.65 101.64 3.33 650.33 293.39 3.33 650.33 293.39 405.58

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37	Tank Rehab	LS	1	\$	4,500.00	\$	4,500.00			
38	Short Lived Asset Reserve- Well Pump Replacements	LS	1	\$	1,200.00	\$	1,200.00			
39	Short lived Asset Reserve - Gate Valves	LS	1	\$	5,961.69	\$	5,961.69			
40	Short lived Asset Reserve - Pressure Reducing Valves	LS	1	\$	14,414.25	\$	14,414.25			
41	Short lived Asset Reserve - Master Meter	LS	1	\$	1,343.50	\$	1,343.50			
42	Short lived Asset Reserve - Water Meters	LS	1	\$	47,658.00	\$	47,658.00			
43	Short lived Asset Reserve - Hydrants	LS	1	\$	19,838.75	\$	19,838.75			
44	Short lived Asset Reserve - Disinfection Equipment	LS	1	\$	870.00	\$	870.00			
ANNUAL	O&M COSTS					\$	130,328.07			
20-YEAR	NET PRESENT VALUE O&M COSTS (Real Federal Interest Rate: 2.5%)				2.5%	\$	2,031,705.39			
20-YEAR	PRESENT WORTH OF SALVAGE VALUE (Real Federal Interest Rate: 2.59		2.5%	\$	4,364,151.75					
20-YEAR	NET PRESENT VALUE TOTAL COSTS (Real Federal Interest Rate: 2.5)				2.5%	\$	12,383,190.11			
*https://wv	*https://www.whitehouse.gov/omb/information-for-agencies/circulars/									
	D: 101 ( 0 15K ii									

Appendix C: Discount Rates for Cost-Effectiveness, Lease-Purchase, and Related Analyses for OMB Circular No. A-94

# CAPITAL COST DETAIL Lower Arroyo Hondo MDWCA Water System Improvements Project

### Other Needs

	Summary of Construction Cos	ts					
Item	Description	Unit	Qty		Unit Price		Amount
<b>UAH INTER</b>	CONNECTION						
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	11,110.00	\$	11,110.00
2	Testing allowance	Allow	1	\$	1,600.00	\$	1,600.00
3	Traffic control plan	LS	1	\$	6,470.00	\$	6,470.00
4	Rock excavation required for installation of new interconnection waterline, including rock	CV	110	\$	495.00	\$	E7 401 40
4	removal, disposal of material, and labor, CIP.	CY	119	\$	485.00	\$	57,481.48
5	Construction Staking	LS	1	\$	3,100.00	\$	3,100.00
	Furnish and install 6-inch PVC C900 DR-18 waterline, including all labor, trenching,						
5	backfill, compaction, warning tape, tracer wire, fittings, appurtenances, testing,	LF	800	\$	65.00	\$	52,000.00
	disinfection, and site restoration).						
	Furnish and install 6-inch pressure reducing valve assembly, including all materials,						
6	labor, 2-inch pressure relief valve, valves, pressure gauge, concrete vault, fittings,	EA	1	\$	96,095.00	\$	96,095.00
	accessories, and all related appurtenances not separately listed on the bid form, CIP						
				-			
7	Furnish and install 6-inch gate valve in cast iron valve box, including all material,	EA	1	\$	5,270.00	\$	5,270.00
	labor, valve, valve box, and all other appurtenances not separately listed, CIP		_	'	-,	7	5,=: 5:55
SECOND NO	DRTHERN GROUNDWATER WELL						
1	Mobilization and demobilization (not to exceed 5% of total bid)	LS	1	\$	25,810.00	\$	25,810.00
2	Testing allowance	Allow	1	\$	200.00	\$	200.00
3	Traffic control plan	LS	1	\$	9,790.00	\$	9,790.00
4	Rock excavation required for installation of new waterline, including rock removal,	CY	1	\$	7,200.00	\$	7,200.00
	disposal of material, and labor, CIP.			<u> </u>			· · · · · · · · · · · · · · · · · · ·
5	Construction Staking	LS	1	\$	9,800.00	\$	9,800.00
	Furnish and install new well house, including 2-inch master meter, pressure gauges,						
4	valves, sample cock, 2-inch piping to 5-feet ouside of structure, pipe supports, well	LS	1	\$	210,000.00	\$	210,000.00
	surface casing, drain line to daylight, fittings, appurtenances, and existing pipe			'	,	·	ŕ
	disposal, CIP Furnish and install new sodium hypochlorite metering pump, solution tank, spill						
5	containment, tubing, fittings and appurtenances, CIP	LS	1	\$	8,700.00	\$	8,700.00
	Electrical and controls, including pump control panel, combination disconnects,						
	manual transfer switch, surge protection devices, fusible disconnect, antenna, radio			١.			
6	telemetry, trenching and backfill, equipment rac heater, vent fans, grounding,	LS	1	\$	87,000.00	\$	87,000.00
	lighting, and conduit & wiring, CIP						
7	Coordinate with Electric Company to extend power to new well site, including poles,	Allow	1	\$	15,700.00	\$	15,700.00
	overhead line, and transformer, CIP	Allow			15,700.00		15,700.00
8	Furnish and install a new portable generator	EA	1	\$	5,000.00	\$	5,000.00
	Furnish and install 4-inch PVC C900 DR18 transmission line , including labor,						
	material, potholing, trenching, bedding, removal of waste excavation, joint						
9	restraints, fittings, warning tape, tracer wire, above ground pipe markers, backfilling,	LF	100	\$	50.00	\$	5,000.00
	compaction, disinfection, site restoration, hydrostatic pressure testing and all other						
	appurtenances, CIP			1			
	Drilling equipment mobilization (75%)/demobilization (25%), includes all equipment,						
9	labor and materials not separately listed necessary to construct, develop, test and	LS	1	\$	20,000.00	Ś	20,000.00
	equip one well in the project area, coordination, protection of each well throughout		=	1		7	
	project, driller's logs, as-builts, and site restoration, complete in place (CIP).						
	Drill 20-inch borehole and cement in place 14-inch steel surface casing to 20-ft depth						
10	with neat cement grout, CIP. Collect drill cutting samples every 10 ft. or as directed	LF	20	\$	310.00	\$	6,200.00
	by Engineer.						
	Drill 12.75-inch production well borehole, from bottom of surface casing to						
11	anticipated 200-ft total depth, with minimum 5-ft of overdrill below proposed total	LF	205	\$	85.00	\$	17,425.00
	cased depth, CIP. Collect drill cutting samples every 10 feet.						
12	Allowance for Down-Hole Geophysics in Test Borehole	ALLOW	1	\$	5,000.00	\$	5,000.00
	6-inch SDR-17 PVC production well casing, including incidental 2-foot stickup and						
13	centralizers, CIP	LF	160	\$	45.00	\$	7,200.00
14	6-inch SDR-17 PVC screen (40' est. qty.), includes incidental end cap and centralizers,	LF	40	\$	100.00	\$	4,000.00
17	CIP	LF	+0	۲	100.00	٧	4,000.00
	Filter pack , including 20% contingency for washouts, etc.), anticipated to be 8-12						
15	colorado silica sand, final size to be determined by Engineer, includes materials,	CF	46	\$	75.00	\$	3,450.00
	disinfection and placement with tremie pipe, CIP						

Grout between borehole and surface casing/production casing, and between surface casing and production casing, as indicated in drawings, including 20% contingency for washouts, etc., includes materials and placement with tremie pipe, CIP  18 Swabbing and/or bailing development, includes any labor, materials and equipment needed that are not separately listed on bid form.  19 Air-lift pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pumping development, includes any labor, materials and equipment needed that are not separately listed on bid form.  Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery periods after pumping are inclidental.  Well disinfection and bacteriological testing, includes disinfection of equipment and equipment and materials placed in the well, and collection and delivery of bacteriological samples to laboratory.  22 materials placed in the well, and collection and delivery of bacteriological samples to laboratory.  23 Furnish 1.5-inch fagavanized drop pipe.  EA 1 \$ 5,000.00 \$ 2,880.00 \$ 800.00 \$ 800.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.00 \$ 13,400.0										
1	16		CF	15	\$	70.00	\$	1,050.00		
19   Al-Rit pumping development, includes any labor, materials and equipment needed   HR	17	casing and production casing, as indicated in drawings, including 20% contingency CF 120 \$ 50.00								
1	18	3 1 - 1 HR 1 4 15 4/5/01								
20	19	, , , , , , , , , , , , , , , , , , , ,	HR	4	\$	550.00	\$	2,200.00		
Pump test on well(s) per direction of fingineer, anticipated as a combined 300 min set of the second of the seco	20	not separately listed on bid form. Required recovery periods after pumping are	HR	16	\$	475.00	\$	7,600.00		
Well disinfection and bacteriological testing, includes disinfection of equipment and laboratory.   Society of bacteriological samples to laboratory.   Society of bacteriological material, labor, meter, and all laboratory.   Society of bacteriological material, labor, meter, and all combined papternances not separately listed. Pump size and model above its estimated. Final size and model to be determined by Engineer based on laboratory.   Society of bacteriological above its estimated. Final size and model to be determined by Engineer based on laboratory.   Society of bacteriological model to be determined by Engineer based on laboratory.   Society of bacteriological model above its estimated. Final size and model to be determined by Engineer Bacteriological pates analysis.   Society of bacteriological pates analysis.   Societ	21	Pump test on well(s) per direction of Engineer, anticipated as a combined 300 min step test and 18-hour constant rate test, includes any labor, materials and equipment needed that are not separately listed on bid form. Required recovery	HR	24	\$	475.00	\$	11,400.00		
Earth   1.5-inch, palvanized drop pipe.   LF   160   \$ 18.00   \$ 2.880.00	22	Well disinfection and bacteriological testing, includes disinfection of equipment and materials placed in the well, and collection and delivery of bacteriological samples to	EA	1	\$	5,000.00	\$	5,000.00		
Furnish and install 4-inch master meter, , including all material, labor, meter, and all related appurtenances not separately listed on the bid form), CIP	23		LF	160	\$	18.00	\$	2,880.00		
Feat	24	Furnish 1.5-inch check valve	EA	2	\$	400.00	\$	800.00		
Emish 1 1/4" Sch 80 PVC Sounding Tube	25	_	EA	1	\$	13,435.00	\$	13,435.00		
Emish 1 1/4" Sch 80 PVC Sounding Tube	25	Furnish #12 nump wire	I F	180	Ś	10.00	Ś	1.800.00		
Furnish and install S HP Grundfox 25SO-26 (OAE) submersible production pump, motor, and all downhole appurteenances not separately listed. Pump size and model above is estimated. Final size and model to be determined by Engineer based on pump Test results.    Surface completion of wellhead, including pitless adapter, well cap, connection to drop pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, stub-out of electrical conduit, 4x4 concrete pad around well seal, each of pipe, studies and passing bacteriological test analysis subjects analysis, and evaluation of geophysical logging, invoices which are elegible for payment from the testing allowance.    Substitution of the pipe pipe pipe pipe pipe pipe pipe pi							_			
Design   Protoco and all downhole appurtenances not separately listed. Pump size and model to be determined by Engineer based on Pump Test results.    Surface completion of wellhead, including pitless adapter, well cap, connection to receive the pitch state of electrical conduit, 4'v4' concrete pad around well seal, teeposts, appurtenances not separately listed, earthwork and compaction, CIP resting allowance, includes reimbursement of 3rd party costs for water quality laboratory analysis, material testing and passing bacteriological test analysis amples.   Contractor labor, equipment and materials to support and coordination of logging invoices which are elegible for payment from the testing allowance.   HR   8   \$50.00   \$5,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,000.00   \$0,					т.					
28	27	motor, and all downhole appurtenances not separately listed. Pump size and model above is estimated. Final size and model to be determined by Engineer based on	EA	1	\$	12,000.00	\$	12,000.00		
A	28	drop pipe, stub-out of electrical conduit, 4'x4' concrete pad around well seal,	EA	1	\$	15,000.00	\$	15,000.00		
Sunday   Recophysical logging   Frequested by Engineer. Excludes cost of 3rd party geophysical logging invoices which are elegible for payment from the testing allowance.   EA   1   \$ 2,000.00   \$ 2,000.00	29	laboratory analysis, material testing and passing bacteriological test analysis	ALLOW	1	\$	5,000.00	\$	5,000.00		
Construction Subtotal         \$ 774,986.48           Contingency         15%         \$ 116,247.97           Construction Total         \$ 891,234.45           NMGRT (Toas County)         7.5000%         \$ 66,842.58           Total Construction Costs         \$ 958,077.04           TOTAL CONSTRUCTION COST (W/ DAX)         \$ 891,234.45           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 958,077.04           Summary of Non-Construction Costs           Planning and Design:           Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 89,123.45         \$ 95,123.45           Design Phase- Permitting         \$ 1,500.00         \$ 89,123.45           Design Phase- Additional Services         10%         \$ 89,123.45         \$ 44,561.72           Subtotal         \$ 135,185.17         \$ 145,324.06         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89         \$ 10,138.89 <td>30</td> <td>geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical</td> <td>EA</td> <td>1</td> <td>\$</td> <td>2,000.00</td> <td>\$</td> <td>2,000.00</td>	30	geophysical logging, if requested by Engineer. Excludes cost of 3rd party geophysical	EA	1	\$	2,000.00	\$	2,000.00		
Construction Subtotal         \$ 774,986.48           Contingency         15%         \$ 116,247.97           Construction Total         \$ 891,234.45           NMGRT (Toas County)         7.5000%         \$ 66,842.58           Total Construction Costs         \$ 958,077.04           TOTAL CONSTRUCTION COST (W/ DAX)         \$ 891,234.45           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 958,077.04           Summary of Non-Construction Costs           Planning and Design:           Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 89,123.45         \$ 1,500.00           Design Phase- Additional Services         10%         \$ 89,123.45           Subtotal         \$ 135,185.17         \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         \$ 8,000.00           Eigh Administration- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services (40 Days Construction Observation)         \$ 56,599.40 <td>31</td> <td>Standby at the written request of Owner or Engineer</td> <td>HR</td> <td>8</td> <td>Ġ</td> <td>550.00</td> <td>¢</td> <td>4 400 00</td>	31	Standby at the written request of Owner or Engineer	HR	8	Ġ	550.00	¢	4 400 00		
Contingency         15%         \$ 116,247.97           Construction Total         \$ 891,234.45           NMGRT (Toas County)         7.5000%         \$ 66,842.58           Total Construction Costs         \$ 958,077.04           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 891,234.45           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 958,077.04           Summary of Non-Construction Costs           Panning and Design:           Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 89,123.45         \$ 9,123.45           Design Phase- Additional Services         10%         \$ 89,123.45           Subtotal         \$ 1,500.00         \$ 1,500.00           Design Phase- Additional Services         5         44,561.72           Subtotal         \$ 135,185.17         \$ 135,185.17           NMGRT (Toas County)         7,5000%         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         \$ 8,000.00           Bid Administration- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services (40 Days Construction Observation)         \$ 77,967.92           Subtotal<		, , , , , , , , , , , , , , , , , , , ,	1110		7	330.00	_			
Construction Total         \$ 891,234.45           NMGRT (Toas County)         7.5000%         \$ 66,842.58           Total Construction Costs         \$ 958,077.04           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 891,234.45           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 958,077.04           Summary of Non-Construction Costs           Planning and Design:           Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 1,500.00           Design Phase- Additional Services         5%         \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         7.5000%         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering Construction:           Bid Administration- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services         \$ 8,000.00           Construction Phase- Additional Engineering Services (40 Days Construction Observation)         \$ 56,599.40           Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000%         \$ 5,847.59						15%				
NMGRT (Toas County)         7.5000%         \$ 66,842.58           Total Construction Costs         \$ 958,077.04           TOTAL CONSTRUCTION COST (W/O TAX)         \$ 891,234.45           TOTAL CONSTRUCTION COST (W/ TAX)         \$ 958,077.04           Summary of Non-Construction Costs           Planning and Design:           Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 1,500.00           Design Phase- Additional Services         5%         \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         7.5000%         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         Bid Administration- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services         \$ 8,000.00           Construction Phase- Additional Engineering Services (40 Days Construction Observation)         \$ 56,599.40           Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000%         \$ 5,847.59						1370				
Total Construction Costs \$958,077.04  TOTAL CONSTRUCTION COST (W/O TAX) \$891,234.45  TOTAL CONSTRUCTION COST (W/ TAX) \$958,077.04  Summary of Non-Construction Costs  Planning and Design:  Design Phase- Basic Engineering Services 10% \$89,123.45  Design Phase- Permitting \$100.00  Design Phase- Additional Services 5% \$44,561.72  Subtotal \$135,185.17  NMGRT (Toas County) 7.5000% \$10,138.89  Total Planning and Design \$145,324.06  Engineering During Construction:  Bid Administration- Basic Engineering Services \$8,000.00  Construction Phase- Basic Engineering Services 20% \$13,368.52  Construction Phase- Additional Engineering Services (40 Days Construction Observation) \$56,599.40  Subtotal  NMGRT (Toas County) 7.5000% \$5,847.59							÷			
TOTAL CONSTRUCTION COST (W/O TAX)         \$ 891,234.45           Summary of Non-Construction Costs           Planning and Design:           Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 1,500.00           Design Phase- Additional Services         5%         \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         7.5000%         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         \$ 8,000.00           Construction Phase- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services (40 Days Construction Observation)         \$ 56,599.40           Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000%         \$ 5,847.59	NMGRT (	Toas County)				7.5000%	\$	66,842.58		
TOTAL CONSTRUCTION COST (W/ TAX)  Summary of Non-Construction Costs  Planning and Design:  Design Phase- Basic Engineering Services  Design Phase- Permitting  Design Phase- Additional Services  Design Phase- Additional Services  Subtotal  NMGRT (Toas County)  Total Planning and Design  For all Planning Construction:  Bid Administration- Basic Engineering Services  Construction Phase- Basic Engineering Services (40 Days Construction Observation)  Subtotal  NMGRT (Toas County)  Total Planning and Design  Substitution Phase- Basic Engineering Services  Construction Phase- Basic Engineering Services (40 Days Construction Observation)  Subtotal  NMGRT (Toas County)  Total Planning Construction:  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)	<b>Total Con</b>	struction Costs					\$	958,077.04		
TOTAL CONSTRUCTION COST (W/ TAX)  Summary of Non-Construction Costs  Planning and Design:  Design Phase- Basic Engineering Services  Design Phase- Permitting  Design Phase- Additional Services  Design Phase- Additional Services  Subtotal  NMGRT (Toas County)  Total Planning and Design  For all Planning Construction:  Bid Administration- Basic Engineering Services  Construction Phase- Basic Engineering Services (40 Days Construction Observation)  Subtotal  NMGRT (Toas County)  Total Planning and Design  Substitution Phase- Basic Engineering Services  Construction Phase- Basic Engineering Services (40 Days Construction Observation)  Subtotal  NMGRT (Toas County)  Total Planning Construction:  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)  Substitution Phase- Additional Engineering Services (40 Days Construction Observation)	TOTAL CO	DNSTRUCTION COST (W/O TAX)					Ś	891.234.45		
Summary of Non-Construction Costs   Planning and Design:								•		
Planning and Design:Design Phase- Basic Engineering Services10%\$ 89,123.45Design Phase- Permitting\$ 1,500.00Design Phase- Additional Services5%\$ 44,561.72Subtotal\$ 135,185.17NMGRT (Toas County)7.5000%\$ 10,138.89Total Planning and Design\$ 145,324.06Engineering During Construction:Bid Administration- Basic Engineering Services\$ 8,000.00Construction Phase- Basic Engineering Services (40 Days Construction Observation)\$ 56,599.40Subtotal\$ 77,967.92NMGRT (Toas County)7.5000%\$ 5,847.59	. OTAL CC	, , ,	Costs				٧	338,077.04		
Design Phase- Basic Engineering Services         10%         \$ 89,123.45           Design Phase- Permitting         \$ 1,500.00           Design Phase- Additional Services         5%         \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         7.5000%         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         Bid Administration- Basic Engineering Services         \$ 8,000.00           Construction Phase- Basic Engineering Services         20%         \$ 13,368.52           Construction Phase- Additional Engineering Services (40 Days Construction Observation)         \$ 56,599.40           Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000%         \$ 5,847.59	Dlam:		.0515							
Design Phase- Permitting         \$ 1,500.00           Design Phase- Additional Services         5% \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         7.5000% \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         \$ 8,000.00           Construction Phase- Basic Engineering Services         \$ 8,000.00           Construction Phase- Additional Engineering Services (40 Days Construction Observation)         \$ 56,599.40           Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000% \$ 5,847.59		-			_		٠.	00.105		
Design Phase- Additional Services         5%         \$ 44,561.72           Subtotal         \$ 135,185.17           NMGRT (Toas County)         7.5000%         \$ 10,138.89           Total Planning and Design         \$ 145,324.06           Engineering During Construction:         \$ 8,000.00           Construction Phase- Basic Engineering Services         20%         \$ 13,368.52           Construction Phase- Additional Engineering Services (40 Days Construction Observation)         \$ 56,599.40           Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000%         \$ 5,847.59						10%	_			
Subtotal \$ 135,185.17  NMGRT (Toas County) 7.5000% \$ 10,138.89  Total Planning and Design \$ 145,324.06  Engineering During Construction:  Bid Administration- Basic Engineering Services \$ 8,000.00  Construction Phase- Basic Engineering Services \$ 20% \$ 13,368.52  Construction Phase- Additional Engineering Services (40 Days Construction Observation) \$ 56,599.40  Subtotal \$ 77,967.92  NMGRT (Toas County) 7.5000% \$ 5,847.59	Design Ph	pase- Permitting					\$	1,500.00		
NMGRT (Toas County)7.5000%\$ 10,138.89Total Planning and Design\$ 145,324.06Engineering During Construction:Bid Administration- Basic Engineering Services\$ 8,000.00Construction Phase- Basic Engineering Services20%\$ 13,368.52Construction Phase- Additional Engineering Services (40 Days Construction Observation)\$ 56,599.40Subtotal\$ 77,967.92NMGRT (Toas County)7.5000%\$ 5,847.59	Design Ph	nase- Additional Services				5%	\$	44,561.72		
NMGRT (Toas County)7.5000%\$ 10,138.89Total Planning and Design\$ 145,324.06Engineering During Construction:\$ 8,000.00Bid Administration- Basic Engineering Services\$ 8,000.00Construction Phase- Basic Engineering Services20%\$ 13,368.52Construction Phase- Additional Engineering Services (40 Days Construction Observation)\$ 56,599.40Subtotal\$ 77,967.92NMGRT (Toas County)7.5000%\$ 5,847.59	Subtotal									
Total Planning and Design\$ 145,324.06Engineering During Construction:\$ 8,000.00Bid Administration- Basic Engineering Services\$ 8,000.00Construction Phase- Basic Engineering Services20%\$ 13,368.52Construction Phase- Additional Engineering Services (40 Days Construction Observation)\$ 56,599.40Subtotal\$ 77,967.92NMGRT (Toas County)7.5000%\$ 5,847.59	NMGRT (Toas County) 7.5000%									
Engineering During Construction:  Bid Administration- Basic Engineering Services \$8,000.00  Construction Phase- Basic Engineering Services \$13,368.52  Construction Phase- Additional Engineering Services (40 Days Construction Observation) \$56,599.40  Subtotal \$77,967.92  NMGRT (Toas County) 7.5000% \$5,847.59		<u> </u>			<u> </u>		Ś	145,324.06		
Bid Administration- Basic Engineering Services \$8,000.00 Construction Phase- Basic Engineering Services \$20% \$13,368.52 Construction Phase- Additional Engineering Services (40 Days Construction Observation) \$56,599.40 Subtotal \$77,967.92 NMGRT (Toas County) 7.5000% \$5,847.59								-,		
Construction Phase- Basic Engineering Services20%\$ 13,368.52Construction Phase- Additional Engineering Services (40 Days Construction Observation)\$ 56,599.40Subtotal\$ 77,967.92NMGRT (Toas County)7.5000%\$ 5,847.59							ς.	8 000 00		
Construction Phase- Additional Engineering Services (40 Days Construction Observation)\$ 56,599.40Subtotal\$ 77,967.92NMGRT (Toas County)7.5000%\$ 5,847.59					+	200/				
Subtotal         \$ 77,967.92           NMGRT (Toas County)         7.5000%         \$ 5,847.59	· · ·									
NMGRT (Toas County) 7.5000% \$ 5,847.59										
· · · · · · · · · · · · · · · · · · ·							_			
Total Engineering during Construction \$ 83,815.51						7.5000%	÷			
	Total Eng	ineering during Construction					\$	83,815.51		

	ON-CONSTRUCTION COST					\$	229,139.
AL P	ROJECT CAPITAL COST					\$ :	1,187,216.0
	Summary	of O&M Costs					
1	Miscellaneous	LS	1	\$	2.17	\$	2
2	Exempt Status - IRS Application	LS	1	\$	200.00	\$	200
3	Repairs & Maintenance Equipment	LS	1	\$	314.01	\$	314
4	Contract - Attorny Fees	LS	1	\$	475.59	\$	475
5	Bookkeeping	LS	1	\$	6,729.07	\$	6,729
6	Operator Extras	LS	1	\$	443.06	\$	443
7	Water Operator - Other	LS	1	\$	7,150.18	\$	7,150
8	Software	LS	1	\$	20.00	\$	20
9	Supplies - General Office	LS	1	\$	397.23	\$	397
10	Supplies - Furn/Fixt/Equip	LS	1	\$	10.61	\$	10
11	Insurance - Gen Liability/Prop	LS	1	\$	66.67	\$	66
12	Postage	LS	1	\$	465.43	\$	465
13	Printing Publishing	LS	1	\$	12.67	\$	12
14	NM Rural Water Association Dues	LS	1	\$	63.50	\$	63
15	Subscriptions & Dues	LS	1	\$	171.22	\$	173
16	Utilities - Electricity	LS	1	\$	2,197.35	\$	2.19
17	Bank Charges	LS	1	\$	1.30	\$	2,13
18		LS	1	\$		\$	3,575
	Board Stipends		+		3,575.81		
19	Board Training	LS	1	\$	61.33	\$	6:
20	Room Rental	LS	1	\$	285.18	\$	285
21	PRC Fees	LS	1	\$	10.65	\$	10
22	Water Conservation Fees	LS	1	\$	101.64	\$	10:
23	Miscellaneous G&A	LS	1	\$	3.33	\$	
24	Storage Unit	LS	1	\$	650.33	\$	650
25	Small Fees Paid to NM T&R	LS	1	\$	293.39	\$	293
26	Sales Tax Adjustments	LS	1	\$	405.58	\$	405
22	RIP Loan	LS	1	\$	4,040.79	\$	4,040
23	Reconcilliation Discrepancies	LS	1	\$	358.42	\$	358
24	Water Conservation Fees	LS	1	\$	101.64	\$	103
25	Miscellaneous G&A	LS	1	\$	3.33	\$	
26	Storage Unit	LS	1	\$	650.33	\$	650
27	Small Fees Paid to NM T&R	LS	1	\$	293.39	\$	293
28	Sales Tax Adjustments	LS	1	\$	405.58	\$	405
29	RIP Loan	LS	1	\$	4,040.79	\$	4,040
30	Reconcilliation Discrepancies	LS	1	\$	358.42	\$	358
31	Debt Service- Interest payment	LS	1	\$		\$	798
32	Short Lived Asset Reserve- Well Pump Replacements	LS	1	\$		\$	1,200
33 34	Short lived Asset Reserve - Gate Valves  Short lived Asset Reserve - Pressure Reducing Valves	LS LS	1 1	\$	263.50 4,804.75	\$	263 4,804
35	Short lived Asset Reserve - Pressure Reducing Valves  Short lived Asset Reserve - Master Meter	LS	1	\$	1,343.50	\$	1,343
36	Short lived Asset Reserve - Disinfection Equipment	LS	1	\$		\$	870
	. O&M COSTS					\$	43,639
	NET PRESENT VALUE O&M COSTS (Real Federal Interest	t Rate: 2.5%			2.5%		680,310
	•			+		_	
	PRESENT WORTH OF SALVAGE VALUE (Real Federal Inte				2.5%	\$	65,576
VIAR	NET PRESENT VALUE TOTAL COSTS (Real Federal Intere	st kate: 2.5%			2.5%	>	1,801,950.

Lower Arroyo Hondo- Recommended Project												
	Lower Arryo Hondo MDWCA Water System Improvements											
	Grant/Loan Amount											
Water System		No Grant (3%)	Ca	pital Outlay (0%)	Water Trust Board (0.25%)							
Improvements		0/100		100/0		90/10	90/10 80/20			75/25		60/40
Loan Amount	\$	18,289,872	\$	-	\$	1,828,987	\$	4,572,468	\$	4,572,468	\$	7,315,949
Annual Payment	\$	1,229,367	\$	-	\$	93,869	\$	187,738	\$	234,672	\$	375,476
Expenses	\$	177,904	\$	177,904	\$	177,904	\$	177,904	\$	177,904	\$	177,904
Reserve	\$	122,937	\$	-	\$	9,387	\$	18,774	\$	23,467	\$	37,548
Projected Average												
Monthly Base Rate	\$	527	\$	61.26	\$	97	\$	132	\$	150	\$	203

Lower Arroyo Hondo- Recommended Project								
Lower Arryo Hondo MDWCA Water System	m Improvem	ents						
ESTIMATED PROJECT TOTAL		\$	18,289,872.21					
No Grant (0% Grant / 100% Lo	oan)							
Debt Repayment / Rate Struc	ture							
Grant Amount	0%		0					
Loan Amount	100%	\$	18,289,872.21					
Annual Payment (3%, 20 Yr.)	3.00%	\$	1,229,366.70					
Expenses		\$	177,904.38					
Reserve	10%	\$	122,936.67					
Total Annual Expenses		\$	1,530,207.75					
Connections	79							
New Connections	163							
Projected Average Monthly Base Rate		\$	527					

Lower Arroyo Hondo- Recommend	Lower Arroyo Hondo- Recommended Project									
Lower Arryo Hondo MDWCA Water Syste	Lower Arryo Hondo MDWCA Water System Improvements									
ESTIMATED PROJECT TOTAL	ESTIMATED PROJECT TOTAL \$ 18,289,872.21									
Capital Outlay (100% Grant / 0%	% Loan)									
Debt Repayment / Rate Struc	ture									
Grant Amount	100%	\$	18,289,872.21							
Loan Amount	0%	\$	-							
Annual Payment (0%, 20 Yr.)	0.00%	\$	-							
Expenses		\$	177,904.38							
Reserve	10%	\$	-							
Total Annual Expenses		\$	177,904.38							
Connections	79									
New Connections	163									
Projected Average Monthly Base Rate		\$	61							

Lower Arroyo Hondo- Recommended Project								
Lower Arryo Hondo MDWCA Water System Improvements								
ESTIMATED PROJECT TOTAL		\$	18,289,872.21					
Water Trust Board (90% Grant / 1	-							
Debt Repayment / Rate Struc								
Grant Amount	90%		16,460,884.99					
Loan Amount	10%	\$	1,828,987.22					
Annual Payment (0.25%, 20 Yr.) Expenses	0.25%	\$	93,868.89 177,904.38					
Reserve	10%	\$	9,386.89					
Total Annual Expenses		\$	281,160.15					
Connections New Connections Projected Average Monthly Base Rate	79 163	\$	97					
Water Trust Board (80% Grant / 2)	0% Loan)	7	31					
Debt Repayment / Rate Struc	<del>-</del>							
Grant Amount	80%	\$	14,631,897.77					
Loan Amount	20%	\$	3,657,974.44					
Annual Payment (0.25%, 20 Yr.) Expenses	0.25%	\$	187,737.77 177,904.38					
Reserve	10%	\$	18,773.78					
Total Annual Expenses		\$	384,415.93					
Connections New Connections	79 163							
Projected Average Monthly Base Rate		\$	132					

Lower Arroyo Hondo- Recommended Project								
Lower Arryo Hondo MDWCA Water System Improvements								
ESTIMATED PROJECT TOTAL		\$	18,289,872.21					
Water Trust Board (75% Grant / 2	5% Loan)							
Debt Repayment / Rate Struc	_							
Grant Amount	75%		13,717,404.16					
Loan Amount	25%	\$	4,572,468.05					
Annual Payment (0.25%, 20 Yr.) Expenses	0.25%	\$	234,672.22 177,904.38					
Reserve	10%	\$	23,467.22					
Total Annual Expenses		\$	436,043.82					
Connections New Connections	79 163							
Projected Average Monthly Base Rate		\$	150					
Water Trust Board (60% Grant / 4	0% Loan)							
Debt Repayment / Rate Struc	ture							
Grant Amount	60%	-	10,973,923.33					
Loan Amount	40%	\$	7,315,948.88					
Annual Payment (0.25%, 20 Yr.) Expenses Reserve	0.25% 10%	\$ \$ \$	375,475.55 177,904.38 37,547.55					
Total Annual Expenses	10%	۶ \$	590,927.48					
Total Amilual Expenses		Ą	330,327.48					
Connections	79							
New Connections	163	۲	202					
Projected Average Monthly Base Rate		\$	203					