

BUREAU OF RECLAMATION



DEPARTMENT OF ENVIRONMENTAL RESOURCES & PUBLIC WORKS

DROUGHT RESPONSE PROGRAM: DROUGHT RESILIENT PROJECT PROPOSAL Zia Flume Reconstruction

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TECHNICAL PROPOSAL & EVALUATION CRITERIA

Executive Summary

Wednesday, March 27, 2019

Pueblo of Zia

Pueblo of Zia, Sandoval County, NM

The Pueblo of Zia diverts all irrigation water from the Jemez River and into Zia Lake. The lake is the Pueblo's sole reservoir and is therefore critical infrastructure for resiliency during dry periods in the irrigation season and for long term drought relief for irrigation and livestock needs. From the lake, water is conveyed across the Jemez River to the South Ditch by means of an elevated crossing known as the Zia Flume. This crossing has significantly deteriorated and the potential for imminent failure has been recognized by the Pueblo and multiple Federal and State agencies. Reconstruction of the flume will maintain future delivery of water to the entire south side of the river, including many of the most productive farmlands within the Pueblo, and therefore significantly increase the reliability of the Pueblo's water supply. The lake provides storage capacity and drought relief capability; however, reconstruction of the flume is necessary to deliver such benefit to the tribal members on the south side of the river. This proposed reconstruction of the flume will extend the service life for the irrigation infrastructure. All infrastructure to be upgraded is located on Trust land, and solely benefits tribal members.

It is critical that this project be completed before the structure fails entirely, and the proposed project schedule reflects this urgency. It is expected that design and environmental clearances will require five months, from April to September 2019. Construction will be scheduled to start immediately following the end of irrigation season, from October 2019 through March 2020.

Background Data

As is typical in the arid Southwest, New Mexico is extremely drought prone and most areas of the State receive minimal precipitation throughout the year. The Pueblo of Zia is no exception, and this area of the Jemez River basin (a component of the Rio Grande Basin) operates in an overall water deficit, such that annual evaporation exceeds annual precipitation rates. The Pueblo diverts all irrigation water from the Zia Diversion on the Jemez River, from which point water is diverted to Zia Lake. The lake is the Pueblo's sole reservoir and is therefore critical infrastructure for resiliency during dry periods in the irrigation season and for long term drought relief for irrigation and livestock needs. From the lake, which is on the north side of the river, water is conveyed across the Jemez River to the South Ditch by means of an elevated crossing known as the Zia Flume.

Zia Flume Existing Condition

The Jemez River crossing was originally constructed by the Bureau of Indian Affairs as a buried siphon. Due to river erosion and maintenance issues, the buried crossing was reconstruction in the early 1990's. That project rebuilt the buried section from the lake outfall and replaced the siphon section with an elevated piped crossing.

Figure 1: Flume Section, Leaking at Transition Weld



The new flume was constructed as a 24-inch steel pipe with ¼-inch wall thickness. The flume has significantly deteriorated in subsequent decades. While it has been patched and repaired multiple times, the pipe is rusting and deteriorated, and prone to failures at the welds (see Figure 1).

In addition, thermal expansion was not adequately accommodated in the original design and the pipe has experienced serious horizontal deflection as a result. The design of the support piers consisted of steel pilings imbedded in concrete footings. However, the flume supports were not anchored to the pilings, as shown in Figure 2. The ongoing horizontal deflections due to thermal expansion and contraction risk toppling the flume off the support piers, which would certainly result in catastrophic failure of the structure.

Figure 2: Pier Column Support



Compounding the situation, the Jemez River has been eroding and migrating its channel southward and has been eroding the support piers. The worst erosion is at the fifth pier, where the river has eroded an estimated 4-5 feet below the bed elevation at construction. The Corps of Engineers undertook some emergency repairs some years ago, placing angular rock along the bank immediately upstream of the crossing in an effort to protect the pier. That rock has been

largely displaced by subsequent flooding. Pier 5 is shown in Figure 3, with some of the displaced rock and flood debris evident. The photographs in figures 1-3 were taken by Reclamation engineers during site inspections conducted on 6 February 2017.

Figure 3: Flume Support, Pier 5



The flume has been widely recognized as being in jeopardy of imminent failure since an extreme flood event that occurred on 20 August 2016. This risk condition has been documented by field inspections conducted by the Corps of Engineers and by Reclamation. In 2017, Reclamation completed a planning level analysis of alternatives to address the situation. The recommended alternative was to reconstruct the buried pipe from the lake outfall to the flume and replace the flume.

Reconstruction of the flume will maintain future delivery of water to the entire south side of the river, including much of the most productive farmlands within the Pueblo, and therefore significantly increase the reliability of the Pueblo's water supply. The lake provides storage capacity and drought relief capability; however, reconstruction of the flume is necessary to deliver such benefit to the tribal members on the south side of the river. This proposed reconstruction of the flume will extend the service life for the irrigation infrastructure. All the infrastructure to be upgraded is located on Trust land, and solely benefits tribal members.

Criticality of Water Supply

All irrigation water is supplied by the Jemez River. Historic base flows in the Jemez River, measured several miles upstream of Zia Pueblo lands at the U.S. Geological Survey's *Jemez Gage*, found that base flows averaged between 20-30 cubic feet per second (cfs) during the period 1954-2003. The maximum daily irrigation diversion at the Zia Diversion on the Jemez River was measured as 10 cfs in 2004. However, that maximum is regularly unachievable due to inadequate flows in the Jemez River. This is evidenced in the reduced elevation of Zia Lake, which has not been filled to capacity in many years.

The Zia Lake reservoir was constructed in 1937 with a storage capacity of 130 acre-feet. In the late 1970's, the lake was expanded to 480 acre-feet. However, storage capacity diminishes over time due to sedimentation. In 2006, studies estimated the capacity at 400 acre-feet. If losses remained average in the years since, the lake is now likely reduced to about 360 acre-feet of storage capacity. While the irrigation infrastructure was constructed to serve about 950 acres of farmland, infrastructure design constraints and inadequate water supply has resulted

in the Pueblo maintaining far less in production in the past few decades, which have been plagued by consistent drought conditions.

The diverted water is currently used for agriculture, livestock and - in emergency situations - can be used for firefighting and fire suppression. An estimated 507 acres of farm land, and 100 farmers, are served by this diversion. In recent years, the farmlands served by South Ditch, known locally as the Southern Farms area, have averaged 55 farmers. Farming is discouraging due to a lack of reliable and adequate water supply to serve the available, potentially productive acreage. The Pueblo expects that reliable water supply and more efficient water conveyance to the Southern Farms area would double the number of active farmers in the area.

The Southern Farms area is used by Pueblo members to grow crops for subsistence, and the major crops are primarily chile, corn, squash, melons and alfalfa. More importantly, these farmlands are also used to pass the important traditions and cultural lessons of agriculture down to the younger generations. The Pueblo of Zia has a history deeply rooted in agriculture. During the planting season, sons, fathers and grandfathers work together to cultivate the earth and pass down stories of tradition and cultural practices. The traditional Spring ditch cleaning is maintained as a vibrant part of the cultural tradition, and there is a high level of participation throughout the Pueblo.

Unfortunately, the Pueblo's irrigation system has severe shortfalls in water supply. The entire basin is severely drought handicapped. With sole supply by the Jemez River, drought impacts to the river base flows impact the entire Pueblo system. Due to the evaporative losses, diversion into Zia Lake must be adequate to accommodate irrigation needs and evaporative losses or the delivery throughout the entire Pueblo system is compromised.

Criticality of the Zia Flume

The Pueblo has identified several infrastructure needs that are critical to maintaining their cultural traditions and developing their resilience to drought. These include increasing the efficiency and capacity for the impoundment of irrigation water at Zia Lake, improving efficiencies throughout the water conveyance system, and improving on-farm irrigation efficiency.

Toward the goals of sustainable delivery and drought resilience, upgrades are currently being made to the Zia Lake reservoir to ensure that the diverted water is being contained and maintained more efficiently for times of severe drought.

The highest risk in the system is posed by the condition of the Zia Flume, which is in imminent danger of failure due to physical deterioration, structural risk, and river erosion of the support piers. If the Zia Flume fails, several hundred acres of land would go fallow and, as drastic, incur the loss of years of tradition, culture and knowledge for future generations.

There is currently no means of capturing data on the amount of water diverted from the river at the Zia Diversion dam, nor of metering the water diverted from the lake into the South or North ditch systems. Consequently, there is no data on the volume of water delivered through Zia Flume either.

However, assuming the previously noted 2006 measurement of the volume of water diverted as 10 cfs is still functionally achievable, then it is reasonable to assume that this establishes the average available flow into Zia Lake. The flow through the piped section to the flume is controlled hydraulically by the capacity of the lake outfall structure. Preliminary calculations by Reclamation engineers indicate that the maximum flow rate through the flume is probably 21 cfs or less.

In the past, the deteriorating condition of the flume has resulted in several weld failures that leaked so much water that crop irrigation from the South Ditch was impossible until repairs were completed. During the best of times, there are still losses from the pipe. In addition, there is no information on the condition of the buried siphon section, which could also be responsible for seepage losses. In absence of measurement, it is suspected that the system losses for the conveyance system between the lake outfall and the transition from flume to canal may range from 5-15 percent of flow on average. Future study will be necessary to quantify system losses.

South Ditch Irrigation System

To supply the community lands on the south side of the river, water is released from the lake outfall and conveyed through buried pipe for approximately 1,780 feet to the Zia Flume. From the downstream end of the siphon section, the conveyance transitions to the concrete lined irrigation ditch (South Ditch) by means of the elevated flume crossing. From the siphon transition point to the point where the flume transitions to the canal section is about 628 feet. This portion of the South Ditch system is depicted graphically in Figure 4 on the following page.

The South Ditch then continues in an open, concrete lined canal for just over 14,800 feet, with discharge at the end of the ditch system routed back into the Jemez River. This canal is equipped with 65 turnouts on the main South Ditch conveyance, and an additional 12 turnouts on the South Ditch Lateral 1. The system serves the irrigation and livestock needs for all Pueblo members on the south side of the river. The general alignment and turnout locations are depicted in Figure 5.

The open canal section is concrete lined and was constructed with a one-foot bottom width, 2.6-foot sidewall height, and a top width of 6.2-feet. About 40 percent of South Ditch is in serviceable condition, while the other 60 percent – including the flume section – needs to be reconstructed.

Figure 4: Zia Lake to South Ditch Canal

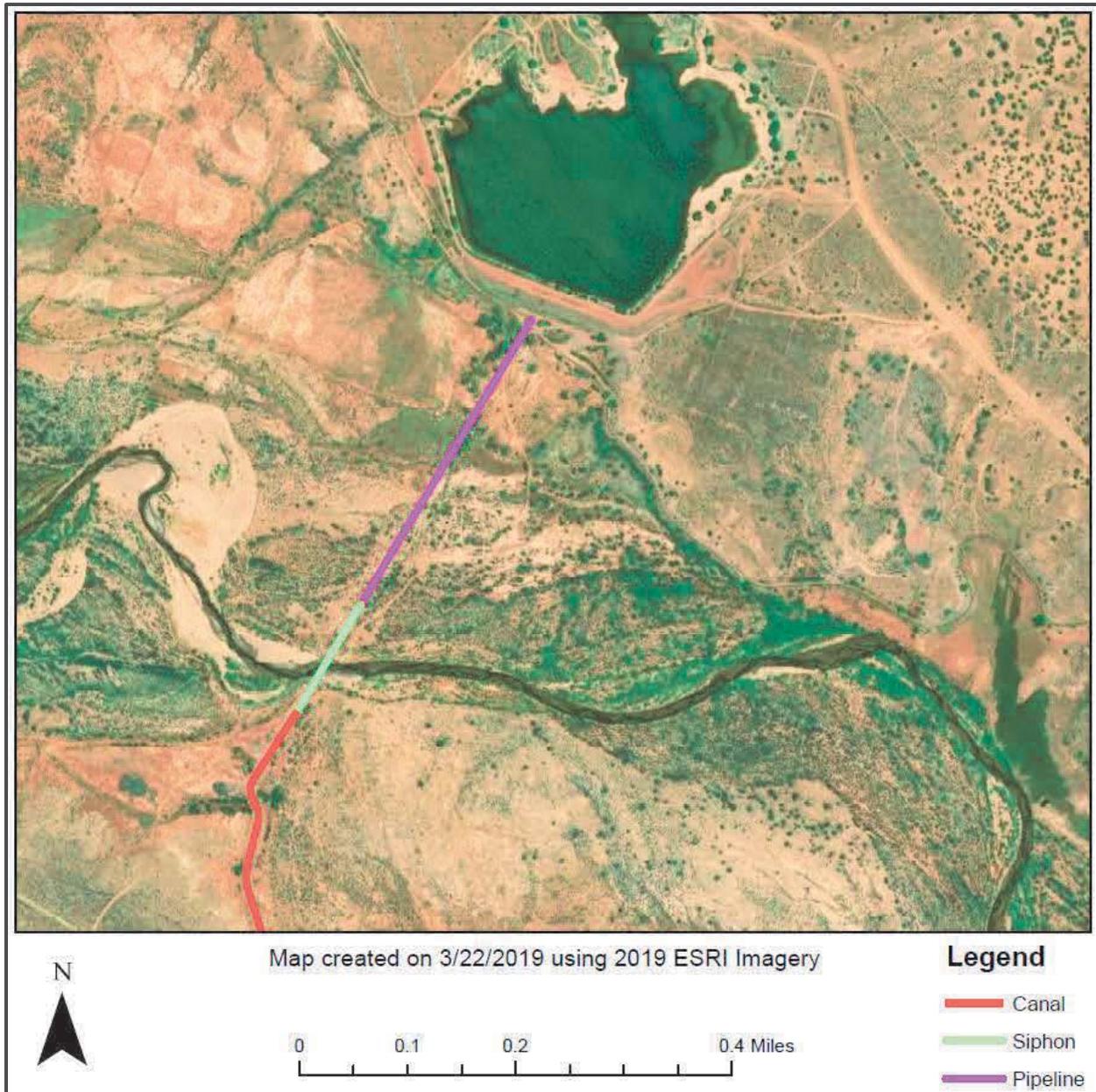
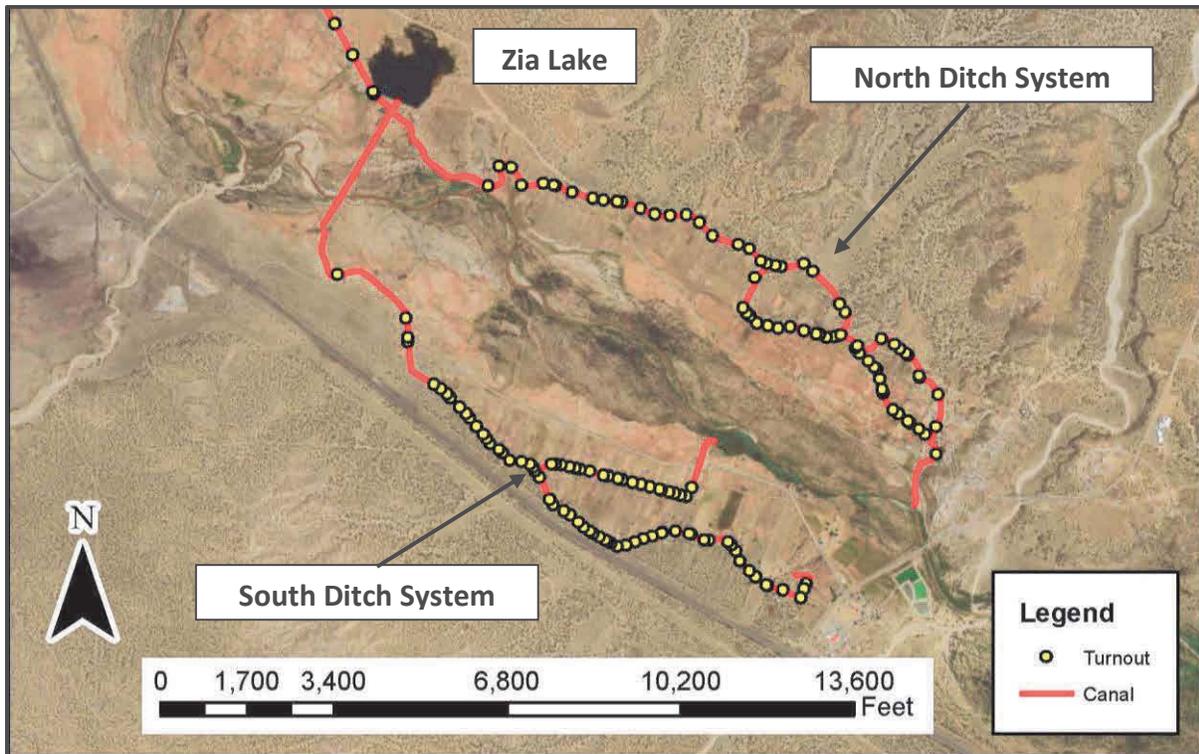


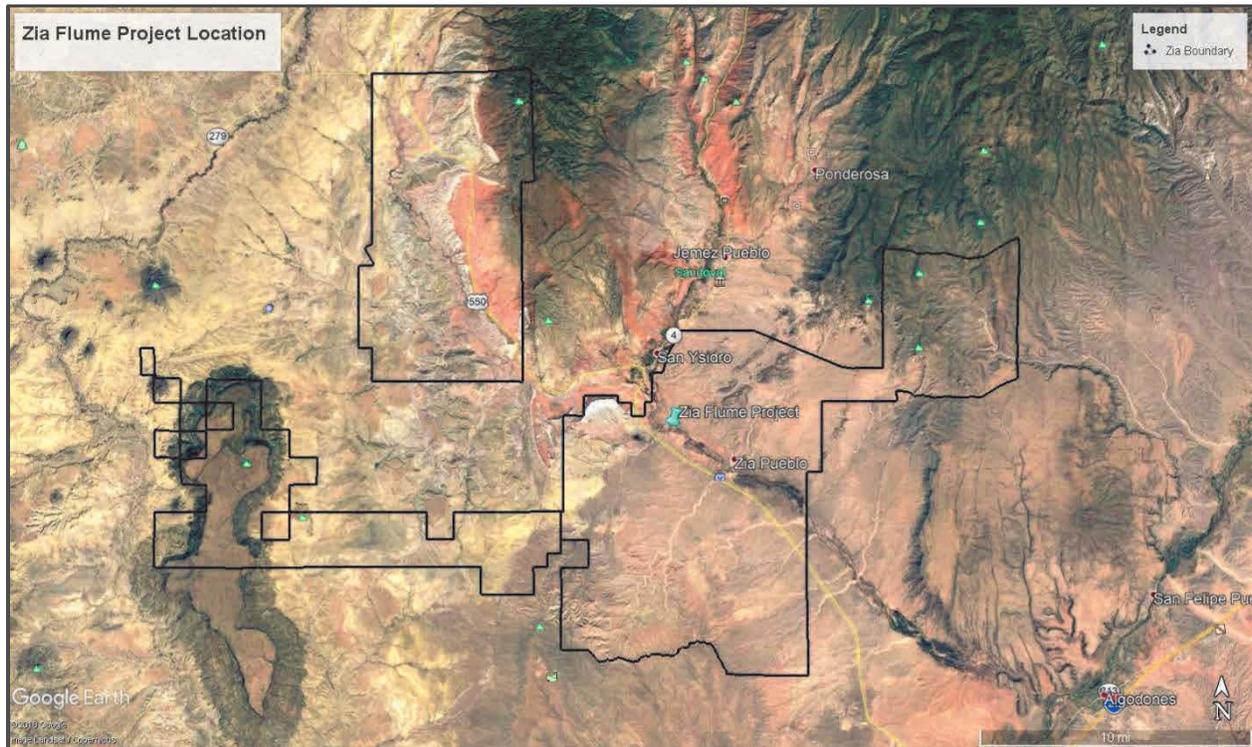
Figure 5: Irrigation Canals fed from Zia Lake



Project Location

The Pueblo of Zia is located in Sandoval County, NM on 172,000 acres of Trust land. The Pueblo is located approximately 35 miles northwest of Albuquerque and 65 miles southwest of Santa Fe. The Pueblo has approximately 972 members. The proposed project is to reconstruct the Zia Flume and associated buried piping, which is located south of the Zia Lake Reservoir and extends southward across the Jemez River to supply farmers in the Southern Farms area. The Pueblo lands, which are predominantly in three separate tracts within the Jemez Basin, and the location of the project, are shown in Figure 6. The latitude of the project is 35°31'18.91" N and the longitude is 106°45'45.22" W.

Figure 6: Project Location Map



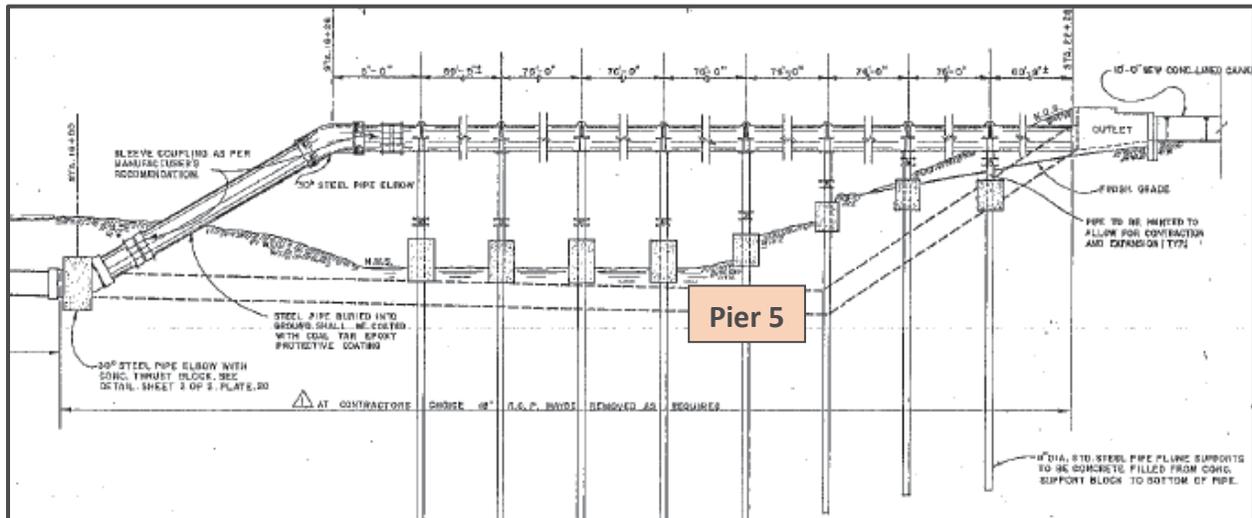
Technical Project Description & Milestones

The purpose of this project is to reconstruct the irrigation conveyance from the Zia Lake outfall to the beginning of the concrete lined South Ditch. This encompasses about 1,500 feet of buried concrete pipe, the elevated flume crossing the Jemez River, and transitions. As previously discussed, this reconstruction will restore the deteriorated flume section, correct design deficiencies that inadequately address thermal expansion and contraction demands on the flume structure, protect the structure from river erosion, and restore the integrity of the irrigation infrastructure throughout this piped section of South Ditch. The requested WaterSMART grant, along with contributions from the Pueblo of Zia, State of New Mexico Department of Homeland Security and Emergency Management (DHSEM), U.S. Army Corp of Engineers, and Bureau of Reclamation, will adequately fund this critical design and construction project.

As previously noted, the ongoing erosion and damage to the flume was exacerbated in 2016 by an extreme flood event on August 20. In response, the Corps of Engineers inspected the damage and provided the Pueblo with a preliminary estimate for protect further damage to Pier 5 through riprap protection. Due to the lack of available funding or other suitable recourse for the Pueblo, no permanent solution was investigated by the Corps at that time. The flooding

resulted in State declaration of disaster, and the State of New Mexico agreed to support the Pueblo with some disaster assistance funds to restore the section to *pre-disaster conditions*.

Figure 7: Zia Flume, 1992 Flume Design



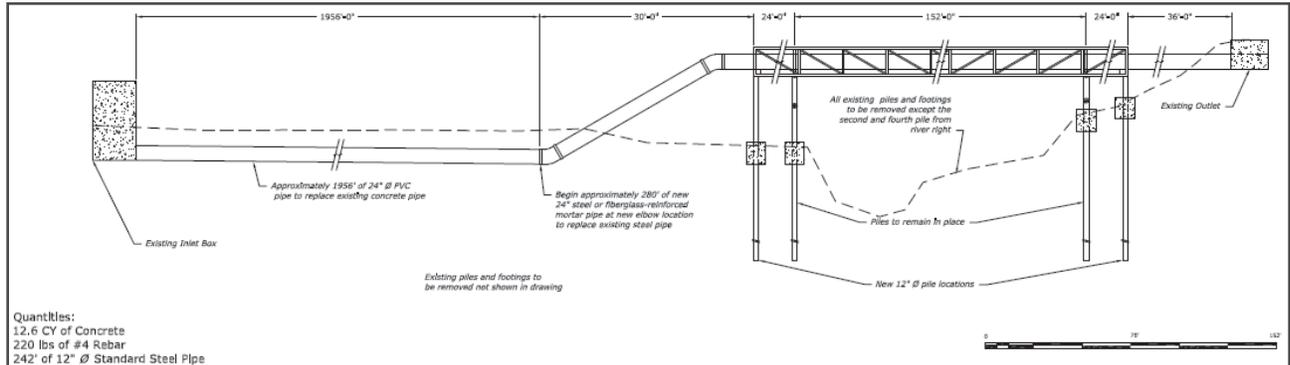
The flume design, as built in the early 1990's, is shown above in Figure 7. As is apparent in the figure, the depth of footers for the first four piers was greater than for piers 5 through 8, because the first four piers were located within the active river channel at that time. However, the river has migrated southward in subsequent years, and is now undercutting Pier 5 significantly.

The Pueblo was concerned with the probability of catastrophic failure if a small-scale repair project was implemented solely to address the erosion at Pier 5. At Pueblo request, Bureau of Reclamation engineers undertook to evaluate the condition of the flume and support the Pueblo in investigating feasible alternatives. Three options were developed (See Appendix 1). Of these options, the option recommended as most viable and sustainable over the long term, was identified as significant reconstruction.

The recommendation was to replace both the buried concrete pipe and the aboveground steel pipe structure, as well as the damaged support piers. The buried section was recommended to be replaced with high density polyvinyl chloride (PVC) pipe. The existing flume would be replaced with a new steel pipe or fiberglass-reinforced mortar pipe on a premanufactured truss bridge structure allowing horizontal displacement due to thermal expansion and contraction. The existing piers would be replaced by new footer piers and truss supports. The feasibility level cross section is shown in Figure 8.

Through collaboration, the Pueblo has developed a feasible approach and funding plan to fully address the reconstruction of the flume, from design through construction. The project elements are further discussed in the following paragraphs, along with details on milestones

Figure 8: Feasibility Level Project Reconstruction



and funding. The project milestone schedule is presented as Figure 9 on the following page. While summarized in the schedule, the funding milestones are discussed throughout as relevant. The critical path milestones are shown in red on the schedule timeline in the chart.

Figure 9: Project Milestone Schedule

Task Name	Duration	Start	Finish	Predecessor	Resource Names	2019				2020	
						Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
FUNDING	131 days	Mon 4/1/19	Mon 9/30/19								
PL93-638 Contract Award	52 days	Fri 2/1/19	Mon 4/15/19								
COE Interagency Transfer	34 days	Thu 3/14/19	Tue 4/30/19								
State Emergency Mgt	191 days	Mon 9/10/18	Mon 6/3/19								
WaterSMART Contract Award	133 days	Thu 3/28/19	Mon 9/30/19								
DESIGN	111 days	Tue 4/16/19	Tue 9/17/19								
Award Subcontract	10 days	Tue 4/16/19	Mon 4/29/19	2							
Project Scoping	10 days	Tue 4/30/19	Mon 5/13/19	7							
Geotechnical Investigations	10 days	Wed 5/1/19	Tue 5/14/19	8							
Physical Modeling	30 days	Tue 5/14/19	Mon 6/24/19	8							
60% Design Approval	45 days	Wed 6/12/19	Tue 8/13/19	9,10							
90% Design Approval	15 days	Wed 8/14/19	Tue 9/3/19	11							
Construction Bid Package	10 days	Wed 9/4/19	Tue 9/17/19	12							
ENVIRONMENTAL	76 days	Tue 5/14/19	Tue 8/27/19								
Cultural Clearance	5 days	Tue 5/14/19	Mon 5/20/19	8							
NEPA Compliance	20 days	Tue 6/25/19	Mon 7/22/19	15,10							
Construction Permitting	10 days	Wed 8/14/19	Tue 8/27/19	11							
CONSTRUCTION	146 days	Wed 8/14/19	Wed 3/4/20								
Long Lead Materials Procurement	45 days	Wed 8/14/19	Tue 10/15/19	11							
Bid Package Advertisement	11 days	Wed 9/18/19	Wed 10/2/19	13							
Award Construction Contract	10 days	Thu 10/3/19	Wed 10/16/19	5,20							
Construction	100 days	Thu 10/17/19	Wed 3/4/20	21							

Design

The project design is being funded by Pueblo in-kind contributions, funded through Pueblo general funds and a Public Law 93-638 self-determination contract with the Bureau of Reclamation. The authority for the 638 contract is the Rio Grande Pueblos Irrigation Infrastructure Act, Section 9106 of the 2009 Omnibus and Public Lands Act (Public Law 111-11). This is a new contract, providing support in reconstructing the Zia Flume and associated infrastructure. The contract is currently in final review, and is expected to be awarded by mid-

April 2019. Due to the collaborative nature of the team assembled by the Pueblo to complete this project, the Corps of Engineers has expressed the desire to participate in the project as well. The Corps anticipates providing some financial support during design, through interagency funds transfer to Reclamation. Should the Corps not be able to complete the interagency transfer, however, the Corps' proposed level of support is small enough that it is not expected to impact viability of the project. Of greater support is the availability of the Corps' hydraulic model of the Jemez River, which will be provided to the design subcontractor for their use.

Upon award of the self-determination contract, the Pueblo will immediately advertise for design services in support of the project. The competitive process will result in award to the lowest responsive and responsible bidder (Designer). The Designer will be provided with all available supporting documentation, including the Corps' hydraulic model, the existing 1992 design plans, and Reclamation's 2017 feasibility level design. The project design will be informed by these documents, but the ultimate proposed design will be produced by the Designer. The Designer will be responsible for producing final designs sealed by a professional engineer licensed in the State of New Mexico.

The design is expected to require geotechnical field investigations and application of the Corps' hydraulic model of the Jemez River. The Designer will be required to design within available funding constraints, and to fully support the recommendations of the ultimate design. As shown in the milestone schedule, design is expected to require 5 months, and the major deliverable will be development of a construction bid package and engineering estimate of probable construction cost.

Environmental Compliance

The environmental compliance is expected to require a duration of just over three months and will be conducted concurrent with design. The compliance activities are planned to be accomplished through technical assistance support from the Bureau of Reclamation, Albuquerque Area Office, and through in-kind contributions from the Pueblo of Zia.

Cultural clearance will be conducted in-house by the Pueblo of Zia's *Tribal Historic Preservation Office*. Any requested support for this milestone will be provided by Reclamation. In addition, Reclamation will provide biological and water resource review, and will draft the environmental compliance documentation to meet the requirements of the National Environmental Policy Act (NEPA).

Due to the irrigation function of project infrastructure and improvements, there is relatively little permitting anticipated for the project. Most project activities are expected to be exempt from the Clean Water Act Section 404 requirements because of the project purpose, covered by the irrigation exemption. However, if funding allows, it is possible that the design may incorporate some erosion protection features. In this case, an individual Section 404 permit

may be required from the Corps of Engineers. As part of the environmental compliance and permitting, Reclamation will undertake this determination and coordination, and be responsible for obtaining any necessary permits. The key deliverables for this task will be completion of the environmental documentation and obtaining any necessary permits for construction.

Construction

WaterSMART funding award is expected as implied in the funding announcement, by 1 October 2019. Should funding not be available at that time, the project would be at a point where construction could be delayed until October 2020, albeit with the accepted inherent risk of catastrophic failure of the flume.

Due to the urgency and criticality of the project, at the 60 percent design, the project team will also receive from the Designer a complete list of any long lead items required for construction. This will allow the Pueblo to order these long lead items in advance of awarding construction, which will facilitate the accelerated construction schedule.

Upon completion of the construction bid package, the Pueblo will advertise for construction services. The selection will be made by competitive bid, with award to the lowest price responsive and responsible bidder. The construction is expected to be completed during the Winter, non-irrigation, season.

Construction elements will depend on final design, but can be expected to include demolition, excavation dewatering, trenching buried pipe, construction of support footers, and installation of the new flume and support structure. The key deliverables for this task will be substantial and final completion of the new buried section and elevated flume crossing of the Jemez River. Project as-builts will be completed upon construction.

Performance Measures

During project design, the Designer will be required to analyze the existing water delivery capability for the flume and compare results to the expected delivery that will be achieved by project construction. This will allow for determination of probably water consumption savings due to the project. The Designer will also provide recommendations for future metering to be accomplished through operation and management upgrades. This would likely be accomplished most effectively at the lake outfall distribution box.

Evaluation Criteria

A. Project Benefits

The Zia Flume project will assist the Pueblo in being more resilient to drought by helping to ensure that all water being conveyed is used for its necessary purpose and not lost. The project will restore the system to more efficient and effective performance as designed. In this way, even in times of extreme drought, water will be utilized in a manner that mitigates the effects of drought and supports honored traditions and practices of cultural significance. The project should continue to provide benefits over the life of the new construction, which will be determined during design but is expected to provide 25 to 30 years of service life.

This project will not make additional water supplies available but will reduce demand on the water impounded at Zia Lake by improving the efficiency of the South Ditch conveyance system. This will reduce overall demand and improve efficiency. In addition, this project will enable future upgrades on the South Ditch infrastructure to further improve efficiencies.

The project will greatly improve the management of water supplies. The reconstruction of the Zia Flume will result in a net water savings by resolving the current sources of loss within the project area due to the deteriorated condition of the flume and potential deterioration of the buried pipe and siphon as well. Construction will also mitigate the current potential for catastrophic failure due to thermal expansion forces and to erosion of the flume support by the Jemez River.

While quantitative measurement is not currently available, water resource managers at the Pueblo intuitively anticipate a conservation approaching 25 percent of recent historic use on the South Ditch irrigation system. Qualitatively, this enhanced management, improved efficiencies and decreased losses are expected to allow 4 to 5 additional fields to be placed into production. This will lead to increased productivity for farmers and increased subsistence farming for additional farmers. This is a tremendous benefit to the continuation of tradition and culture for the Pueblo.

The new information that will be available to water managers will be increased understanding of traditional, historical use of water. This historical use will be important in management because it will lend knowledge to the amount of water truly necessary to maintain agriculture in the Pueblo and will lead to increased improvements in the overall system based on that knowledge.

B. Drought Planning and Preparedness

The existing Drought Contingency Plan is attached at the end of this document. This Plan was created with the assistance of community members and Tribal Council and was approved and adopted by the Council. This plan addresses drought in the multiple ways it may affect the community. One of the critical concerns expressed during development of the plan was the necessity of maintaining and increasing agriculture even in times of drought. The primary

means of instilling this resiliency, as outlined in the drought contingency plan, is by repairing the Zia Flume. The areas in critical need of water are those served by the Zia Flume. Other areas, on the north side of the river, are fed directly through ditch lines from the Zia Lake Reservoir. The current, continued and increasing losses in the Zia Flume are creating loss of arable land in the Southern Farms area at an increasing rate.

The Pueblo's Drought Contingency Plan includes consideration of climate change impacts to water resources and drought and emphasizes the increasing importance of minimizing and controlling system losses.

The Zia Flume project is supported by the existing drought plan and is directly identified as a response action and potential mitigation to agricultural effects to drought. The proposed project implements a critical need identified in the drought plan, in that there is a need for efficiency in systems as well as a bolstering and sustaining of cultural and traditional ways of life in a changing climate. The Zia Flume is prioritized in the referenced drought plan as it is specifically identified as a need, a pertinent need, in the drought plan.

C. Severity of Actual or Potential Drought Impacts to be Addressed by the Project

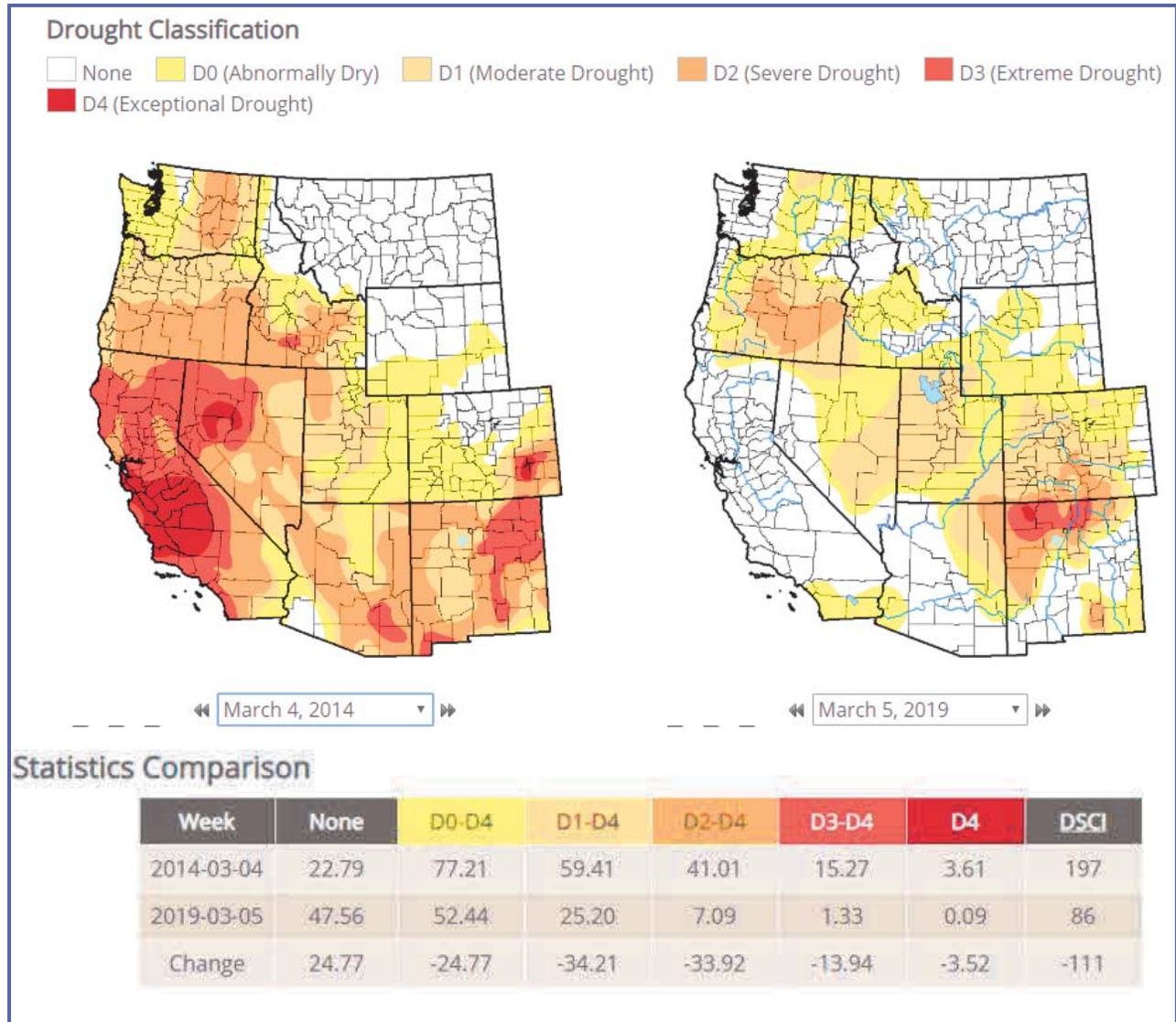
The Pueblo drought classification (published by droughtmonitor.unl.edu), as shown in Figure 10, has deteriorated over the past 5 years. As can be seen from the Map, this area has been elevated from *moderate* drought in March 2014 to *severe* drought in March 2019, even though some of the surrounding areas have seen drought relief. This trend is projected to continue in the coming years. It is important to create resiliency now, when it is more feasible to do so, and recovery of resources may still be possible.

If this project is not completed, the ongoing and future potential impacts of drought on agriculture in the Pueblo of Zia are severe and far reaching. If this project is not completed, the Zia Flume will likely fail within the next year. Without reconstruction of the Zia Flume, over 507 acres of agricultural production will be lost. With that loss, the Pueblo will also suffer significantly from the social, economic, traditional and cultural losses that would be incurred. Many families rely heavily on agriculture for subsistence. Most subsistence farming, and therefore the familial passing of traditional knowledge of culture and farming, occurs in the Southern Farms area; this would all be lost. Due to the cultural and traditional significance, there is no possible way to quantify the impact of such a loss. The Southern Farms area does not have any other source of water.

Currently, because the project is located in rural New Mexico there are considerable drought conditions to be considered, both current and expected. The area is very arid, with evaporative losses exceeding precipitation each year. It is projected that future trends will be dominated by storms with increased intensity but short duration. Such events are relatively less beneficial to agriculture, and instead greatly detrimental to sustaining agricultural practices and traditions. The area has been in severe drought for the past several years and although this year seems

promising for overall precipitation compared to recent years, it will take many years of sustained above-average precipitation to restore depleted aquifers. In the meantime, the need still exists to upgrade systems to ensure that the Pueblo endures in times of severe drought in the future.

Figure 10: Southwest Drought Classification, 2014 and 2019

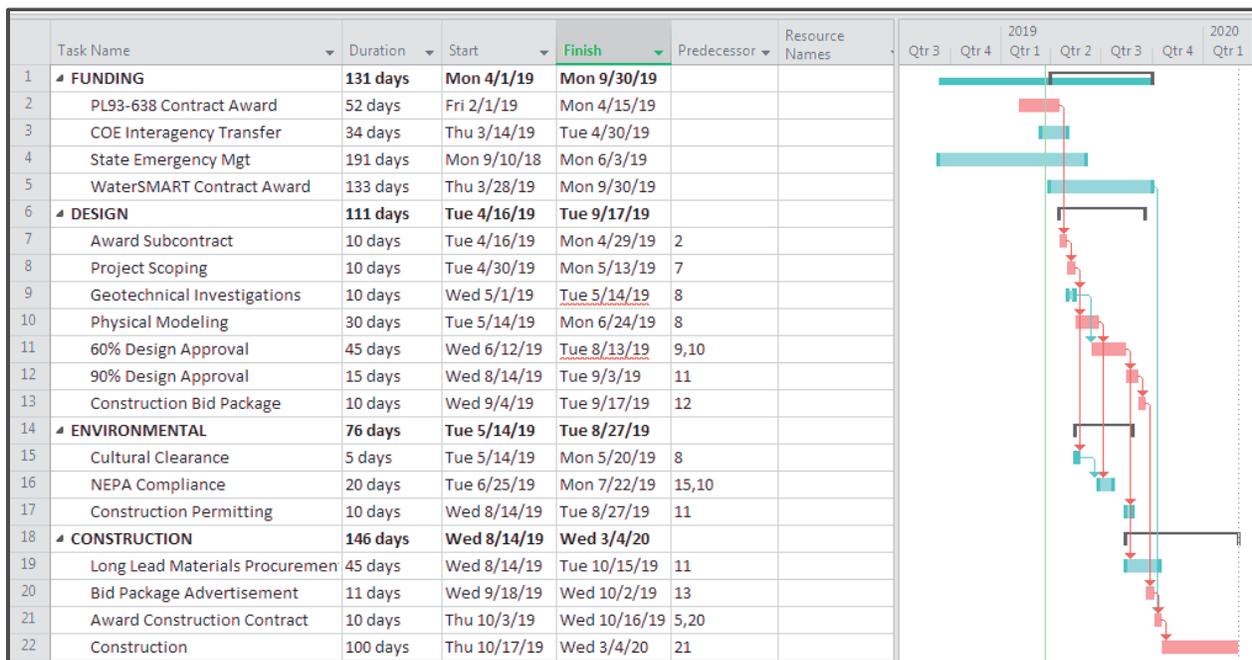


D. Project Implementation

The Pueblo of Zia has spent the past year developing a collaborative approach to this project which ensures cooperative support, multiple funding inputs, and commitment from State and Federal agencies to complete a successful project.

While the project approach and milestones have been previously discussed within this proposal, the key elements are reiterated here. First and foremost, the project milestone schedule, shown earlier as Figure 9 and reproduced in this section, identifies each significant milestone, including dates and durations, predecessors and critical path components.

Project Milestone Schedule



As is shown in the schedule above, the project has a very compressed schedule with several components on the critical path. While there is time in the schedule for award of the requested WaterSMART grant, the award of the prior self-determination contract is the first item in the schedule and is critical to initiating the project and maintaining the accelerated schedule so necessary for such an important project and as-risk infrastructure. As also is evident, the design and construction tasks are on the critical path entirely, with but two exceptions. The only items not on critical path for these phases are the geotechnical investigations and the long lead procurement items. It is noted that advance procurement of long lead items is critical to maintaining the construction schedule.

There is adequate time to complete the environmental phase of the project, including cultural resources, NEPA documentation and permitting. The environmental compliance is being undertaken by the Bureau of Reclamation’s Albuquerque Area Office as technical assistance support to the Pueblo on this project, and the estimate for environmental compliance was

prepared by that office. There is a potential for requiring an individual Section 404 permit, depending on whether design recommends stabilization and protection measures for the riverbank upstream of the flume. In addition, Section 402 stormwater permitting will be required, but that will be the responsibility of the selected construction contractor. The stormwater compliance is integral to the construction bid and a routine aspect of business for construction contractors experienced in this type of construction. There is no anticipated Endangered Species Act or other biological impact expected to be incurred by project construction.

E. Nexus to Reclamation

The project has clear nexus to Reclamation projects and authorities. The Pueblo of Zia has been an engaged partner in Reclamation's ongoing project, the *Rio Grande Pueblos Irrigation Infrastructure Act* project, with established authority under Section 9106, Public Lands and Omnibus Act of 2009. That project funded the irrigation infrastructure surveys for Zia, as well as for the other 17 Pueblos within the Rio Grande Basin. The Pueblo actively participated in the development of the key deliverable for that project, which was a *Report to Congress* on the condition of the Pueblos' irrigation infrastructure and a list of recommended projects to correct deficiencies. During report development, Zia provided a condition assessment for all the irrigation infrastructure on Pueblo of Zia lands, from which project needs were identified. Significantly, the proposed project of flume reconstruction was identified in the report as a critical project need.

Water savings incurred by improved irrigation infrastructure efficiencies benefit the Jemez River basin, allowing better aquifer recharge and surface water within the Jemez River. The Jemez is a significant tributary to the Rio Grande, operation and management of which is a substantial part of the Reclamation mission within the Upper Colorado Region and specifically within the Albuquerque Area Office.

The project directly benefits the tribal members of the Pueblo of Zia, which therefore aids Reclamation in fulfilling the agency's trust responsibilities.

F. Department of the Interior Priorities

This project supports two of the fundamental priorities established by the Department of the Interior. First, in restoring trust with local communities. The proposed project is critical to the cultural traditions of the Pueblo of Zia, yet the infrastructure has been deteriorating and failing for many years. Even following the recognition that the flume was in imminent danger of catastrophic failure, the Pueblo was unable to identify any Federal or State sources of funding sufficient to allow the Pueblo to proceed with the project.

Only through the persistent efforts of the Pueblo to develop a collaborative approach that pooled several sources of Pueblo, State and Federal funding was an adequately funded approach developed that made the project feasible. This partnered approach for success brings

together the Pueblo, State of New Mexico, Bureau of Reclamation, and Army Corps of Engineers to find a way to complete this critical project. The collaborative approach facilitates communication and allows efficiencies in project scoping, environmental analyses and permitting, and construction compliance and oversight activities.

Finally, the entire scope of this project is to modernize infrastructure. The proposed project will reconstruct a critical and significant component of the Pueblo's irrigation infrastructure. The modernization of the Zia Flume will extend the system serviceability and increase the efficiency of the irrigation water conveyance. This will result in overall system benefits, including reduced demand on the available water supply and increased resilience in times of drought.

PROJECT BUDGET

The project budget detailed in this section includes the funding plan and letters of commitment, the budget proposal, and the budget narrative. The proposed budget does not include any pre-award costs. All budget items have been reviewed as compliant with the applicable cost principles established in 2 CFR Part 200.

Funding Plan & Letters of Commitment

The proposed reconstruction of the irrigation flume is a high priority project, critical to the Pueblo's cultural and economic traditions. Because of this, there has been significant interest from multiple agencies in supporting the Pueblo in addressing the concerns with the deterioration of the structure and the damage imposed during flood events on the Jemez River. Since the flood event of 2016, there have been several site visits and inspections conducted by the Bureau of Reclamation, the Army Corps of Engineers, and the State of New Mexico Emergency Management Services Division. This support has enabled the Pueblo to put together a collaborative approach to funding this critical project. Letters of support from each of these contributing agencies are attached.

The keen interest and support shown by these agencies has allowed the Pueblo to pool resources to develop a solid plan for construction. As applicant, the Pueblo is contributing 39 percent of the total budget, with the third-party agency contributions totaling 23 percent. This proposed WaterSMART request would contribute the remaining 38% of funds necessary to complete the work.

The non-Federal contribution totals \$1,113,390.59 (56%) of the project cost, detailed as follow:

- *Pueblo of Zia* – The Pueblo is contributing a total of \$767,431.70 (39%) to the project. These funds are from two funding streams: The Pueblo's General Fund will provide \$17,431.70 in in-kind support, to cover the majority of the program salaries required for design and construction administration; the Pueblo is also utilizing Public Law 93-638 funds received from the Bureau of Reclamation under the Rio Grande Pueblos Irrigation Infrastructure Act authority, totaling \$750,000. This new construction contract is specifically for reconstruction of the Jemez River irrigation flume, and includes minor tribal administration support, design funding, and funding toward the construction cost.
- *State of New Mexico* – The State Emergency Management Services Division has identified \$345,958.89 in State funds to support the project scope.

The Federal contribution, including the requested WaterSMART award, totals \$860,000.00, which equates to about 44% of the overall project cost, from the following sources:

- *Bureau of Reclamation, Albuquerque Area Office* – The Albuquerque Area Office has committed to funding the environmental support for the project, including NEPA

compliance and permitting. Costs are estimated at \$50,000 and funds are available, as expressed in the attached *Letter of Support*.

- *U.S. Army Corps of Engineers* – The Corps is intending to complete an interagency funds transfer, estimated as \$60,000, to the Reclamation Albuquerque Area Office in support of the project design. In addition, non-monetary design review support will be provided by the Corps’ Tribal Partnership Program.
- *Bureau of Reclamation, WaterSMART Drought Resiliency Award* – The requested funding of \$750,000 is 38% of the overall project budget, and the majority of the Federal contribution.

The budget does not include any disallowed costs, including pre-award costs, proposal preparation costs, or land or water purchase costs.

Budget Proposal

The budget proposal is summarized in the following tables and in the attached Standard Form SF-424C, Budget Information for Construction Programs.

Total Project Cost

The total project cost is estimated at \$1,973,390.59. The following table provides a breakdown of that total.

Table 1. Total Project Cost Table

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$750,000.00
Costs to be paid by the applicant	\$767,431.70
Value of third-party contributions	\$455,958.89
TOTAL PROJECT COST	\$1,973,390.59

Non-Federal and Federal Funding Sources

The breakdown of project costs between Federal and non-Federal funding are shown in the following table. The majority of non-Federal contributions are from the Pueblo of Zia, through General Fund program funding and through a P.L. 93-638 self-determination contract awarded by the Bureau of Reclamation to the Pueblo of Zia in support of this project. As a reminder, self-determination awards are not considered to be Federal funds upon award.

In addition, the State of New Mexico, Emergency Management Services Division, is contributing non-Federal funds toward construction.

Federal funding sources include the Bureau of Reclamation and the Corps of Engineers, Tribal Partnership Program.

Table 2. Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
1 Pueblo of Zia, General Fund Account	\$17,431.70
2 Public Law 93-638 Project Funding through Reclamation	\$750,000.00
3 State of New Mexico Emergency Management Division	\$345,958.89
Non-Federal Subtotal	\$1,113,390.59
Other Federal Entities	
1 Reclamation (AAO) Program Support	\$50,000.00
2 US Army Corps of Engineers Project Support	\$60,000.00
Other Federal Subtotal	\$110,000.00
REQUESTED RECLAMATION FUNDING	\$750,000.00

Budget Proposal

The budget proposal is detailed in Table 3 on the following page, and includes the Pueblo of Zia administration costs, the estimated cost for design and construction sub-contracts, and the estimated NEPA support costs.

In order to execute the project, the Pueblo will be supported by two sub-contracts. Initially, the Pueblo will obtain the services of a qualified engineering consultant (Designer) through competitive bid process in compliance with the Pueblo’s procurement policies and Federal requirements as stipulated in the Pueblo’s self-determination contract. The Designer will complete the necessary geotechnical evaluations and hydraulic modeling, develop the design drawings and specifications, package the construction bid documents, and provide the Pueblo with an engineer’s estimate of probably construction cost.

The construction contract will be a competitive solicitation, with award based on Federal and Pueblo procurement standards as well. Due to the construction duration required for a project of this magnitude, the proposed construction would be initiated at the end of the 2019 irrigation season if the grant funded was awarded timely to support such a schedule. If award is delayed to Fiscal Year 2020, the construction would be scheduled for the end of the 2020 irrigation season.

Table 3. Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type (Unit)	TOTAL COST
	\$/Unit	Quantity		
Pueblo of Zia Salaries and Wages				
Deborah Anyaibe, Director, Environmental Resources & Public Works	\$38.00	240	Hour	\$9,120.00
Jesse Young, Env Resources Project Manager	\$27.00	240	Hour	\$6,480.00
Office Coordinator	\$18.00	120	Hour	\$2,160.00
Tribal Historic Preservation Officer	\$22.00	80	Hour	\$1,760.00
Pueblo of Zia Fringe Benefits				
Full-Time Employees	28.06%	\$19,520	Percent	\$5,477.31
Travel				
None Requested				\$0.00
Equipment				
None Requested				\$0.00
Supplies and Materials				
None Requested				\$0.00
Contractual / Construction				
Design (A/E) Contractor	\$232,746.68	1	Lump Sum	\$232,746.68
Construction Contractor	\$1,656,905.04	1	Lump Sum	\$1,656,905.04
Other				
Reclamation AAO NEPA Support	\$50,000.00	1	Lump Sum	\$50,000.00
TOTAL DIRECT COSTS				\$1,964,649.03
Pueblo of Zia Indirect Costs (Excludes Pass-throughs)				
Current Negotiated Rate	34.97%	\$24,997	Percent	\$8,741.56
TOTAL ESTIMATED PROJECT COSTS				\$1,973,390.59

Budget Narrative

The budget narrative provides details on the budget proposal summarized in the preceding table. All costs comply with the cost principles established in 2 CFR Part 200.

Salaries and Wages

The salary and wages included in the budget include the key personnel – the Project Manager and his supervisor, the Program Director – and supporting personnel (office coordinator and Tribal Historic Preservation Officer). All Pueblo labor will be directly in support of the project and is provided as in-kind contribution by the Pueblo.

Fringe Benefits

The tribal fringe benefit is 28.06%, and includes health (17.19%), State unemployment (3.00%), Social Security ((6.20%), Medicare (1.45%) and workers compensation (0.22%). This rate is applicable to each of the employees shown in the budget.

Travel

There is no request for travel included in the budget. The project is located on Pueblo lands and staff have Pueblo-assigned vehicles and fuel allocated through their program budgets. Travel required for the contractors is incorporated in the design and construction contract estimates.

Equipment

There is no request for equipment included in the budget. There are no equipment purchases, rentals or leases anticipated for staff supporting this project. Equipment utilized by contractors is incorporated in the design and construction contract estimates.

Materials and Supplies

There is no request for materials or supplies included in the budget. The materials and supplies required of the design and construction efforts are included in those contract estimates.

Contractual

The project requires sub-contract support for design and construction services, and both will be initiated through competitive procurement in accordance with the Pueblo's procurement policies, the cost principles established in 2 CFR Part 200, and the requirements of the Pueblo's negotiated self-determination contract. The bids for both design and construction will be publicly solicited, with responses by sealed bids. Award will be by firm fixed price to the lowest priced responsive and responsible bidder.

The design services contract was estimated based on the labor rates established in a published reference contract for engineering design services, GSA contract number GS-00F-188CA, and is summarized in Table 4 below.

Table 4. Design Contract Estimate

SUPPLY/SERVICE	UNIT	UNIT PRICE	QUANTITY	ESTIMATED COST
Principal Engineer	HR	\$190.80	4	\$763.20
Project Manager	HR	\$147.49	100	\$14,749.00
Civil Engineer, Senior	HR	\$145.56	120	\$17,467.20
Civil Engineer, Mid-Level	HR	\$106.22	230	\$24,430.60
Civil Engineer, Junior	HR	\$77.72	170	\$13,212.40
Mechanical Engineer, Mid-Level	HR	\$121.17	60	\$7,270.20
Subject Matter Expert	HR	\$205.00	80	\$16,400.00
CAD Technician, Mid-Level	HR	\$91.66	80	\$7,332.80
Survey Party, Chief	HR	\$106.08	40	\$4,243.20
Survey Party, Member	HR	\$89.29	40	\$3,571.60
Survey Party, Junior Member	HR	\$76.04	40	\$3,041.60
Technical Writer, Mid-Level	HR	\$86.11	40	\$3,444.40
Clerical, Mid-Level	HR	\$61.15	10	\$611.50
Supplies/Materials/Testing	LS	\$2,000.00	1	\$2,000.00
Travel	LS	\$518.00	1	\$518.00
Geotechnical Subcontractor	LS	\$100,000.00	1	\$100,000.00
SUBTOTAL				\$219,055.70
Tribal Tax		6.25%	219056	\$13,690.98
SUBCONTRACT TOTAL				\$232,746.68

The design effort will benefit by the collaboration and support offered by the Corps of Engineers, discussed in the following section, and by technical assistance support offered by Reclamation’s Albuquerque Area Office.

The majority of project funding is for construction. The construction contract estimate is tabulated in Table 5 on the following page. This estimate is subject to refinement once the project design is completed, but the overall cost has been validated through a planning level design analysis that was completed by Reclamation engineers in 2017. Reclamation provided technical assistance in the development of the budgetary construction cost estimate, and unit price resources included previous Reclamation projects and data from the Natural Resources Conservation Service *Field Operations Technical Guide*.

Table 5. Construction Contract Estimate

SUPPLY/SERVICE	UNIT	UNIT PRICE	QUANTITY	ESTIMATED COST
MOBILIZATION	LS	\$20,000.00	1	\$20,000.00
CONSTRUCTION STAKING	LS	\$10,000.00	1	\$10,000.00
DEWATERING	LS	\$110,000.00	1	\$110,000.00
DEMOLITION	LS	\$120,000.00	1	\$120,000.00
EQUIPMENT:				
Clearing & Grubbing (eqpt & labor)	acre	\$288.10	20	\$5,762.00
Brushing & Mowing (eqpt & labor)	acre	\$1,904.12	20	\$38,082.40
Trenching	HR	\$120.00	80	\$9,600.00
2CY Hydraulic Excavator	HR	\$204.72	120	\$24,566.40
80HP Dozer	HR	\$72.16	120	\$8,659.20
12CY Dump Truck	HR	\$103.97	300	\$31,191.00
Equipment Subtotal				\$117,861.00
LABOR:				
Heavy Equipment Operator	HR	\$27.70	320	\$8,864.00
Skilled Labor	HR	\$27.06	850	\$23,001.00
General Labor	HR	\$18.92	400	\$7,568.00
Construction Supervisor	HR	\$32.40	160	\$5,184.00
Labor Subtotal				\$44,617.00
MATERIALS:				
18" - 36" Willow Plantings (200/acre)	acre	\$334.00	2	\$668.00
Riprap w/ Geotextile (placed)	CY	\$52.01	1660	\$86,336.60
Piping & Appurtenances	LS	\$900,000.00	1	\$900,000.00
Concrete	CY	\$400.00	200	\$80,000.00
Earthfill, Roller Compacted (placed)	CY	\$4.25	2000	\$8,500.00
Supplies/Materials/Testing	LS	\$1,475.00	1	\$1,475.00
Materials Subtotal				\$1,076,979.60
CONSTRUCTION SUBTOTAL				\$1,499,457.60
Contingency (3%)		3%	\$1,499,457.60	\$44,983.73
Engineering Support During Construction				\$15,000.00
CONSTRUCTION SUBTOTAL				\$1,559,441.33
Tribal Tax	percent	6.25%	\$1,559,441.33	\$97,465.08
(rounding adjustment)				-\$1.37
TOTAL ESTIMATED CONSTRUCTION COST				\$1,656,905.04

Third Party In-Kind Contributions

The third-party contributions to the project include environmental compliance support by Reclamation (\$50,000), design funding support by the Corps of Engineers (\$60,000 to be

transferred to Reclamation through interagency agreement), and construction funding support from the State of New Mexico (\$345,958.89). The Corps of Engineers and State contributions are solely monetary. The Reclamation support, however, includes task related contributions for the environmental compliance and permitting. These activities will be performed by Reclamation directly, rather than through a 638 contract to the Pueblo. For avoid redundancy, the costs are described more fully in the following section.

Environmental and Regulatory Compliance Costs

Through the Albuquerque Area Office, Reclamation has offered to provide the compliance for the project. This entails all analyses and documentation required for compliance with the National Environmental Policy Act (NEPA), including project approval signed by the designated official for the Secretary of the Interior for the project record, as well as permitting. The estimated costs are shown in Table 6. The unit prices were obtained from a representative contract for the area (GSA Contract No. GS-10F-0117J).

Table 6. Environmental & Regulatory Compliance Cost Estimate

SUPPLY/SERVICE	UNIT	UNIT PRICE	QUANTITY	ESTIMATED COST
Principal Investigator	HR	\$149.23	15	\$2,238.45
Field Project Manager	HR	\$92.85	80	\$7,428.00
Environmental Scientist MID	HR	\$115.65	120	\$13,878.00
Geologist/Hydrogeologist MID	HR	\$114.68	16	\$1,834.88
Biologist SR	HR	\$113.73	24	\$2,729.52
Biologist MID	HR	\$98.33	80	\$7,866.40
CADD Operators	HR	\$71.04	20	\$1,420.80
GIS Analysts MID	HR	\$85.14	30	\$2,554.20
Technical Editor JR	HR	\$65.22	40	\$2,608.80
Supplies/Materials/Testing	LS	\$400.00	1	\$400.00
Travel	LS	\$467.00	1	\$467.00
SUBTOTAL				\$43,426.05
NM Gross Receipts Tax		6.25%	\$43,426.05	\$6,573.80
SUBCONTRACT TOTAL				\$49,999.85

The NEPA compliance is anticipated to require an environmental assessment. However, this will be further evaluated during design to determine whether the entire work scope will be categorically excluded. Because the nature of the work is strictly irrigation, it is expected that the project construction will be covered by the irrigation exemption, so no Section 404 permit will be required for the reconstruction. However, it is possible that associated erosion control and bank stabilization may require an individual Section 404 permit.

The environmental analyses will include evaluation for compliance with the Historic Preservation Act, and the Pueblo Tribal Historic Preservation Officer will be consulted. Analyses will also address considerations under the Endangered Species Act, Sections 401 and 402 of the Clean Water Act, and all other required environmental compliance considerations under NEPA. The compliance costs detailed in the table above provide a conservative estimate of the compliance work effort to ensure that the project budget is adequate to fully support construction.

Other Expenses

There are no other project expenses.

Indirect Costs

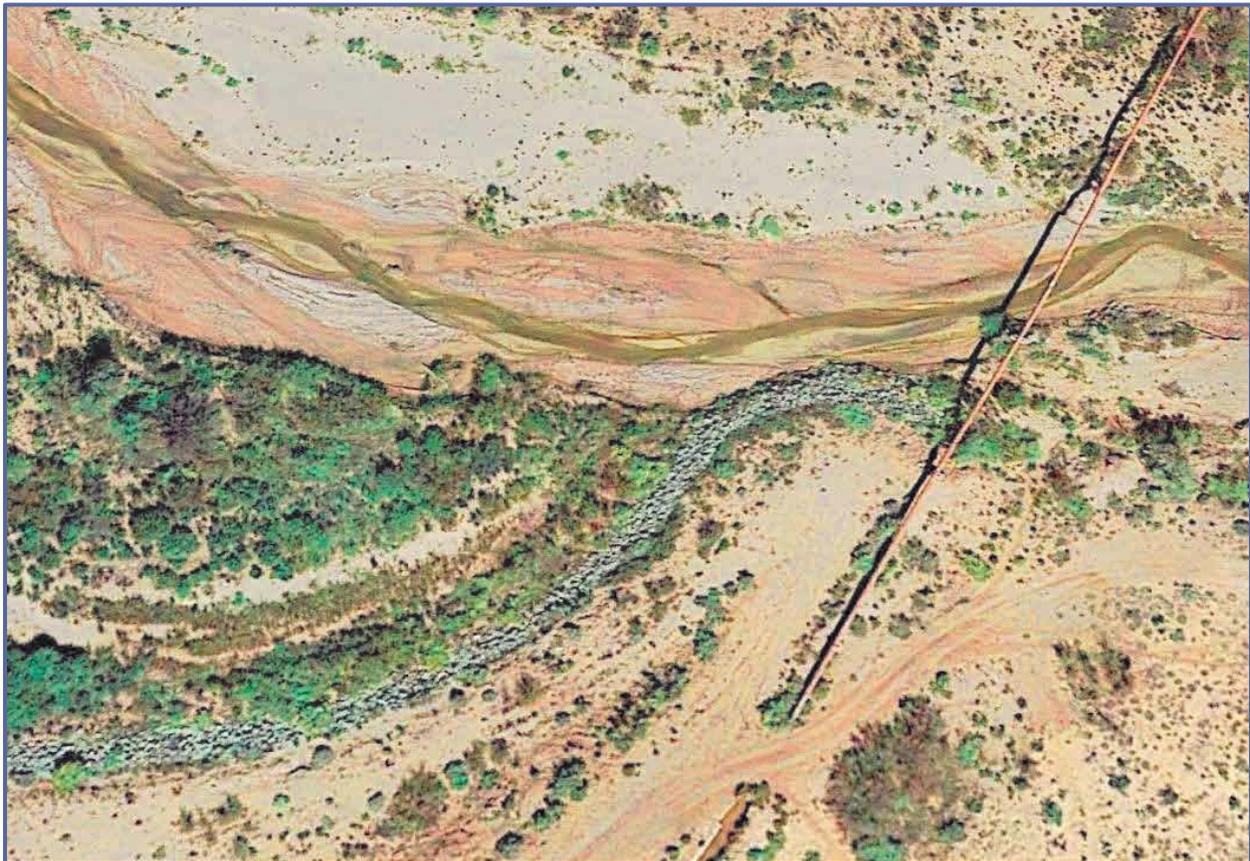
The Pueblo of Zia's current *Indirect Cost Negotiation Agreement* with the Department of the Interior, Interior Business Center, was issued 17 May 2018 for the 2018 calendar year. The indirect cost rate is 34.97%, shown in the budget proposal (Table 3). The agreement stipulates that the base utilized for calculation of appropriate indirect costs excludes passthrough funds such as subawards. Therefore, the indirect costs shown in the budget are solely applied to the Pueblo labor and fringe. It is noted that a new rate agreement will likely be in place in May 2019 and minor adjustment to the allowable indirect may result.

ENVIRONMENTAL & CULTURAL RESOURCE COMPLIANCE

The proposed project is located entirely on previously disturbed ground, and the alignment has been reconstructed from the lake outfall to the open ditch portion of South Ditch at least once in years past. The existing infrastructure was constructed in the early 1990's, following the design drawings developed by the Bureau of Indian Affairs dated February 1992.

The existing Zia Lake outfall distribution box will be tied into at the beginning of the project alignment. The alignment will end in a reconstructed transition at the head of the concrete-lined portion of South Ditch. Ground disturbance for the buried pipe segment will largely consist of trenching or excavating, compacting and final grading. For the flume segment, the flume support piers will require forming and placing concrete and steel, equipment access to place the support structures and truss systems, and final aerial pipe placement. The possible bank stabilization would entail grading, excavating and placing of additional angular rock to reinforce the stabilization constructed by the Corps of Engineers, visible below in Figure 11 (2017 Google Earth image).

Figure 11: Jemez River Flume Crossing



The expected ground disturbance will begin from the outfall of Zia Lake and extend southwest to the Jemez River flume crossing. Depending on final design and construction methods, the total ground disturbance is expected to total between 72,000 and 120,000 square feet (1.65 to 2.75 acres). The reason for the range is because the scope of potential bank protection along the Jemez River upstream of the flume crossing will be determined during design.

Most of the project alignment lies within the historic Jemez River floodplain. The first 500 feet of the alignment is situated above the floodplain, however, and will require assessment for cultural resources impacts prior to construction. As previously stated, the ground has already been disturbed through initial construction, and reconstruction in the early 1990s. There are no historic structures or other features eligible for listing on the National Register of Historic Places within the project area. However, there are known pre-contact sites in the nearby upland areas and so a level III field assessment will be undertaken during design to ensure that any appropriate mitigation measures are incorporated into the proposed project design package.

A preliminary review of the U.S. Fish & Wildlife Service database indicates several species which are protected under the Endangered Species Act are known to occur in the Jemez River basin. These are the New Mexico Meadow Jumping Mouse, Jemez Mountains Salamander, Yellow-Billed Cuckoo, Southwestern Willow Flycatcher, Mexican Spotted Owl and Rio Grande Silvery Minnow. However, the sparse vegetative cover in the project area is not suitable to provide likely habitat for the listed bird species nor jumping mouse. Within the riparian areas of the project area, it is unlikely that the minnow or salamander will have suitable habitat either. However, a field assessment of the project area and surrounding potential habitat areas will be undertaken during design.

Most of the project area is within the historic floodplain of the Jemez River, and about 100 feet of the flume construction activities will take place within the active channel. However, these activities are expected to be exempt from Section 404 of the Clean Water Act because the project infrastructure is covered by the irrigation exemption. Throughout the proposal, there is discussion that the one aspect that could require an individual Section 404 permit would be potential bank stabilization on the Jemez River upstream of the flume. This potential permitting is the most conservative approach. However, consultation with Reclamation water resource specialists indicate that it is likely that potential riverbank stabilization activities would be exempted through the irrigation or bank stabilization nationwide Section 404 permits.

Other potential impacts due to project construction would be considerations related to noxious and non-native invasive species. Large areas of the Pueblo have been overgrown with invasive woody species, particularly Russian olive and salt cedar. The project construction would minimize these species' occurrence within the project area, due to the root disturbing

construction activities. However, the project footprint is too small to beneficially impact the distribution of these species. Ground disturbed during construction is likely to negatively impact distribution of invasive groundcover species that are promoted by such disruption. While the project may require reseeding of disturbed areas following construction, the ground is too arid to expect much success. The minor acreage affected by the project is but a small part of the entire bosque within the Pueblo lands. Addressing invasive species is an identified concern for the Pueblo and must be addressed by a comprehensive management plan.

The project will have no impact on low income or minority populations. As is expressed throughout this proposal, the project will have a significant beneficial impact on the socio-economic and cultural traditions of tribal members.

REQUIRED PERMITS & APPROVALS

Due to the irrigation function of project infrastructure and improvements, there is relatively little permitting anticipated for the project. Most project activities are expected to be exempt from the Clean Water Act Section 404 requirements because of the project purpose, covered by the irrigation exemption.

If funding allows, the design may incorporate some erosion protection features. In this case, it is possible that an individual Section 404 permit may be required from the Corps of Engineers. Alternatively, and most likely, the proposed bank stabilization would be covered under the irrigation or bank stabilization exemptions. As part of the environmental compliance and permitting, Reclamation will undertake this determination and coordination, and be responsible for obtaining any necessary permits.

The contractor will be required to develop the plan, permitting and compliance for Section 402 compliance with the National Pollutant Discharge Elimination System. This is expected to include best management practices for management of runoff related to construction activities, including dewatering discharges.

EXISTING DROUGHT CONTINGENCY PLAN

BUREAU OF RECLAMATION



**DEPARTMENT OF ENVIRONMENTAL
RESOURCES & PUBLIC WORKS**

**DROUGHT CONTINGENCY PLAN
2019**

Drought Contingency Plan Public Water System

Pueblo of Zia
135 Capitol Square Dr.
Zia Pueblo, NM 87053

Pueblo of Zia Department of Environmental Resources & Public Works
135 Capitol Square Dr.
Zia Pueblo, NM 87053

Zia Community System
Public Water System ID Number: 063500123

11/26/2018
Revised March 2019

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EXAMPLE RESOLUTION FOR FORMING A DROUGHT TASK FORCE .**Error! Bookmark not defined.**

EXAMPLE RESOLUTION FOR ADOPTION OF A DROUGHT CONTINGENCY PLAN
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1. Declaration of policy, purpose, and intent

1.1. General

In order to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for Agriculture, domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety and minimize the adverse impacts of water supply shortage or other water supply emergency conditions, the Pueblo of Zia hereby adopts the following regulations and restrictions on the delivery and consumption of water.

The Drought Contingency Plan (Plan) is a framework for scenarios and objectives and potential response systems in order to prevent, or better respond to, a drought-related emergency or critical situation. The overall goal of the Plan, and the contingency planning process, is to facilitate rapid emergency response and mitigation of drought induced shortage including necessary upgrades to irrigation infrastructure to ensure that all water use, specifically in times of shortage, is used sustainably and efficiently with minimal or no system losses. The intention of the Plan directs the use and conservation of water in a severe drought situation. The Plan should be updated as needed but at least every 5 years.

The primary focus is placed on best management practices to manage water use demand, while evaluating options for alternative water supply sources. Water uses regulated or prohibited under the Plan are considered to be non-essential and continuation of such uses during times of water shortage or other emergency water supply condition are deemed to constitute a waste of water which subjects the offender(s) to penalties as defined in this Plan. It is imperative that current water systems for irrigation and municipal water are upgraded to decrease losses. This is especially true of the water conveyance system (Zia Flume) in Zia that carries water from the reservoir to users on the south side of the river. The system suffers from several, substantial deficiencies that cause detrimental losses.

1.2. Water use priorities

The risks to public health and traditional and cultural uses from water shortages could be high and include issues of water quality, water quantity, sanitation, and hygiene for personal use, food preparation as well as consumption. As a result of this, this Plan establishes the following priorities for use in developing demand reduction programs and allocations during a water shortage emergency. Priorities for use of available water, from highest to lowest priority, are:

1. Health and safety: residential home interior uses, sanitation, and fire fighting
2. Agriculture
3. Commercial, Industrial and governmental: maintain jobs and economic base
4. New demand: projects without permits when shortage is declared

1.3. Application

The provisions of this Plan shall apply to property utilizing water provided by the public water system or Zia Flume system. While the current public water system works at a high efficiency level, allowing the Pueblo to make necessary changes in time of drought to easily adjust to changing climate, the irrigation system is must less efficient and must have drastic upgrades to work optimally in times of drought.

2. Drought task force

A drought task force will be created by the Pueblo in order to assist in further developing and implementing effective drought monitoring, mitigation, necessary construction and response actions. The drought task force consists of representatives from the following:

- Pueblo of Zia Administration

- Public Works
- Department of Environmental Resources
- Housing
- Pueblo of Zia Fire Chief
- Pueblo of Zia Police Chief,
- Critical water users, e.g. CHR, T'siya Day School

3. Authorization

The designated official listed below, or her designee, is hereby authorized and directed to implement the applicable provisions of this Plan upon determination that such implementation is necessary to protect tradition, public health, safety, and welfare. The designated official or her designee shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan. The authorized designated official is: Deborah Anyaibe, Director of Environmental Resources and Public Works

4. Definitions

For the purposes of this Plan, the following definitions shall apply:

- A. **Agricultural Use-** water use for the growth of crops or livestock.

- B. **Commercial and institutional water use:** water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings. The term is also referred to as non-residential water use.

- C. **Conservation:** those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

- D. **Customer:** any person, company, or organization using water supplied by the public water system.

- E. **Domestic water use:** water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence. The term is also referred to as residential water use.

- F. **Drought level or stage:** severity of the drought conditions indicated by the impact and/or vulnerability triggering criteria for the water source and capacity to meet demand, and corresponding best management practices to mitigate impacts.

- G. **Even number address:** street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.
- H. **Industrial water use:** the use of water in processes designed to convert materials of lower value into forms having greater usability and value.
- I. **Non-essential water use:** water uses that are neither essential nor required for the protection of public, health, safety, and welfare.
- J. **Non-residential water use:** the term is also referred to as commercial or institutional water use.
- K. **Odd numbered address:** street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.
- L. **Public water system:** a system for the provision to the public of water for human consumption through pipes or other constructed conveyances. The term is also referred to as community water system.
- M. **Residential water use:** the term is also referred to as domestic water use.
- N. **Water Conveyance-** The main intake structure, that directs water from the source of supply, such as a reservoir or a river, into the irrigation system.
- O. **Zia Flume-** The Water Conveyance on the Pueblo of Zia that directs water from the Zia Lake Reservoir, Southern over the Jemez River, to the Pueblo's Southern Farms Area.

5. Previous water shortage conditions

Living in the western regions of the United States, the peoples of the Pueblo of Zia were accustomed to natural variations in climate cycles, and drought conditions have impacted the Tribe throughout time. Like other Native Americans living in this region, the Tribe moved seasonally between the ocean and the mountains, according to rainfall and temperature cycles. The ability to move tribal villages as necessary to be near water sources allowed our ancestors to adapt to periods of abundant rainfall and drought conditions. This cultural adaptability remains, however the physical ability to move tribal homes to new areas was removed when the Tribe was required to live on a reservation. This created new challenges, because the Tribe had to remain in one place and survive off of local water sources, regardless of whether rainfall was plentiful or limited.

Shortages are magnified by the deficiencies in the irrigation system. When water is low and there is not a surplus of water, the losses that occur from breaks in the seals of the piping, as well as evaporative losses in the form of water vapor escaping the open ends of the iron piping, create severe losses that are not regained anywhere in the system

6. Criteria for initiating and termination of drought response stages

Water supply will be monitored on a periodic basis as determined by the severity of the drought and determine when conditions warrant initiation or termination of each stage of the Plan based on the specified triggering criteria. The triggering criteria are based on public health and safety risks (likelihood and impacts) and an analysis of the anticipated vulnerability of the water source under drought conditions, and system capacity limits, this should include the irrigation system, specifically the Zia Flume.

7. Public involvement

Opportunities for public input in the Plan were provided by the methods including:

- Holding staff meetings to accept input on the Plan Providing the Plan to anyone requesting a copy
- Accepting comments on the Plan at a designated office
- Public comment period

8. Public education and notification

Community outreach, education, and notification about the Plan will include information about the conditions under which each stage is to be initiated or terminated, the drought response measures to be implemented in each stage, and the specific actions required of the public.

The more severe the water shortage, the more vigorous the public information campaign will need to be. Any public communications strategy undertaken in connection with a water shortage should contain the following fundamental attributes:

- **Timely:** Information should be disseminated well in advance of voluntary or mandatory actions that are to take effect, repeated often, and updated at regular intervals.
- **Credible:** Information should strive to be clear, professional, consistent, straight forward, reasoned, and honest to build trust and community support.
- **Multi-modal:** Information should be made available to the public using a variety of methods; for example, using the, newsletters, and public meetings, e-mail.
- **Open:** The public water system will actively listen to, engage, and involve the community, solicit feedback, address identified concerns, and respond to public input in a manner that is respectful, appreciative, welcome to creative solutions, and acknowledges each individual's sacrifice, inconvenience, and contribution to the solution.
- **Coordinated:** The Department of Public Works should collaborate with other Tribal departments and other impacted entities to ensure that the community, as a whole, has a synchronized and coordinated approach.
- **Action oriented:** Information should always contain positive action steps people can take to help foster a spirit of cooperation and create an overall atmosphere that encourages the people to conserve water for the public good.

There are various methods to carry out communications and public outreach. The following techniques and methods will be considered: to notify the public:

- Announcement at public events and meetings
- Presentations and open forums at community meetings
- Publication in a newsletter of general circulation
- Press releases using other local media-mail
- Direct mail to each customer; e.g. utility bill inserts and fliers
- Signs posted in public places; e.g. posting a bulletin at the tribal offices
- Take-home fliers/posters at schools, churches, libraries, grocery stores
- Public information booths at events
-
- Notifying other tribal offices, departments, schools, and other agencies as appropriate

The following individuals or agencies will be notified:

- Governor of the Pueblo of Zia
- Tribal water utility board
- Tribal environmental department
- Local tribal housing department entity
- Local fire chief
- Local police chief
- Critical water users, e.g. health clinics, schools
- County Office of Emergency Services (OES) director
- Indian Health Service District/Field Office
- Other Federal entities; e.g. BIA, BOR, EPA

9. Summary inventory of water supply and demand

9.1. Water supply

The public water system is currently supplied by water source(s) including ground water wells. The irrigation system is also very important to the Pueblo. The diversion dam feeds water to the ditch system, supplying both the Northern and Southern Farming areas. In order to get the water from the Northern side of the Jemez River to the Southern Side the water is gravity fed through the Zia Flume across the river.

While production from specific water supply source will often vary year to year, due to a variety of factors, it is anticipated that during a drought condition, the water supply would drastically change in quantity and quality. This drastic change would likely leave the public water system largely unaffected, because the system is supplied by groundwater. It would take an extremely severe drought to begin to affect the ground water in this area. The irrigation system will be drastically and immediately affected by even the slightest drought. This is why all deficiencies in the system have such a great impact on the very important, traditional and cultural practices in agriculture and irrigation.

Table 1: Estimated minimum water supply

9.2. Water demand

The public water system has a current water demand from uses including residential, non-

residential including commercial, schools, tribal offices, health clinics.. The surface water system is primarily used for agricultural practices; irrigation and livestock.

A brief description of each water use demand is provided in the Table below. A detailed description of each water use demand is provided in the Appendix and includes only average demand due to the lack of current usage data. Current irrigation usage is unknown as well due to the fact that it has never been gauged.

Table 2: Average water use demand

Customer type	Number of connections	Total water demand gallons per day
Residential	293	111,633
Non-residential including T'siya Day School, the health clinic and tribal offices	25	15,000
Irrigation	76	2,000
Total all demands	394	128,633

The average water demand is based on a use of:

- 127 gallons per person per day, which is the average usage in the surrounding areas and a family size of 3 people.
- 7,000 gpd for Elementary School
- 5,000 gpd for health clinic
- 3,000 gpd for tribal offices
- 2,000 gpd for all irrigation

In addition, actual water use data for the wintertime (e.g. January and February) has been utilized to evaluate the water use allotments for the most restrictive stages. Wintertime water use is considered to be more representative of actual minimum domestic water use because it consists primarily of domestic uses, as exterior water use is likely to be minimal during this time of year (e.g. limited use for lawn irrigation, swimming pools, etc.).

The wintertime water use was found to range from approximately [] to [] [indicate approximate range of wintertime per capita water usage] [40 to 95 gpd].

10. Determining if a water shortage is imminent

In normal years when the water supply outlook is favorable, there is generally sufficient supply to meet the existing demand. However, after an unusually dry winter or period of consecutive dry years, there is an increased likelihood the water supply will not meet the demand. It is critical during this situation to analyze whether water supplies will be deficient relative to the estimated water needs for the coming dry season. This should be done as early in the season as possible to attempt to predict and plan for possible shortages however, there is a chance that late winter rains will change the water supply outlook, and therefore, the situation often remains

dynamic through the end of April.

Generally, the period of May 1 to October 31 is considered the critical period for the purpose of defining the degree of water supply shortfall and for selecting the appropriate demand reduction strategy and goals. During this period is often when water supply availability is the lowest and water demand is the highest, potentially creating a summer water supply shortage situation.

There may often be no single criterion, trigger, or definition that is used to determine if a water shortage exists. The determination of a water shortfall involves consideration of all the relevant factors listed in the Plan which generally involve both the water supply and demand.

Generally, forecasting water supplies available from all potential sources (e.g. surface water and ground water sources) may involve a range of certainty due to the availability of historic information and variance in weather patterns and subsurface conditions. Although this data is largely unavailable for the Pueblo specifically, there is some area data that may be useful.

Using the best available information, the determination of the degree of the water shortfall will be determined by following a three-step process, which includes:

1. Develop a monthly forecast of water supply available from all sources.
2. Compare the water supply available to the anticipated water demand.
3. Evaluate whether the available water supply is adequate to meet the demand over the projected time period of dry weather conditions, and any anticipated water shortfall. Implement any water shortage/drought response actions as necessary.

11. Triggering criteria and stages of action

One of the key elements of the Plan is incremental triggering criteria for the drought severity and corresponding response actions. Each stage is triggered by an anticipated or actual water shortage condition, and each stage has several triggering criteria. The triggering criteria described below are based on an analysis of the vulnerability of the water source under anticipated drought conditions and system capacity limits. The drought condition stage, water shortage triggering criteria, and corresponding demand reduction goals are presented in the Table below.

Table 3: Level of water shortage, triggering criteria, and demand reduction goals

Stage Level	Stage title	Water shortage condition and triggering criteria	Demand reduction goal	Program type
1	Normal	Abnormally dry, minor shortage: 0-10%	10%	Voluntary
2	Alert	Moderate shortage: 10-25%	25%	Mandatory
3	Warning	Severe drought: 25-35%	35%	Mandatory
4	Critical	Extreme drought: 35-50%	50%	Mandatory
5	Emergency	Exceptional drought: over 50%	Over 50%	Mandatory

A water shortage may trigger any stage of response actions and include best management practices for supply management and demand reduction. Determination of the most appropriate stage to implement will be based on actual conditions at the time of the event. Successive stages of response actions will be declared only after exhausting efforts to make a prior stage successful.

In some cases, it may be necessary to immediately implement an advanced stage of the Plan.

This may occur due to information that indicates likely increased severity in the drought conditions (e.g. to serve as a preemptive action) or when the health and safety of the community are at an increased risk. The response actions are designed to be flexible so that there is an appropriate response to the specific situation occurring at a particular time. The conditions that may trigger specific stages of the Plan are specified below.

11.1. Stage 1: Minor/abnormally dry conditions (Normal)

The triggering criteria and conditions for this drought level or stage include:

- Annually, beginning on February 1 through October 1
- Pueblo of Zia Governor's Office with the assistance of the Department of Environmental Resources/Public Works issues a drought declaration at Stage 1.
- When the water supply available to the public water system is equal to or less than 80% of the storage average.
- When the water supply available to the public water system is reduced by 10% of the long-term average.
- When flows in the Jemez River are equal to or less than 10 cfs].
- When the one-year change in the static water level in the well(s) indicates a downward trend and the change in the depth of static water level exceeds 3 ft.
- When the one-year change in the specific capacity of the well(s), defined as the yield of the well divided by drawdown (expressed in units of gpm/ft), decreases by [10% percent of the original specific capacity of the well(s).
- When total water source yield is unable to meet the water demand averaged over each person at 127 gallons per person per day
- When total daily water demand equals or exceeds 115,000 gallons per day for 90 consecutive days based on a safe operating capacity of the water supply facilities.
- A combination of the above-mentioned circumstances reduces the public water system's overall water supply or production capabilities by 10% or more.

11.2. Stage 2: Moderate conditions (Alert)

The triggering criteria and conditions for this drought level or stage include:

- The Pueblo of Zia Governor in combination with the Department of Environmental Resources/Public Works issues a drought declaration at Stage 2.
- When the water supply available to the public water system is equal to or less than 70% of the storage average.
- When the water supply available to the public water system is reduced by 25% of the

long-term average.

- When flows in the Jemez River are equal to or less than 7 cfs.
- When the one-year change in the static water level in the well(s) indicates a downward trend and the change in the depth of static water level exceeds 5 feet. When the one-year change in the specific capacity of the well(s), defined as the yield of the well divided by drawdown (expressed in units of gpm/ft), decreases by 25% percent of the original specific capacity of the well(s).
- When total water source yield is unable to meet the water demand averaged over each person at 100 gallons per person per day.
- When total daily water demand equals or exceeds 100,000 gallons per day] for 60 days] consecutive days based on a safe operating capacity of the water supply facilities.
- A combination of the above-mentioned circumstances reduces the public water system's overall water supply or production capabilities by [_____]25%or more.

11.3. Stage 3: Severe conditions (Warning)

The triggering criteria and conditions for this drought level or stage include:

- The Pueblo of Zia Governor in combination with the Department of Environmental Resources/Public Works issues a drought declaration at Stage 3.
- When the water supply available to the public water system is equal to or less than 60% of average storage.
- When the water supply available to the public water system is reduced by [35% of the long-term average.
-
- When flows in the Jemez River are equal to or less than 6 cfs].
- When the one-year change in the static water level in the well(s) indicates a downward trend and the change in the depth of static water level exceeds 7 feet
- When the one-year change in the specific capacity of the well(s), defined as the yield of the well divided by drawdown (expressed in units of gpm/ft), decreases by 35% percent of the original specific capacity of the well(s).
- When total water source yield is unable to meet the water demand averaged over each person at 90 gallons per person per day.
- When total daily water demand equals or exceeds 90,000 gallons per day for 30 consecutive days based on a safe operating capacity of the water supply facilities.
- A combination of the above-mentioned circumstances reduces the public water system's

overall water supply or production capabilities by 35% or more.

11.4. Stage 4: Extreme conditions (Critical)

The triggering criteria and conditions for this drought level or stage include:

- The Pueblo of Zia Governor in combination with the Department of Environmental Resources/Public Works issues a drought declaration at Stage 4.
- When the water supply available to the public water system is equal to or less than 60% of average storage.
- When the water supply available to the public water system is reduced by 50% of the long-term average.
- When flows in the Jemez River are equal to or less than 5 cfs].
- When the one-year change in the static water level in the well(s) indicates a downward trend and the change in the depth of static water level exceeds 10 feet.
- When the one-year change in the specific capacity of the well(s), defined as the yield of the well divided by drawdown (expressed in units of gpm/ft), decreases by [50% percent of the original specific capacity of the well(s).
- When total water source yield is unable to meet the water demand averaged over each person at 75 gallons per person per day
- When total daily water demand equals or exceeds 75,000 gallons per day for 30 consecutive days based on a safe operating capacity of the water supply facilities.
- A combination of the above-mentioned circumstances reduces the public water system's overall water supply or production capabilities by 50% or more.

11.5. Stage 5: Exceptional conditions (Emergency)

The triggering criteria and conditions for this drought level or stage include:

- Pueblo of Zia Governor in combination with the Department of Environmental Resources/Public Works authority issues a drought declaration at Stage 5.
- When the water supply available to the public water system is equal to or less than 50% of average storage.
- When the water supply available to the public water system is reduced by over 75% of the long-term average.
- When flows in the Jemez River are equal to or less than 3 cfs.
- When the one-year change in the static water level in the well(s) indicates a downward trend and the change in the depth of static water level exceeds 15 feet.

- When the one-year change in the specific capacity of the well(s), defined as the yield of the well divided by drawdown (expressed in units of gpm/ft), decreases by over 75% percent of the original specific capacity of the well(s).
- When total water source yield is unable to meet the water demand averaged over each person at 50 Gallons per person per day.
- When total daily water demand equals or exceeds 50,000 gallons per day for 15 consecutive days based on a safe operating capacity of the water supply facilities.
- A combination of the above-mentioned circumstances reduces the public water system's overall water supply or production capabilities by over 75% or more.

12. Response actions

The Plan provides stages of response actions to manage and mitigate the impacts indicated by each triggering criteria and condition. The response actions provide for a combination of best management practices for both water supply management and reduction in water demand. The response approaches are designed to be flexible so that there is an appropriate action to the specific drought situation occurring at a particular time.

The response actions included in each stage are cumulative, meaning that if Stage 2 is implemented than all of the measures in Stage 1 and 2 shall be implemented. Likewise, if ultimately Stage 5 is implemented, all of the measures in Stages 1, 2, 3, and 4 shall be implemented as well.

A brief description of the response actions for each stage of the Plan are specified below.

12.1. Stage 1 response actions

12.1.1. Target and public message

Target: Achieve a voluntary reduction of 5% of total daily water demand.

Public message: *Due to abnormally dry conditions this winter, we are asking all customers to voluntarily cut back on water use by 5% in order to stretch the available water supply. The water users should stop using water for non-essential purposes and conserve where possible in case the dry period continues through the year. If everyone cooperates and the water supplies are not impacted anymore, we may avoid more stringent water restrictions. Wasting water hurts everyone.*

12.1.2. Communication, coordination, and planning

Communication, coordination, and planning activities include:

- A. Initiate public information outreach campaign to:
 - Prepare and distribute educational information
 - Notify customers of the water shortage, the need to conserve water, and the

- importance of significant water use reductions
 - Notify customers with large landscapes of irrigation restrictions
 - Provide customers with practical information on ways to improve water use efficiency
 - Implement customer meter reading program
 - Request customers to reduce their water use by the percentage listed above
- B. Notify Federal (e.g. FEMA, BOR, BIA, IHS, EPA, etc.), State, and Local (County) entities.
- C. Begin initial evaluation of potential temporary and/or long-term needs for infrastructure improvements and funding opportunities.

12.1.3. Supply management best management practices

Best management practices for supply management include:

- A. Reduce flushing of water mains.
- B. Initiate leak detection and repair program.
- C. Develop program for water waste patrols; hire and train staff.
- D. Initiate use of reclaimed water for non-potable purposes.

12.1.4. Demand reduction best management practices

Best management practices for demand reduction include:

- A. Water customers are requested to voluntarily limit the irrigation of landscaped areas to two days a week. Irrigate landscapes only between the hours of 12:00 midnight to 10:00 A.M. and 8:00 P.M. to 12:00 midnight on designated watering days determined by the ditch boss's watering schedule for Northern and Southern Farm irrigators
- B. Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes including:
 - 1. Willfully or negligently wasting water;
 - 2. Irrigation devices that are not properly designed, installed, maintained, and operated to prevent wastage of water;
 - 3. Use of water to wash down any sidewalks, walkways, driveways, parking lots, basketball courts, or other hard-surfaced areas;
 - 4. Use of water for dust control; unless for specific, time-constrained construction projects
 - 5. Use of water to wash down buildings or structures for purposes other than immediate fire protection;
 - 6. Flushing gutters or permitting water to run or accumulate in any gutter or street;
 - 7. Use of water to fill, refill, or add to any indoor or outdoor swimming pools or Jacuzzi-type pools;
 - 8. Use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life or where such fountains or ponds are equipped with a recirculation system;
 - 9. Installing or replacing any air-conditioning systems (including portable systems) without a water conservation device which is properly maintained;

10. Failure to repair a controllable leak(s) or faulty water fixture(s) within a reasonable period time; and
11. Use of water from hydrants for construction purposes without a permit or any other purposes other than firefighting.

12.2. Stage 2 response actions

12.2.1. Target and public message

Target: Achieve a mandatory reduction of 15% of total daily water demand.

Public message: *It is necessary to impose mandatory restrictions on water use to ensure that throughout the duration of this water shortage an adequate supply of water is maintained for public health and safety purposes. Our overall goal is to reduce water use by 15%, which can be achieved if everyone cuts back on their other non-essential uses. We are relying on cooperation and support of all water users to abide by all restrictions and to reach this goal. Otherwise, the shortage could deteriorate into a more serious emergency that requires household water allocations to avoid depleting that available water supply.*

12.2.2. Communication, coordination, and planning

Communication, coordination, and planning activities include:

- A. Increase public information outreach campaign to:
 - Notify customers of the mandatory reductions
 - Notify customers of the water shortage, the need to conserve water, and the importance of significant water use reductions
 - Generate publicity about customers demonstrating significant water savings
 - Consult with major customers to develop conservation plans
 - Publicize weekly water consumption graph/data
- B. Identify priorities for water supplies.
- C. Begin to coordinate with Federal (e.g. FEMA, BOR, BIA, IHS, EPA, etc.), State, and Local (County) entities and in particular the County Office of Emergency Services (OES).
- D. Initiate evaluation and plan for potential temporary and/or long-term needs for infrastructure improvements and funding opportunities (e.g. FEMA, BOR, BIA, IHS, EPA, USDA/RD, State, etc.).
- E. Develop strategy to mitigate revenue losses.

12.2.3. Supply management best management practices

Best management practices for supply management include:

- A. Discontinue flushing of water mains; for emergency purposes only.
- B. Intensify leak detection and repair program.
- C. Intensify program for water waste patrols.

- D. Use of reclaimed water for non-potable purposes.
- E. Plan for use of an alternative water source(s).

12.2.4. Demand reduction best management practices

Best management practices for demand reduction include:

- A. Water customers are required to limit the irrigation of landscaped areas to two days a week. Irrigate landscapes only between the hours of 12:00 midnight to 10:00 A.M. and 8:00 P.M. to 12:00 midnight on designated watering days determined by the ditch boss's watering schedule for Northern and Southern Farm irrigators
- B. Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle is prohibited except on designated watering days between the hours of 12:00 midnight and 10:00 A.M. and between 8:00 P.M. and 12:00 midnight. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rinses. Further, such washing may be exempted from these regulations if the health, safety, and welfare of the public are contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.
- C. Use of water from hydrants shall be limited to firefighting related activities, or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the public water system.
- D. Water customers are mandated to practice water conservation and to minimize or discontinue water use for non-essential purposes. Prohibitions include:
 - 1. Willfully or negligently wasting water;
 - 2. Irrigation systems and devices that are not properly designed, installed, maintained, and operated to prevent wastage of water;
 - 3. Use of water to wash down any sidewalks, walkways, driveways, parking lots, basketball courts, or other hard-surfaced areas;
 - 4. Use of water for dust control; except when it is necessary for ongoing construction projects.
 - 5. Use of water to wash down buildings or structures for purposes other than immediate fire protection;
 - 6. Flushing gutters or permitting water to run or accumulate in any gutter or street;
 - 7. Failure to repair a controllable leak(s) or faulty water fixture(s) within a reasonable period time; and

12.3. Stage 3 response actions

12.3.1. Target and public message

Target: Achieve a mandatory reduction of 25% of total daily water demand.

Public message: *The Tribe faces a serious water shortage emergency due to prolonged*

drought. To conserve the available water supply for the greatest public benefit while minimizing impacts on our local economy, it has become necessary to institute a water allocation program for all residential customers. Our goal is to reduce system water demand by 25%. While water allocation amounts are adequate for normal domestic needs, significant cuts to outdoor water use may be necessary to remain within set allocations. All customers are urgently asked to make every effort to conserve water and abide by watering restrictions or face further reductions in water allotments.

12.3.2. Communication, coordination, and planning

Communication, coordination, and planning activities include:

- A. Intensify and expand public information outreach campaign to:
 - Inform customers of ban on open burning
 - Expand and strengthen water conservation education, activities, and programs
- B. Identify priorities for water supplies.
- C. Coordinate with Federal, State, and Local (County) entities, and in particular, the County Office of Emergency Services (OES), and any mutual aid assistance.
- D. Coordinate with local health directors to assess public health treats and take appropriate actions.
- E. Provide regular situational reports to Federal entities and County OES.
- F. Deploy temporary and/or long-term infrastructure improvements for water supply augmentation such as emergency interconnection, rehabilitation of existing water wells, construction of new water wells, re-confirm arrangements for water hauling etc.
- G. Invoke ban on open burning.
- H. Increase customer service training for staff.
- I. Review and adopt enforcement rates and appeals board to process requests for exceptions.

12.3.3. Supply management best management practices

Best management practices for supply management include:

- A. Discontinue flushing of water mains; for emergency purposes only.
- B. Intensify leak detection and repair program.
- C. Intensify and expand program for water waste patrols; e.g. increase staff.
- D. Use of reclaimed water for non-potable purposes.
- E. Use of an alternative water source(s).

12.3.4. Demand reduction best management practices

Best management practices for demand reduction include:

- A. Water customers are required to limit the irrigation of landscaped areas to one day a week. Sundays for customers in service Northern Farming areas Saturdays for customers in Southern Farming Areas Irrigation is limited to the hours of 12:00 midnight and 10:00 A.M. and between 8 P.M. and 12:00 midnight only. All stipulations implemented by ditch bosses supersedes stipulations place in this Plan.
- B. Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle is prohibited.
- C. The use of water for construction purposes from designated fire hydrants under special permit is to be discontinued, unless expressly allowed by tribal leadership.

12.4. Stage 4 response actions

12.4.1. Target and public message

Target: Achieve a mandatory reduction of 35% of total daily water demand.

Public message: *Due to continuing deterioration and scarcity of the available water supply, all customers are subject to reduced water allocations. The current water shortage has become very severe. We must all continue to conserve water to the maximum extent possible*

12.4.2. Communication, coordination, and planning

Communication, coordination, and planning activities include:

- A. Continue to intensify public information outreach campaign to:
 -
 - Publicize daily water consumption graph/data
 - Open a centralized drought public outreach position for issues on conservation, water use allocations, etc.
 - Set-up and/or confirm emergency notification lists for high priority water users including health clinics, schools, stores and restaurants, and other large or critical users
- B. Identify priorities for water supplies.
- C. Coordinate with Federal, State, and Local (County) entities, and in particular, the County Office of Emergency Services (OES), and any mutual aid assistance.
- D. Coordinate with local health directors to assess public health threats and take appropriate actions.
- E. Provide regular situational reports to Federal entities and County OES.
- F. Continue use of water supply augmentation measures such as emergency interconnection, use of existing water wells, use of new water wells, water hauling etc.

- G. Continue ban on open burning.
- H. Plan with local partners for potential movement of vulnerable populations out of areas with limited or no water supply.

12.4.3. Supply management best management practices

Best management practices for supply management include:

- A. Discontinue flushing of water mains; for emergency purposes only.
- B. Intensify leak detection and repair program.
- C. Intensify program for water waste patrols and consider expansion to.
- D. Use of reclaimed water for non-potable purposes.
- E. Use of an alternative water source(s).

12.4.4. Demand reduction best management practices

Best management practices for demand reduction include:

- A. Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle is prohibited.
- B. No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as the drought response stage.

12.5. Stage 5 response actions

12.5.1. Target and public message

Target: Achieve a mandatory reduction of over 50% of total daily water demand.

Public message: *The Tribe is confronted with a critical water shortage emergency of unprecedented proportions. At this time, there exists barely enough drinking water for the most essential human health, sanitation, and safety needs. We understand the hardship this extraordinary condition poses to every customer, and we appreciate the sacrifices people are making to ensure that water system does not run dry. Everyone is urgently requested to do whatever necessary to maintain water use within or below 50% of average daily consumption.*

12.5.2. Communication, coordination, and planning

Communication, coordination, and planning activities include:

- A. Continue to intensify public information outreach campaign to:
 - Notify customers of the water use allocations
 - Notify customers of public water points; e.g. for bottled water or portable water storage tanks
 - Notify vulnerable populations of potential movement/relocations
- B. Identify priorities for water supplies.
- C. Coordinate with Federal, State, and Local (County) entities, and in particular, the County Office of Emergency Services (OES), and any mutual aid assistance.
- D. Coordinate with local health directors to monitor and assess public health treats and take appropriate actions.
- E. Provide regular situational reports to Federal entities and County OES.
- F. Continue use of water supply augmentation measures such as emergency interconnection, use of existing water wells, use of new water wells, water hauling etc.
- G. Continue ban on open burning.
- H. Plan with local partners for monitoring and potential movement of vulnerable populations out of areas with limited or no water supply.

12.5.3. Supply management best management practices

Best management practices for supply management include:

- A. Discontinue flushing of water mains; for emergency purposes only.
- B. Intensify leak detection and repair program.
- C. Intensify program for water waste patrols.
- D. Use of reclaimed water for non-potable purposes.
- E. Use of an alternative water source(s).

12.5.4. Demand reduction best management practices

Best management practices for demand reduction include:

- A. Implement Stage 5 water consumption allocations for all customers (see Table 4).
- B. Water use reduced to health and safety needs only. All other uses are prohibited.

13. Water use allocations

13.1. General

In the event that water shortage conditions threaten irrigation, public health, safety, and welfare, the designated official is authorized to allocate water according to the following water allocation plan in the Table listed below.

Table 4: Stage water use allocations

Customer/connection type	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Residential	Normal or 127 gppd	Normal or 100 gppd	90 gppd	75 gppd	50 gppd
Commercial/institutional	Normal	90% of average	85% of average	65% of average	50% of average
Landscape irrigation	Normal	90% of average	75% of average	50% of average	25% of average

Note: gallons per person per day is gppd

The residential water use allocations are based on water use priorities for health and safety and were calculated based on minimum domestic uses including drinking, cooking, personal washing, sanitation, and washing clothes. In addition, these water uses have been compared to actual data, in particular during the wintertime period.

These decreases, over the 5 stages must be optimized by each system. For this reason Residential customers may have some livestock and will be entitled to an allocation to meet the needs of the animals. Residential customers with livestock should follow water conservation practices including repairing leaks, dripping faucets, practice of filling water tubs and tanks, and cleaning floors and equipment. The Table below provides a list of daily water needs of some common animals.

Table 6: Water needs for farm animals

Type of animal	Daily water requirements (gallons per day)
Horse	12
Cow	20-45
Beef animal	8-12
Swine/pig	3-5
Sheep/goats	2-4
Poultry/fowl (per 100)	8-15

13.2. Residential customer single-family

The allocation to residential water customers residing in a single-family dwelling shall be based on the persons per household at the level given in Table 4. A “household” means the residential premises served by the customer’s water service line and/or water meter. Persons per household include only those persons currently physically residing at the premises and expected to reside there for the entire billing period. It shall be assumed that a particular customer’s household is comprised of three (3) persons unless the customer notifies the designated official of a greater number of persons per household.

It shall be the customer’s responsibility to go to the office of the designated official to complete and sign the necessary form claiming more than three (3) persons per household. New customers may claim more persons per household at the time of applying for water service on

the form prescribed by the designated official. When the number of persons per household increases so as to place the customer in a different allocation category, the customer may notify the designated official and the change will be implemented in the next practicable billing period. If the number of persons in a household is reduced, the customer shall notify the designated official in writing within two (2) days. In prescribing the method for claiming more than three (3) persons per household, the designated official shall adopt methods to insure the accuracy of the claim. Any person who knowingly, recklessly, or with negligence falsely reports the number of persons in a household or fails to timely notify the designated official of a reduction in the number of person in a household shall be fined not less than \$50.

Residential water customers shall pay the following surcharges:

- For the first 1,000 gallons over allocation: \$5.
- For the second 1,000 gallons over allocation: \$10.
- For the third 1,000 gallons over allocation: \$15.
- For each additional 1,000 gallons over allocation: \$20.

Surcharges shall be cumulative.

13.3. Commercial customers

A monthly water allocation shall be established by the designated official, or his/her designee, for each non-residential commercial customer. The non-residential customer's allocation shall be based on Table 4, and the customer's usage for corresponding month's billing period for the previous 12 months. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists.

The designated official shall give his/her best effort to see that notice of each non-residential customer's allocation is mailed to such customer. If, however, a customer does not receive such notice, it shall be the customer's responsibility to contact the designated official to determine the allocation. Upon request of the customer or at the initiative of the designated official, the allocation may be reduced or increased if, (1) the designated period does not accurately reflect the customer's normal water usage, (2) one non-residential customer agrees to transfer part of its allocation to another non-residential customer, or (3) other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation to the designated official.

Non-residential commercial customers shall pay the following surcharges:

Customers whose allocation 15,000 or less per month:

- For the first 1,000 gallons over allocation: \$20 per thousand gallons
- For the second 1,000 gallons over allocation: \$30 per thousand gallons
- For the third 1,000 gallons over allocation: \$40 per thousand gallons
- For each additional 1,000 gallons over allocation: \$50 per thousand gallons

The surcharges shall be cumulative.

14. Enforcement

This Plan is designed to place the responsibility for managing the water resources during a water shortage emergency on the entire community. Care has been taken in the design of the Plan not to penalize any customer who has undertaken good-faith and diligent measures to conserve water. However, for the protection of the water resources and ability to provide sufficient water for public health and safety priorities, enforcement and penalties are required for those customers who knowingly or intentionally use water in a manner contrary to the Plan.

Enforcement provisions include the following:

- A. No person shall knowingly or intentionally allow the use of water from the public water system for any purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time pursuant to action taken by the designated official in accordance with provisions of this Plan.
- B. Any person who violates this Plan shall be fined:
 1. For the first incident, the fee shall be deferred for customers who attend a course in water conservation. The deferral shall be conditioned upon the customer's successful completion of a water conservation course provided by the authorized designated official and the customer not having an additional incident of water wastage within a one-year period. The deferred fee shall be collected if a second incident of water wastage occurs within a one-year period.
 2. For the second incident, the fee shall be not less than \$50. Each day that one or more of the provisions in this Plan is violated shall constitute a separate offense.
 3. If a person is convicted of a third incident or more distinct violations of this Plan within a one-year period, the designated official shall, upon due notice to the customer, be authorized to:
 - i. Require the customer to repair any defects in the water system of such customer within 14 days of notice;
 - ii. Installation by the designated official of flow restrictors or termination of water service for exterior use;
 - iii. Compliance with this plan may also be sought through injunctive relief in the Tribal Council.
- C. Any person, including a person classified as a water customer of the public water system, in apparent control of the property where a violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on the person's property shall constitute a rebuttable presumption that the person in apparent control of the property committed the violation, but any such person shall have the right to show that he/she did not commit the violation. Parents shall be presumed to be responsible for violations of their minor children and proof that a violation, committed by a child, occurred on property within the parents' control shall constitute a rebuttable presumption

that the parent committed the violation, but any such parent may be excused if he/she proves that he/she had previously directed the child not to use the water as it was used in violation of this Plan and that the parent could not have reasonably known of the violation.

- D. Any employee of the public water system, police officer, or other designated official, may issue a citation to a person he/she reasonably believes to be in violation of this Plan. Service of the citation shall be complete upon delivery of the citation to the alleged violator, to an agent or employee of a violator, or to a person over 14 years of age who is a member of the violator's immediate family or is a resident of the violator's residence.
- E. Because there are currently no and/or a limited number of single-family residential customers with a meter and are billed for water use based on a monthly flat rate, no penalties can be assessed for excessive water use based on a metered volume of water. However, enforcement of violations of the Plan will be made based on other factors including visual observations of irrigation practices, water used for washing vehicles, dust control, and other acts of negligently wasting water.

15. Variances

The designated official may in writing grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the person requesting such variance and if one or more of the following conditions are met:

- Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect, and
- Alternative methods can be implemented which will achieve the same level of reduction in water use.

Persons requesting an exemption from the provisions of this Plan shall file a petition for variance with the public water system within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the designated official and shall include the following:

- A. Name and address of the petitioner(s).
- B. Purpose of water use.
- C. Specific provision(s) of the Plan from which the petitioner is requesting relief.
- D. Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Plan.
- E. Description of the relief requested.
- F. Period of time for which the variance is sought.
- G. Alternative water uses restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.
- H. Other pertinent information.

Variances granted by the public water system shall be subject to the following conditions, unless waived or modified by the designated official:

- Variances granted shall include a timetable for compliance.
- Variances granted shall expire when the Plan is no longer in effect, unless the petitioner

has failed to meet specified requirements.

No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.

▪ .

16. Mechanism for determining actual water use reductions

The system's water production from ground water wells is continuously monitored by SCADA system.

During Stage 1 or Stage 2, daily water production figures will be reported to the designated official. The designated official will then compare the weekly production to the target weekly production and verify that the reduction goal is being achieved. Weekly reports would then be forwarded to the Drought Task Force and the Governor of the Pueblo of Zia. If the reduction goals are not met, the designated official will notify the Drought Task Force and consider potential corrective actions; e.g. implementation of additional water use restrictions.

During Stage 3 or Stage 4, the procedure would remain the same, with the addition of a daily report being provided to the Drought Task Force and the Governor of the Pueblo of Zia; Tribal Council will be notified if necessary.

During Stage 5, the procedure would remain the same, with the addition of an hourly or on-demand report being provided to the Drought Task Force and the Governor of the Pueblo of Zia; Tribal Council will be notified if necessary.

LETTERS OF PROJECT SUPPORT



IN REPLY REFER TO:
ALB-116
2.2.4.21

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

MAR 21 2019

VIA ELECTRONIC MAIL ONLY

Ms. Julie J. Hendricks
Grants Management Specialist
Bureau of Reclamation
P.O. Box 25007
Denver, CO 80225-0007

Subject: Letter of Support for Pueblo of Zia WaterSMART Proposal

Dear Ms. Hendricks:

The Bureau of Reclamation's Albuquerque Area Office is pleased to provide this letter of support for the Pueblo of Zia (Pueblo) WaterSMART proposal seeking assistance with the rehabilitation of their Zia River irrigation flume under the WaterSMART Drought Resiliency funding announcement.

The flume conveys irrigation water from the North Ditch to the South Ditch by means of an elevated channel crossing the Jemez River. The flume was reconstructed in 1992 but the flume has deteriorated over the past thirty years and hydrologic changes to the river have resulted in significant erosion that further jeopardizes the structure. Without this crossing, there is no means of providing irrigation water to the Pueblo's fields on the south side of the Jemez River, which are many of the Pueblo's most productive farmlands.

Our office has provided technical assistance to the Pueblo to support their efforts to address the condition of this structure prior to it reaching a state of emergency. We are in the process of providing Fiscal Year 2019 funding support through the authority of the Rio Grande Pueblos Irrigation Infrastructure Act. Additionally, we are engaged in collaborative meetings the Pueblo hosts, which include participation from the State of New Mexico as well as the U.S. Army Corps of Engineers.

Reclamation has entered into 638 contracting agreements with the Pueblo in the past and has found the Pueblo administration to be extremely competent in complying with the terms of these agreements.

If you have any questions or require further information, please contact Ms. Tracey Heller of my staff at (505) 462-3657 or theller@usbr.gov. For Text Telephone Relay Service access, call the Federal Relay System Text Telephone (TTY) number at (800) 877-8339.

Sincerely,


James Wilber
Acting Area Manager

JEMEZ RIVER IRRIGATION FLUME RECONSTRUCTION
Letters of Project Support

Pueblo of Zia Proposal
FOA No. BOR-DO-19-F003



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

MAR 20 2019

The Honorable Anthony (Tony) Medina
Governor of the Pueblo of Zia
135 Capitol Square Drive
Zia Pueblo, NM 87053

Dear Governor Medina:

I understand that the Pueblo of Zia (Pueblo) Department of Natural Resources has submitted to the US Bureau of Reclamation, Upper Colorado Region – Albuquerque Area Office, a 2019 Water SMART (Sustain and Manage America's Resources for Tomorrow) Drought Resiliency grant proposal to fund the repairs to the existing irrigation flume. The US Army Corps of Engineers Albuquerque District is also doing work that will provide the Pueblo's leadership a strategic roadmap to make future watershed planning decisions within the Pueblo's Tribal Lands boundaries. As part of the current efforts, drought resiliency and other water resource issues are being addressed.

Through this letter, we acknowledge our intent to continue our partnership and provide assistance and support to the Pueblo within our legal authorities. We hope your 2019 Water SMART Drought Resiliency grant proposal is successful.

Sincerely,

Larry D. Caswell, Jr.
Lieutenant Colonel, U.S. Army
District Commander

OFFICIAL RESOLUTION



135 CAPITOL SQUARE DRIVE
ZIA PUEBLO, NM 87053-6013

PHONE (505) 867-3304
FAX (505) 867-3308

PUEBLO OF ZIA TRIBAL COUNCIL
RESOLUTION NO. 19-01

**RESOLUTION IN SUPPORT OF THE DROUGHT RESILIENCY PROJECT GRANT
PROPOSAL**

At a duly called meeting for the Pueblo of Zia Tribal Council, the following resolution was adopted:

WHEREAS, The Pueblo of Zia ("Pueblo") is a federally recognized Indian Tribe that has exercised its inherent sovereign authority from time immemorial; and

WHEREAS, the Pueblo of Zia Tribal Council ("Council") is the duly-recognized governing body of the Pueblo of Zia; and

WHEREAS, the Pueblo has needs related to the Zia Flume, and its importance to the traditional and cultural practices related to agriculture and irrigation; and

WHEREAS, the Bureau of Reclamation has funding available, throughout the WaterSMART Drought Resiliency Project Grant, for the design and re-construction of the Zia Flume, to support the necessary efficiency in the water conveyance system for the sustainability of water resources and the important tradition associated with irrigation and agriculture; and

WHEREAS, the Pueblo of Zia will be receiving P.L. 93-638 funding for the required 50% match of \$750,000.

NOW THEREFORE BE IT RESOLVED, that the Council hereby approves the proposal for the design and reconstruction of the Zia Flume to continue the important traditional and cultural traditions of the Pueblo in times of drought.

BE IT FURTHER RESOLVED, that Council hereby directs the Pueblo to work with the Bureau of Reclamation to meet established deadlines for entering into a grant or cooperative agreement for this Project.

BE IT FURTHER RESOLVED, that Council hereby authorizes and directs the Governor and/or his designee to take all actions as may be necessary and appropriate carry out the purpose and intent of this Resolution.

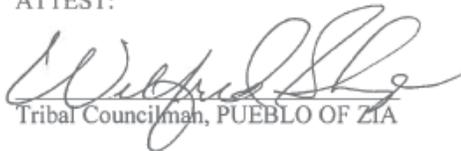
CERTIFICATION

I, the undersigned, as Governor of the Pueblo of Zia, hereby certify that the Tribal Council for the Pueblo of Zia, at a duly called meeting, which was convened and held on the 12 day of March, 2019, at the Pueblo of Zia, in the State of New Mexico, approved the foregoing resolution, a quorum being present, and that the vote was Am in favor and 0 opposed.



Governor, PUEBLO OF ZIA

ATTEST:



Tribal Councilman, PUEBLO OF ZIA



Tribal Councilman, PUEBLO OF ZIA



Print Name



Print Name



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

MAR 20 2019

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Through this letter, we acknowledge our intent to continue our partnership and provide assistance and support to the Pueblo within our legal authorities. We hope your 2019 Water SMART Drought Resiliency grant proposal is successful.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry D. Caswell, Jr.", is positioned above the typed name.

Larry D. Caswell, Jr.
Lieutenant Colonel, U.S. Army
District Commander



United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

IN REPLY REFER TO:
ALB-116
2.2.4.21

MAR 21 2019

VIA ELECTRONIC MAIL ONLY

Ms. Julie J. Hendricks
Grants Management Specialist
Bureau of Reclamation
P.O. Box 25007
Denver, CO 80225-0007

Subject: Letter of Support for Pueblo of Zia WaterSMART Proposal

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Sincerely,

James Wilber
Acting Area Manager



United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Albuquerque Area Office
555 Broadway NE, Suite 100
Albuquerque, NM 87102-2352

IN REPLY REFER TO:
ALB-116
2.2.4.21

MAR 21 2019

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Ms. Julie J. Hendricks
Grants Management Specialist
Bureau of Reclamation
P.O. Box 25007
Denver, CO 80225-0007

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Sincerely,

James Wilber
Acting Area Manager

Ms. Hendricks

2

cc: Deborah Anyaibe
Director of Environmental Resources
Pueblo of Zia
danyaibe@ziapueblo.org

bc: ALB-100 (JFaler), ALB-102 (JWilber), ALB-103 (STorpey), ALB-116 (THeller)

**NEW MEXICO DEPARTMENT OF HOMELAND SECURITY
AND EMERGENCY MANAGEMENT
DISASTER ASSISTANCE PROGRAM
GRANT AGREEMENT**

Event Name: Monsoon Flooding
Grant Agreement Number: 2016-027-001-0

THIS GRANT AGREEMENT is made and entered into as of the date of the last signature in Article IX of this Agreement by and between the State of New Mexico, Department of Homeland Security and Emergency Management, P.O. Box 27111, Santa Fe, New Mexico, 87502, hereinafter called DHSEM, and

**Pueblo of Zia
135 Capital Square Drive
Zia Pueblo, NM 87503**

hereinafter called the Grantee.

WITNESSETH:

WHEREAS, this Grant Agreement for funding by the Disaster Assistance Program under Executive Order **2016-027** is made by and between DHSEM and the Grantee, pursuant to Section 12-11-24 to 12-11-25 New Mexico Statutes Annotated 1978, as amended, and the provisions of the Disaster Assistance Program as described herein.

NOW, THEREFORE, the parties hereto do mutually agree as follows:

ARTICLE I - SCOPE OF WORK

- A. The Grantee agrees that it will make a good faith effort to complete, in every respect possible, the requirements of this Grant Agreement.
- B. Unless such changes are approved in writing by DHSEM, the Grantee agrees to make no change in the Scope of Work allowed in the Project Worksheet(s) prepared for the Grantee by the Inspecting Agency and/or DHSEM under this disaster and appended to this Agreement.
- C. The Grantee shall provide, through force account or contract, all necessary qualified personnel, material, and facilities to implement, carry out, and complete the grant requirements described herein.

ARTICLE II - LENGTH OF GRANT AGREEMENT

- A. The performance period for work authorized under this Grant Agreement shall be 9/1/16 through 10/31/2019.
- B. If, due to unusual circumstances, it becomes apparent that the entire work of this Grant cannot be brought to full completion within the period of performance (POP), the Grantee shall so notify DHSEM in writing as soon as possible prior to the termination of the performance period in order that DHSEM and/or the Inspecting Agency may review the work accomplished to date and determine if an extension of the performance period should be awarded.

ARTICLE III – REPORTS

- A. Quarterly Performance and Financial Reports
For projects estimated at \$50,000 or more, the Grantee shall submit to DHSEM a Performance and Financial Report each quarter, commencing three months from the signature date of this Agreement. The Quarterly Report shall contain a summary of all work to date, an estimated schedule of work to be done, a description of any problems encountered or anticipated, and a summary of expenses and Grant receipts.
- B. Final Performance and Financial Report
The Grantee shall submit a final Performance and Financial Report that summarizes all work done for all projects under this Agreement, including a summary of expenses and Grant receipts.

ARTICLE IV - CONSIDERATION AND METHOD OF PAYMENT

- A. In consideration of the satisfactory completion of work under this Grant Agreement, and in compliance with all other terms herein stated, DHSEM shall pay to the Grantee a sum not to exceed the total state share of the approved costs.
- B. The Grantee shall provide the entire non-state share.
- C. For this Grant Agreement, the state share shall be **75%** of the total of actual eligible costs based upon cost documentation supplied by the Grantee.

The total project estimated cost is:

PW POZ-001

Total PW	345,958.89
75% State Share	259,469.17
25% Applicant Share	86,489.17

- D. Grant funds are to be expended only to accomplish the Scope of Work described in each Project Worksheet (attached). Any costs incurred beyond the total state share of all Project Worksheets shall be the sole responsibility of the Grantee.
- E. The funds set forth in Paragraph C above constitute full amount of this Agreement.
- F. As soon as funds are available, and upon written request from the Grantee, DHSEM shall pay the Grantee the full amount of the state share for each Project Worksheet that was 100% complete at the time it was written.
- G. As soon as funds are available, and upon written request from the Grantee, DHSEM shall pay the Grantee an advance payment of 50% of the state share of each Project Worksheet that is less than 100% complete.
- H. Upon written request from the Grantee, DHSEM shall make subsequent payments not to exceed 80% of the state share for each Project Worksheet.
- I. DHSEM shall base all payments, except the 50% advance, upon actual costs of the work performed, which the Grantee shall support by cost records accounting for all labor, equipment, materials, contracts, and other eligible costs.
- J. DHSEM shall withhold the final 20% of the state share pending DHSEM's final inspection of completed work and comprehensive review of all cost records.
- K. The Grantee shall notify DHSEM when all work is completed and ready for final inspection. DHSEM will arrange the final inspection, and the Grantee agrees to cooperate fully with the Inspecting Agency during the inspection.

- L. Funding of this Grant Agreement is contingent upon funds being available from the State of New Mexico for this purpose.

ARTICLE V - MODIFICATION AND TERMINATION

- A. By written notice to the Grantee, DHSEM shall have the right to terminate this Agreement if, at any time, in the judgment of DHSEM, the provisions of this Grant Agreement have been violated. In this regard, DHSEM may demand refund of all or part of the funds paid to the Grantee, and the Grantee agrees to make such refund promptly.
- B. Neither party to this Agreement may modify any terms or conditions of this Agreement except by a Grant Agreement Amendment.
- C. DHSEM will prepare a Grant Agreement Amendment if any changes to the original Agreement are necessary; no amendment is valid until signed by the Director of DHSEM.

ARTICLE VI – TERMS AND CONDITIONS

The Grantee hereby assures and certifies that it will comply with all regulations, policies, guidelines, and requirements with respect to the acceptance and use of state funds for this program.

The Grantee hereby assures and certifies with respect to this Grant that:

- A. The Grantee shall provide DHSEM with sufficient cost documentation to allow DHSEM to calculate the total actual cost of all work funded by this Grant.
- B. Payment will be made by electronic funds transfer where possible to a bank account in the name of the Grantee. If paid by check, the Grantee will promptly deposit all payments into a bank account in the name of the Grantee. All debts for goods and services procured under this Grant are to be paid by check. Copies of checks and bank statements are a required part of the cost documentation. The final payment of grant funds will be reduced by the amount of interest earned by these funds in any bank account.
- C. The Grantee will adhere to generally accepted financial and accounting standards.
- D. Unless authorized by DHSEM, no member, officer, or employee of the Grantee, or its designees or agents, no member of the governing body of the locality in which the Grantee is situated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the Grantee during his or her tenure or for one year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the process thereof, for work to be performed in connection with this Grant. The Grantee shall incorporate into all such contracts a provision prohibiting such interest pursuant to the purposes of this certification.
- E. The Grantee shall submit a copy of the contract bid specifications to DHSEM for review and concurrence prior to awarding any contract.
- F. Purchasing and contracting performed under this Grant will follow procedures of the State Purchasing Act, NMSA 1978, Sections 13-1-1 to 13-1-199, specifically Sections 13-1-102 and 13-1-190, unless specifically exempted by statute or by DHSEM. Proof of compliance with this Act shall be part of the Grantee cost documentation.
- G. The Grantee is the legal entity responsible under law for the performance of the work authorized under this Agreement.
- H. The Grantee has not received, and will not receive, duplicate benefits for the same loss from any other source.
- I. All funds received pursuant to this Grant Agreement have been, or will be, expended in accordance with applicable state laws and regulations.
- J. The Grantee will provide without cost to the state all lands, easements, and rights of way necessary for the inspection of the approved work.
- K. The Grantee will hold and save the state free from any liability arising from the approved work.

- L. The Grantee will comply with Title VI of the Civil Rights Act of 1964 (PL 88-352) to the end that in accordance with Title VI of that Act and regulations, no person in the United States shall on the grounds of race, color, religion, nationality, sex, age, or economic status, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Grantee received financial assistance, and that it will immediately take any measures necessary to effectuate this requirement.
- M. All repairs and construction shall be in accordance with applicable standards of safety, decency, and sanitation, and shall be in conformance with applicable codes, specifications, and standards; and that hazards in the area where approved work is performed are to be minimized as much as is reasonable so as to provide a workplace that meets or exceeds common safety requirements.
- N. The terms and conditions of this Grant Agreement are contingent upon sufficient appropriations and authorizations being made by the State of New Mexico for performance of this Grant. If sufficient appropriations and authorizations are not made by the State of New Mexico, this Grant Agreement shall terminate upon written notice being given by DHSEM to the Grantee. Both parties are expressly not committed to expenditure of any funds until such time as they are approved, budgeted, and encumbered.

ARTICLE VII - RETENTION OF RECORDS

The Grantee shall keep such records that will fully disclose the amount and disposition of the total funds from all sources under this Grant Agreement, the purpose for which such funds were used, the amount and nature of all contributions from other sources, and such other records as DHSEM shall prescribe. The State of New Mexico requires that records be retained for a period of not less than six years following completion of work and the acceptance of the final payment.

ARTICLE VIII- GRANTEE REPRESENTATIVES

The Grantee hereby designates the persons listed below as the official Grantee representatives responsible for overall fiscal and programmatic supervision of this Grant *(may be the same person)*:

Pete Dana
Grantee Fiscal Representative

Anthony DeBorja
Grantee Program Representative

135 CAPITOL SQUARE DRIVE
Address ZIA FUEBLO, NH 87053

Address

Telephone Number

Telephone Number

ARTICLE IX – SIGNATURES

IN WITNESS WHEREOF, the Grantee and DHSEM do hereby execute this Grant Agreement as of the date last written below,

THIS GRANT AGREEMENT has been approved by:

FOR THE GRANTEE:

Pueblo of Zia
135 Capital Square Drive
Zia Pueblo, NM 87503

By: Anthony DeGarcia Grantee Representative _____ 11-5-18 Date _____

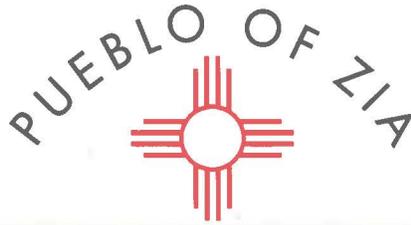
FOR THE GRANTING AGENCY:

DEPARTMENT OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT

By: Juanita Abeyta Grants Manager, DHSEM _____ 12/3/18 Date _____

By: Sarah J. Peterson Chief Financial Officer, DHSEM _____ 12/05/2018 Date _____

By: M. Jay Mitchell Cabinet Secretary, DHSEM _____ 11 Dec 18 Date _____



**PUEBLO OF ZIA TRIBAL COUNCIL
RESOLUTION NO. 19-01**

**RESOLUTION IN SUPPORT OF THE DROUGHT RESILIENCY PROJECT GRANT
PROPOSAL**

At a duly called meeting for the Pueblo of Zia Tribal Council, the following resolution was adopted:

WHEREAS, The Pueblo of Zia (“Pueblo”) is a federally recognized Indian Tribe that has exercised its inherent sovereign authority from time immemorial; and

WHEREAS, the Pueblo of Zia Tribal Council (“Council”) is the duly-recognized governing body of the Pueblo of Zia; and

WHEREAS, the Pueblo has needs related to the Zia Flume, and its importance to the traditional and cultural practices related to agriculture and irrigation; and

WHEREAS, the Bureau of Reclamation has funding available, throughout the WaterSMART Drought Resiliency Project Grant, for the design and re-construction of the Zia Flume, to support the necessary efficiency in the water conveyance system for the sustainability of water resources and the important tradition associated with irrigation and agriculture; and

WHEREAS, the Pueblo of Zia will be receiving P.L. 93-638 funding for the required 50% match of \$750,000.

NOW THEREFORE BE IT RESOLVED, that the Council hereby approves the proposal for the design and reconstruction of the Zia Flume to continue the important traditional and cultural traditions of the Pueblo in times of drought.

BE IT FURTHER RESOLVED, that Council hereby directs the Pueblo to work with the Bureau of Reclamation to meet established deadlines for entering into a grant or cooperative agreement for this Project.

BE IT FURTHER RESOLVED, that Council hereby authorizes and directs the Governor and/or his designee to take all actions as may be necessary and appropriate carry out the purpose and intent of this Resolution.

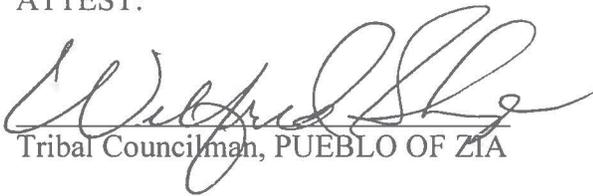
CERTIFICATION

I, the undersigned, as Governor of the Pueblo of Zia, hereby certify that the Tribal Council for the Pueblo of Zia, at a duly called meeting, which was convened and held on the 12 day of March, 2019, at the Pueblo of Zia, in the State of New Mexico, approved the foregoing resolution, a quorum being present, and that the vote was Au in favor and 0 opposed.



Governor, PUEBLO OF ZIA

ATTEST:



Tribal Councilman, PUEBLO OF ZIA



Tribal Councilman, PUEBLO OF ZIA



Print Name



Print Name

Executive Summary

Wednesday, March 27, 2019

Pueblo of Zia

Pueblo of Zia, Sandoval County, NM

The Pueblo of Zia diverts all irrigation water from the Jemez River and into Zia Lake. The lake is the Pueblo's sole reservoir and is therefore critical infrastructure for resiliency during dry periods in the irrigation season and for long term drought relief for irrigation and livestock needs. From the lake, water is conveyed across the Jemez River to the South Ditch by means of an elevated crossing known as the Zia Flume. This crossing has significantly deteriorated and the potential for imminent failure has been recognized by the Pueblo and multiple Federal and State agencies. Reconstruction of the flume will maintain future delivery of water to the entire south side of the river, including many of the most productive farmlands within the Pueblo, and therefore significantly increase the reliability of the Pueblo's water supply. The lake provides storage capacity and drought relief capability; however, reconstruction of the flume is necessary to deliver such benefit to the tribal members on the south side of the river. This proposed reconstruction of the flume will extend the service life for the irrigation infrastructure. All infrastructure to be upgraded is located on Trust land, and solely benefits tribal members.

It is critical that this project be completed before the structure fails entirely, and the proposed project schedule reflects this urgency. It is expected that design and environmental clearances will require five months, from April to September 2019. Construction will be scheduled to start immediately following the end of irrigation season, from October 2019 through March 2020.

PROJECT BUDGET

The project budget detailed in this section includes the funding plan and letters of commitment, the budget proposal, and the budget narrative. The proposed budget does not include any pre-award costs. All budget items have been reviewed as compliant with the applicable cost principles established in 2 CFR Part 200.

Funding Plan & Letters of Commitment

The proposed reconstruction of the irrigation flume is a high priority project, critical to the Pueblo's cultural and economic traditions. Because of this, there has been significant interest from multiple agencies in supporting the Pueblo in addressing the concerns with the deterioration of the structure and the damage imposed during flood events on the Jemez River. Since the flood event of 2016, there have been several site visits and inspections conducted by the Bureau of Reclamation, the Army Corps of Engineers, and the State of New Mexico Emergency Management Services Division. This support has enabled the Pueblo to put together a collaborative approach to funding this critical project. Letters of support from each of these contributing agencies are attached.

The keen interest and support shown by these agencies has allowed the Pueblo to pool resources to develop a solid plan for construction. As applicant, the Pueblo is contributing 39 percent of the total budget, with the third-party agency contributions totaling 23 percent. This proposed WaterSMART request would contribute the remaining 38% of funds necessary to complete the work.

The non-Federal contribution totals \$1,113,390.59 (56%) of the project cost, detailed as follow:

- *Pueblo of Zia* – The Pueblo is contributing a total of \$767,431.70 (39%) to the project. These funds are from two funding streams: The Pueblo's General Fund will provide \$17,431.70 in in-kind support, to cover the majority of the program salaries required for design and construction administration; the Pueblo is also utilizing Public Law 93-638 funds received from the Bureau of Reclamation under the Rio Grande Pueblos Irrigation Infrastructure Act authority, totaling \$750,000. This new construction contract is specifically for reconstruction of the Jemez River irrigation flume, and includes minor tribal administration support, design funding, and funding toward the construction cost.
- *State of New Mexico* – The State Emergency Management Services Division has identified \$345,958.89 in State funds to support the project scope.

The Federal contribution, including the requested WaterSMART award, totals \$860,000.00, which equates to about 44% of the overall project cost, from the following sources:

- *Bureau of Reclamation, Albuquerque Area Office* – The Albuquerque Area Office has committed to funding the environmental support for the project, including NEPA compliance and permitting. Costs are estimated at \$50,000 and funds are available, as expressed in the attached *Letter of Support*.

- *U.S. Army Corps of Engineers* – The Corps is intending to complete an interagency funds transfer, estimated as \$60,000, to the Reclamation Albuquerque Area Office in support of the project design. In addition, non-monetary design review support will be provided by the Corps’ Tribal Partnership Program.
- *Bureau of Reclamation, WaterSMART Drought Resiliency Award* – The requested funding of \$750,000 is 38% of the overall project budget, and the majority of the Federal contribution.

The budget does not include any disallowed costs, including pre-award costs, proposal preparation costs, or land or water purchase costs.

Budget Proposal

The budget proposal is summarized in the following tables and in the attached Standard Form SF-424C, Budget Information for Construction Programs.

Total Project Cost

The total project cost is estimated at \$1,973,390.59. The following table provides a breakdown of that total.

Table 1. Total Project Cost Table

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$750,000.00
Costs to be paid by the applicant	\$767,431.70
Value of third-party contributions	\$455,958.89
TOTAL PROJECT COST	\$1,973,390.59

Non-Federal and Federal Funding Sources

The breakdown of project costs between Federal and non-Federal funding are shown in the following table. The majority of non-Federal contributions are from the Pueblo of Zia, through General Fund program funding and through a P.L. 93-638 self-determination contract awarded by the Bureau of Reclamation to the Pueblo of Zia in support of this project. As a reminder, self-determination awards are not considered to be Federal funds upon award.

In addition, the State of New Mexico, Emergency Management Services Division, is contributing non-Federal funds toward construction.

Federal funding sources include the Bureau of Reclamation and the Corps of Engineers, Tribal Partnership Program.

Table 2. Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	AMOUNT
-----------------	--------

Non-Federal Entities	
1 Pueblo of Zia, General Fund Account	\$17,431.70
2 Public Law 93-638 Project Funding through Reclamation	\$750,000.00
3 State of New Mexico Emergency Management Division	\$345,958.89
Non-Federal Subtotal	\$1,113,390.59
Other Federal Entities	
1 Reclamation (AAO) Program Support	\$50,000.00
2 US Army Corps of Engineers Project Support	\$60,000.00
Other Federal Subtotal	\$110,000.00
REQUESTED RECLAMATION FUNDING	\$750,000.00

Budget Proposal

The budget proposal is detailed in Table 3 on the following page, and includes the Pueblo of Zia administration costs, the estimated cost for design and construction sub-contracts, and the estimated NEPA support costs.

In order to execute the project, the Pueblo will be supported by two sub-contracts. Initially, the Pueblo will obtain the services of a qualified engineering consultant (Designer) through competitive bid process in compliance with the Pueblo's procurement policies and Federal requirements as stipulated in the Pueblo's self-determination contract. The Designer will complete the necessary geotechnical evaluations and hydraulic modeling, develop the design drawings and specifications, package the construction bid documents, and provide the Pueblo with an engineer's estimate of probably construction cost.

The construction contract will be a competitive solicitation, with award based on Federal and Pueblo procurement standards as well. Due to the construction duration required for a project of this magnitude, the proposed construction would be initiated at the end of the 2019 irrigation season if the grant funded was awarded timely to support such a schedule. If award is delayed to Fiscal Year 2020, the construction would be scheduled for the end of the 2020 irrigation season.

Table 3. Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type (Unit)	TOTAL COST
	\$/Unit	Quantity		
Pueblo of Zia Salaries and Wages				
Deborah Anyaibe, Director, Environmental Resources & Public Works	\$38.00	240	Hour	\$9,120.00
Jesse Young, Env Resources Project Manager	\$27.00	240	Hour	\$6,480.00
Office Coordinator	\$18.00	120	Hour	\$2,160.00
Tribal Historic Preservation Officer	\$22.00	80	Hour	\$1,760.00
Pueblo of Zia Fringe Benefits				
Full-Time Employees	28.06%	\$19,520	Percent	\$5,477.31
Travel				
None Requested				\$0.00
Equipment				
None Requested				\$0.00
Supplies and Materials				
None Requested				\$0.00
Contractual / Construction				
Design (A/E) Contractor	\$232,746.68	1	Lump Sum	\$232,746.68
Construction Contractor	\$1,656,905.04	1	Lump Sum	\$1,656,905.04
Other				
Reclamation AAO NEPA Support	\$50,000.00	1	Lump Sum	\$50,000.00
TOTAL DIRECT COSTS				\$1,964,649.03
Pueblo of Zia Indirect Costs (Excludes Pass-throughs)				
Current Negotiated Rate	34.97%	\$24,997	Percent	\$8,741.56
TOTAL ESTIMATED PROJECT COSTS				\$1,973,390.59

Budget Narrative

The budget narrative provides details on the budget proposal summarized in the preceding table. All costs comply with the cost principles established in 2 CFR Part 200.

Salaries and Wages

The salary and wages included in the budget include the key personnel – the Project Manager and his supervisor, the Program Director – and supporting personnel (office coordinator and Tribal Historic Preservation Officer). All Pueblo labor will be directly in support of the project and is provided as in-kind contribution by the Pueblo.

Fringe Benefits

The tribal fringe benefit is 28.06%, and includes health (17.19%), State unemployment (3.00%), Social Security ((6.20%), Medicare (1.45%) and workers compensation (0.22%). This rate is applicable to each of the employees shown in the budget.

Travel

There is no request for travel included in the budget. The project is located on Pueblo lands and staff have Pueblo-assigned vehicles and fuel allocated through their program budgets. Travel required for the contractors is incorporated in the design and construction contract estimates.

Equipment

There is no request for equipment included in the budget. There are no equipment purchases, rentals or leases anticipated for staff supporting this project. Equipment utilized by contractors is incorporated in the design and construction contract estimates.

Materials and Supplies

There is no request for materials or supplies included in the budget. The materials and supplies required of the design and construction efforts are included in those contract estimates.

Contractual

The project requires sub-contract support for design and construction services, and both will be initiated through competitive procurement in accordance with the Pueblo's procurement policies, the cost principles established in 2 CFR Part 200, and the requirements of the Pueblo's negotiated self-determination contract. The bids for both design and construction will be publicly solicited, with responses by sealed bids. Award will be by firm fixed price to the lowest priced responsive and responsible bidder.

The design services contract was estimated based on the labor rates established in a published reference contract for engineering design services, GSA contract number GS-00F-188CA, and is summarized in Table 4 below.

Table 4. Design Contract Estimate

SUPPLY/SERVICE	UNIT	UNIT PRICE	QUANTITY	ESTIMATED COST
Principal Engineer	HR	\$190.80	4	\$763.20
Project Manager	HR	\$147.49	100	\$14,749.00
Civil Engineer, Senior	HR	\$145.56	120	\$17,467.20
Civil Engineer, Mid-Level	HR	\$106.22	230	\$24,430.60
Civil Engineer, Junior	HR	\$77.72	170	\$13,212.40
Mechanical Engineer, Mid-Level	HR	\$121.17	60	\$7,270.20
Subject Matter Expert	HR	\$205.00	80	\$16,400.00
CAD Technician, Mid-Level	HR	\$91.66	80	\$7,332.80
Survey Party, Chief	HR	\$106.08	40	\$4,243.20
Survey Party, Member	HR	\$89.29	40	\$3,571.60
Survey Party, Junior Member	HR	\$76.04	40	\$3,041.60
Technical Writer, Mid-Level	HR	\$86.11	40	\$3,444.40
Clerical, Mid-Level	HR	\$61.15	10	\$611.50
Supplies/Materials/Testing	LS	\$2,000.00	1	\$2,000.00
Travel	LS	\$518.00	1	\$518.00
Geotechnical Subcontractor	LS	\$100,000.00	1	\$100,000.00
SUBTOTAL				\$219,055.70
Tribal Tax		6.25%	219056	\$13,690.98
SUBCONTRACT TOTAL				\$232,746.68

The design effort will benefit by the collaboration and support offered by the Corps of Engineers, discussed in the following section, and by technical assistance support offered by Reclamation’s Albuquerque Area Office.

The majority of project funding is for construction. The construction contract estimate is tabulated in Table 5 on the following page. This estimate is subject to refinement once the project design is completed, but the overall cost has been validated through a planning level design analysis that was completed by Reclamation engineers in 2017. Reclamation provided technical assistance in the development of the budgetary construction cost estimate, and unit price resources included previous Reclamation projects and data from the Natural Resources Conservation Service *Field Operations Technical Guide*.

Table 5. Construction Contract Estimate

SUPPLY/SERVICE	UNIT	UNIT PRICE	QUANTITY	ESTIMATED COST
MOBILIZATION	LS	\$20,000.00	1	\$20,000.00
CONSTRUCTION STAKING	LS	\$10,000.00	1	\$10,000.00
DEWATERING	LS	\$110,000.00	1	\$110,000.00
DEMOLITION	LS	\$120,000.00	1	\$120,000.00
EQUIPMENT:				
Clearing & Grubbing (eqpt & labor)	acre	\$288.10	20	\$5,762.00
Brushing & Mowing (eqpt & labor)	acre	\$1,904.12	20	\$38,082.40
Trenching	HR	\$120.00	80	\$9,600.00
2CY Hydraulic Excavator	HR	\$204.72	120	\$24,566.40
80HP Dozer	HR	\$72.16	120	\$8,659.20
12CY Dump Truck	HR	\$103.97	300	\$31,191.00
Equipment Subtotal				\$117,861.00
LABOR:				
Heavy Equipment Operator	HR	\$27.70	320	\$8,864.00
Skilled Labor	HR	\$27.06	850	\$23,001.00
General Labor	HR	\$18.92	400	\$7,568.00
Construction Supervisor	HR	\$32.40	160	\$5,184.00
Labor Subtotal				\$44,617.00
MATERIALS:				
18" - 36" Willow Plantings (200/acre)	acre	\$334.00	2	\$668.00
Riprap w/ Geotextile (placed)	CY	\$52.01	1660	\$86,336.60
Piping & Appurtenances	LS	\$900,000.00	1	\$900,000.00
Concrete	CY	\$400.00	200	\$80,000.00
Earthfill, Roller Compacted (placed)	CY	\$4.25	2000	\$8,500.00
Supplies/Materials/Testing	LS	\$1,475.00	1	\$1,475.00
Materials Subtotal				\$1,076,979.60
CONSTRUCTION SUBTOTAL				\$1,499,457.60
Contingency (3%)		3%	\$1,499,457.60	\$44,983.73
Engineering Support During Construction				\$15,000.00
CONSTRUCTION SUBTOTAL				\$1,559,441.33
Tribal Tax	percent	6.25%	\$1,559,441.33	\$97,465.08
(rounding adjustment)				-\$1.37
TOTAL ESTIMATED CONSTRUCTION COST				\$1,656,905.04

Third Party In-Kind Contributions

The third-party contributions to the project include environmental compliance support by Reclamation (\$50,000), design funding support by the Corps of Engineers (\$60,000 to be transferred to Reclamation through interagency agreement), and construction funding support

from the State of New Mexico (\$345,958.89). The Corps of Engineers and State contributions are solely monetary. The Reclamation support, however, includes task related contributions for the environmental compliance and permitting. These activities will be performed by Reclamation directly, rather than through a 638 contract to the Pueblo. For avoid redundancy, the costs are described more fully in the following section.

Environmental and Regulatory Compliance Costs

Through the Albuquerque Area Office, Reclamation has offered to provide the compliance for the project. This entails all analyses and documentation required for compliance with the National Environmental Policy Act (NEPA), including project approval signed by the designated official for the Secretary of the Interior for the project record, as well as permitting. The estimated costs are shown in Table 6. The unit prices were obtained from a representative contract for the area (GSA Contract No. GS-10F-0117J).

Table 6. Environmental & Regulatory Compliance Cost Estimate

SUPPLY/SERVICE	UNIT	UNIT PRICE	QUANTITY	ESTIMATED COST
Principal Investigator	HR	\$149.23	15	\$2,238.45
Field Project Manager	HR	\$92.85	80	\$7,428.00
Environmental Scientist MID	HR	\$115.65	120	\$13,878.00
Geologist/Hydrogeologist MID	HR	\$114.68	16	\$1,834.88
Biologist SR	HR	\$113.73	24	\$2,729.52
Biologist MID	HR	\$98.33	80	\$7,866.40
CADD Operators	HR	\$71.04	20	\$1,420.80
GIS Analysts MID	HR	\$85.14	30	\$2,554.20
Technical Editor JR	HR	\$65.22	40	\$2,608.80
Supplies/Materials/Testing	LS	\$400.00	1	\$400.00
Travel	LS	\$467.00	1	\$467.00
SUBTOTAL				\$43,426.05
NM Gross Receipts Tax		6.25%	\$43,426.05	\$6,573.80
SUBCONTRACT TOTAL				\$49,999.85

The NEPA compliance is anticipated to require an environmental assessment. However, this will be further evaluated during design to determine whether the entire work scope will be categorically excluded. Because the nature of the work is strictly irrigation, it is expected that the project construction will be covered by the irrigation exemption, so no Section 404 permit will be required for the reconstruction. However, it is possible that associated erosion control and bank stabilization may require an individual Section 404 permit.

The environmental analyses will include evaluation for compliance with the Historic Preservation Act, and the Pueblo Tribal Historic Preservation Officer will be consulted. Analyses

will also address considerations under the Endangered Species Act, Sections 401 and 402 of the Clean Water Act, and all other required environmental compliance considerations under NEPA. The compliance costs detailed in the table above provide a conservative estimate of the compliance work effort to ensure that the project budget is adequate to fully support construction.

Other Expenses

There are no other project expenses.

Indirect Costs

The Pueblo of Zia's current *Indirect Cost Negotiation Agreement* with the Department of the Interior, Interior Business Center, was issued 17 May 2018 for the 2018 calendar year. The indirect cost rate is 34.97%, shown in the budget proposal (Table 3). The agreement stipulates that the base utilized for calculation of appropriate indirect costs excludes passthrough funds such as subawards. Therefore, the indirect costs shown in the budget are solely applied to the Pueblo labor and fringe. It is noted that a new rate agreement will likely be in place in May 2019 and minor adjustment to the allowable indirect may result.