

## Grant County AWSA Tier 2 Application:

### Executive Summary:

The Grant County recharge and reservoir project focuses on solving the existing and impending water supply shortage for the Tri-City area (Fort Bayard, Santa Clara, Bayard, and Hurley) by incorporating unused treated effluent from the Bayard Regional WWTP. The reuse project will recharge the primary aquifer supplying the region, replace potable water with treated effluent for recreational and landscape irrigation, and possibly create a multi-purpose reservoir. Without this project the Tri-City region will be forced to import additional sources of water from other areas of the County or potentially the Gila River. Currently, the 550 ac-ft/yr of treated effluent is discharge at Chino Mines Tailing Pond 7 and evaporated or lost to seepage through the tailings. Discontinuing the discharge to Pond 7 will benefit Chino Mines by reducing the rate of seepage and cost of pollution control.

Grant County has proposed a project consisting of three phases: 1) preliminary design of facilities to convey treated effluent for reuse and recharge, 2) construction of treated effluent conveyance system from the Bayard Regional WWTP to Fort Bayard, 3) determine the feasibility of building a multipurpose reservoir by developing a conjunctive source plan that identifies water availability and the most efficient method for using “new water” from the treated effluent, existing water rights, and existing water supply for the Tri-City area (Santa Clara, Bayard, and Hurley), and 4) construction of reservoir.

### **1. If the proposal would extend the water supply through conservation, or increase the supply through development of new water,**

#### **a. Describe the location and verify the ownership of and legal access to lands related to the proposal.**

Exhibit 1 shows the project location. The project will be located in the vicinity of Bayard, Santa Clara and Ft. Bayard in central Grant County. The City of Bayard will construct the effluent pipeline from the Bayard Regional Wastewater Treatment Plant to the Cobre High School football field as the first phase of the Disposal Master Plan. From that point the pipeline will run north through Cobre Consolidated School District Property to the US 180 right-of-way, cross to the east side of the highway and follow the highway right-of-way to Twin Sisters Creek. From that point it will run north along the creek, first through Grant County Property and then through State Property (Ft Bayard Medical Center), to the boundary with US Forest Service (USFS) land. A lateral pipeline will be provided for Santa Clara use running through existing Village right-of-way (Oak Street). Another lateral will be provided for use of effluent by the State (Ft. Bayard facility) running along the existing County Road to the Ft Bayard Medical Facility. If a reservoir is added to the project then the effluent line will continue north along Twin Sister Creek for approximately 770 feet through

USFS land to the reservoir site. Exhibit 2 shows the applicable land ownership. Access to the land would be provided as shown in the table below:

Segment	Ownership	Length	Access
1	Cobre Consolidated School District	1,625 Ft.	Easement
2	New Mexico Department of Transportation	13,235 Ft.	Permit
3	County of Grant	2,870 Ft.	Easement
4	New Mexico Property Control Division	1,840 Ft.	Permit or Easement
5	Village of Santa Clara (Lateral - Oak)	2,200 Ft.	Easement
6	Ft Bayard Medical Facility (Lateral)	2,500 Ft.	County Easement
7	USFS (With reservoir construction)	770 Ft. & Reservoir Site of 100 Acres	Land Exchange or Permit

**b. Identify the source of the water to be put to use.**

The primary source of water will include effluent from the Bayard Regional Wastewater Treatment Plant. As stated in John Shomaker & Associates, Inc. *Preliminary Hydrogeologic Evaluation of the Grant County Reservoir and Water Reuse Project, New Fort Bayard, New Mexico (2011)*, currently about 550 acre feet per year (ac-ft/yr) of effluent from the Bayard Regional Wastewater Treatment Plant is discharged to Chino Mines Company Tailings Pond No. 7 and evaporated on Pond No. 7 or reused for mining operations. Adding effluent to Tailings Pond No. 7 has been allowed by the New Mexico Environment Department (NMED) issued discharge plan DP-484, but permit conditions have also required developing a way to discontinue effluent discharge to Tailings Pond No. 7; this alternative would include the Grant County Reservoir and Water Reuse Project.

**c. Describe and quantify whether and how the proposal would extend the water supply through conservation, or increase the supply through development of new water in the Southwest Planning Region.**

Currently, about 550 ac. ft. of effluent from the Bayard Regional Wastewater Treatment Plant is pumped to a tailings pond at the Chino Mines Company and evaporated. The water is not being put to any beneficial use. This project, combined with the City of Bayard project, will put all of that water to use, thereby increasing the available water supply to the area.

In general, the proposal increases the available water supply within the Southwest Planning Region. Well fields for both Santa Clara and Bayard are in the vicinity of the Cameron and Twin Sisters Creeks. In addition, the local mining industry taps groundwater in the same vicinity. Groundwater levels are highly dependent on precipitation levels. Water shortages have occurred in the past and could occur again during a prolonged drought period. The proposal increases the water supply as follows:

- 1) Provides irrigation water for parks and recreational facilities of approximately 135 acre-feet per year. Otherwise, these facilities are irrigated with potable water which is then mostly lost to evapotranspiration. Current irrigation levels are sufficient only for consumptive use and there is not a significant amount remaining that recharges the aquifer. Using effluent water for irrigation, instead of potable water, decreases the amount of water depleted from the existing groundwater
- 2) Santa Clara would be able to withdraw the full 241.9 acre-feet per year from water rights available on Twin Sisters and would not be subject to the current physical limitation of eighty to ninety five acre-feet of withdrawal per year. This would provide more than 147 acre-feet of additional water supply per year.
- 3) By recharging the Bayard and Santa Clara well-fields, the proposal would sustain a reliable water supply of 397 acre-feet for Bayard and 272.9 acre-feet for Santa Clara.

The aquifer (Lone Mountain Aquifer) supplying the Town and Bayard and Village of Santa Clara well fields is recharged by infiltration of storm water along Twin Sisters and Cameron Creeks. The creeks are ephemeral, and increasing the amount of water to the drainages for infiltration will increase recharge. For over 50 years, pumping from the Lone Mountain Aquifer has been greater than recharge, and water levels have been declining. Recharging the aquifer by infiltration of treated effluent along Twin Sisters and Cameron Creeks will create a sustainable water supply for the region.

Over the long term, the proposal could increase the water supply by more than 500 acre-feet per year. More detailed clarification of how water supply will be increased is included below.

### Village of Santa Clara:

The Village of Santa Clara has historically obtained its water from two sources:

- 1) The Lone Mountain well field, located approximately three miles south of the Village. The total amount of water that may be diverted from the well-field is 272.9 acre-feet per year. In previous years, Santa Clara has withdrawn more than its appropriated amount of water from this well-field. The State Engineers Office (SEO) has required that Santa Clara “pay back” this over-appropriation by pumping less from the well-field. It is reported that the average rate of decline in the wells is about one foot per year since the start of production in 1955. There are also two industrial (mining) wells in the immediate vicinity. There is deep concern that an increase in mining use will impact Santa Clara’s water supply, as it has in the past.
- 2) The Twin Sisters Infiltration Gallery is located north of Highway 180. The total amount of water that may be diverted from either the surface source, or from well, or both cannot exceed 241.9 acre-feet per year. The maximum with-drawl that Santa Clara has been able to obtain from the Infiltration Gallery is about ninety five acre-feet per year. With the limited capacity of the Infiltration Gallery, the Village has not been able to “prove up” 241.9 acre-feet per year nor have they been able re-pay for the over-appropriation on the Lone Mountain Well Field, as ordered by the SEO, by pumping more water from Twin Sisters. The Village has investigated the development of a well in the Twin Sisters area to supplement or replace the infiltration gallery and have determined that it is not geologically feasible.

Santa Clara would like to prove up the full 241.9 acre-feet at Twin Sisters. Recharging the groundwater in the Twin Sisters and/or Cameron Creek areas appears to be the only viable option left for Santa Clara to use the Twin Sisters water rights. In addition the use of effluent to irrigate parks and ball-fields will free-up potable water for other uses.

### City of Bayard:

A major portion of Bayard’s water is pumped from wells located between Twin Sister’s and Cameron creeks, which serve as recharge sources for the shallow aquifer tapped by the wells. The aquifer depends on infiltration of rainfall and floodwaters into the arroyo stream beds and water levels are closely tied to precipitation rates. The wells are shallow and groundwater elevations are highly sensitive to the amount of recharge provided by precipitation. Static groundwater elevations have dropped by as much as five to six feet per year during periods of time in which precipitation rates were below average but were re-established during periods in which precipitation rates were above average.

Releasing effluent water from the Bayard Regional Wastewater Treatment Facility to provide a continuous and steady flow of water into Twin Sisters Creek or Cameron Creek or both will provide a dependable source for recharging the Bayard Well Field.

The City of Bayard's Wastewater Treatment and Disposal Master Plan calls for disposal of effluent by irrigating ball-fields, parks and landscaping elements in the Bayard, Santa Clara and Ft. Bayard areas. It is projected that seven hundred to eight hundred acre-feet of effluent will be generated per year. Less than one hundred thirty five acre-feet per year would be required for irrigation of the ball-fields, parks, lawns and other uses in the area. The excess effluent, which is not being used for irrigation, could be used for irrigating recreational facilities and to recharge the Bayard well field.

Ft. Bayard Medical Center:

The Ft. Bayard Medical Center encompasses approximately four hundred sixty eight acres. Water is provided from springs about seven miles north of the Center with 282 acre-feet per year of water rights are available. This appropriation is subject to a set-a-side of approximately 43 acre-feet per year to be utilized for irrigation of a national cemetery adjacent to the center. The Water System is composed of fifteen operating spring boxes which serve as water inlet structures that provide drinking water and irrigation water for the facility. In the past the system has provided water for approximately 700 residents at the facility. The spring boxes outlet into a network of carbon steel or transite pipes. The springs join at a stainless steel settling tank from which a six inch carbon steel pipe transmits the water to a chlorination system which feeds a five hundred thousand ground storage tank. A pump then feeds seven hundred fifty gallons per minute to a three hundred thousand gallon elevated storage tank from which it is gravity fed to the distribution system.

This application provides for correction of system deficiencies identified by Sanitary Survey Report (WSS# 382-09). Deficiencies include the following:

- 1) Lack of fencing at the spring boxes and storage tanks to protect from human or wildlife intrusion or contamination. Access hatches for all spring boxes must be redesigned and replaced to avoid contamination.
- 2) Structural deterioration of the spring boxes and tanks.
- 3) The elevated tank needs to be rehabilitated including replacement of the roof, addition of a ladder access, new access hatch and removal and re-application of interior and exterior coating systems.
- 4) Some of the existing facilities have potential to contaminate the water system. Back flow prevention devices must be installed at a number of locations.

A study is currently underway to determine future uses of the facility. Out of the 239 acre-feet (after water for the national cemetery is subtracted) of available water rights, approximately 75 acre-feet is needed for irrigating the landscape, leaving about 164 acre-feet for other purposes. If effluent from the Bayard Regional Wastewater Treatment plant is used for irrigation purposes then additional water would become available for other uses.

**Summary of how and where water will be put to beneficial use:**

Water will be put to beneficial use as a result of the proposed project.

In order to keep the effluent distribution system cost effective, it will be limited to locations where at least 1 acre foot per year can be distributed, which includes the following locations:

<b>Location</b>	<b>Irrigation</b>
Grant County Park	2.0
Ft. Bayard State Hospital Landscape Areas	75.2
Santa Clara Elementary School Ball-Fields	8.8
Cobre High School Ball-Fields	23.8
Bayard Elementary School Ball-Fields	5.7
Snell Middle School Ball-Fields	17.7
Ernie Christian Field	1.9
<b>Total Annual Irrigation Rate</b>	<b>135.1</b>

Use of effluent for irrigation will free up potable water for other uses including:

- 1) Provide the ability for Santa Clara to prove up and put to use additional potable water for growth including development of the Village’s industrial park.
- 2) Provide the ability to use additional potable water for implementation of plans for re-development of the Ft. Bayard Medical Center.
- 3) Provide the ability to use additional potable water for growth within the City of Bayard.

It is projected that the Bayard Regional Wastewater Treatment Plant will discharge approximately eight hundred twenty one (821) acre-feet per year by 2020. This would provide water for recharging the Bayard and Santa Clara Well-fields. The project would provide a continuous and steady flow of approximately two to three cubic feet per second to Cameron Creek or Twin Sisters Creek or both. This will enhance vegetative growth along one or both creeks and enable additional riparian area development.

The continuous and steady flow of water down one or both creeks will recharge the aquifer tapped by the well-fields for both Bayard and Santa Clara.

**d. Demonstrate how the proposal would meet AWSA and CUFA requirements**

As a water use alternative, the proposed project will provide ground water recharge for current and future demands. Currently the Village of Santa Clara has 241.9 Acre Feet of water rights available at the Twin Sisters Gallery for usage of their residents. Most years and especially during drought years only around 90 Acre Feet are able to be used because of lack of available water in the area. Also the Town of Bayard relies on the same water source. Between the two municipalities between 4500-4700 residents rely on relatively small water

shed for recharge. Because of the topographic makeup of the area the water received by the region is usually very sporadic. Limited snowpack and monsoonal rains make up the small amount of recharge annually. Being able to release water into the area at a more consistent flow will benefit the region by utilizing effluent to create an additional source of water to enable increased water yield and thereby meeting the current demands as well as giving opportunity for potential growth along with economic development opportunities.

Since the project is outside of the Gila Basin the CUFA requirements are not applicable.

## **2. Describe the proposal and its technical viability**

- a. Include any (or reference publically – available) technical and engineering studies completed and demonstrate how these studies support the proposal.**

### *Engineering:*

In support of this application, Engineers Inc. has referred to the following studies:

1. City of Bayard, New Mexico Regional Wastewater Treatment and Disposal Master Plan, Molzen-Corbin & Associates, April 1998. This Master plan provided projections for effluent discharge from the facility, alternatives considered for disposal of the effluent, facilities proposed for landscape irrigation with the effluent and the selected alternative for disposal of the effluent. The preferred alternative for disposal of the effluent included two phases. Phase I was for an effluent pump and transmission lines to irrigate recreational and other landscaping elements within the City of Bayard. One of the proposed transmission lines terminates at the Cobre High School Football Field. Phase I, as described in the Master Plan, as modified with the addition of a transmission line to the City of Bayard Cemetery, is the proposed project for the City of Bayard's AWSA application. Phase II, as proposed in the Master Plan, tied onto the Phase I project at the football field and conveyed the effluent to Ft Bayard. This project includes the phase II project described in the Master Plan with the addition of an extension of the transmission line to Twin Sisters Creek.
2. City of Bayard, New Mexico, Phase 2A Effluent Reuse Project, Project Manual, Trum Engineering – MBI, Inc., September 2010 Plans and technical specifications were provided for Phase 2A. Some of the work at the treatment plant pertaining to the Master Plan has already been completed. Additional work has been designed as shown in this Project Manual. Work designed in the manual is included in Bayard's AWSA application.
3. A 40-Year Water Plan for the Village of Santa Clara, New Mexico, Engineers Inc. August 1998. The 40-Year plan for Santa Clara includes information on deficiencies experienced

by the Village with respect to availability of water. It was referenced for development of this application.

4. A 40-Year Water Plan for the City of Bayard, New Mexico, Engineers Inc. April 1996. The 40-Year plan for Bayard includes information on deficiencies experienced by the City with respect to availability of water. It was referenced for development of this application.

The studies listed above were used specifically to scope and evaluate the proposed effluent transmission line for the proposed project. The primary purpose of the project is to recharge ground water affecting the Bayard and Santa Clara well-fields and to provide irrigation for recreational facilities and landscape elements at Santa Clara and Ft Bayard. If feasible, as determined by further study, a supplemental purpose of the project would be to provide for recreation by construction of a reservoir.

- b. Include any (or reference publically – available) hydrologic, ecological, or geotechnical studies completed and demonstrate how information included in these studies specifically supports or detracts from the proposal.**

In support of this application Grant County assembled the following additional team members to perform initial assessments:

- 1) John Shomaker & Associates, Inc. (Shomaker) – Hydrological, hydrogeological, water rights
- 2) Ericson Engineering (Ericson) – Geological, geo-technical engineering
- 3) Parametrix, Inc. (Parametrix) – Environmental, biological resources, cultural resources

In addition to the studies mentioned in 2a, which were used for the primary purpose, Engineers Inc. and other consultants (listed above) performed a rudimentary investigation and analysis of conditions pertaining to the reservoir. A summary is included below.

Peak Flow for Preferred Site:

The reservoir is proposed to be located within the Southwest Quarter of Section 26, Township 17 South, Range 13 West, and New Mexico Meridian. The tributary drainage area to the proposed location is approximately 7330 acres. At a stage elevation of 6075, the surface area of the lake will be approximately 30 acres with available permanent pool storage capacity of 383 acre-feet. The precipitation amount for the 24-hour, 100-year storm in this area has been determined to be 3.79 inches. The soil type in the drainage area is mostly Type D with some B and C. The area is covered with Juniper, Pinon, and understory with fair ground cover. The peak flow for the 24-hour, 100-year storm event is estimated to be 1950 cfs. The HEC-HMS computer program was used to determine the peak flow.

Dam Structure



The structure is expected to be an earth dam, approximately 480 feet in length and 30 feet in height with a crest elevation of 6080 and permanent pool elevation of 6075. It will have a 50 foot wide by 5 foot high concrete spillway with a 25 foot apron. The conceptual dam design is based upon rudimentary engineering analysis. Detailed investigations and analysis during the preliminary engineering study could result in changes to the dam type and dimensions.

#### Evaporation

The yearly average pan evaporation has been determined to be approximately 100 inches per year. A conversion constant of 0.65 was used (average of winter 0.7 and summer 0.6) to convert the pan evaporation to a potential evaporation of 65 inches per year. Evaporation is affected by the water area, depth, temperature, and amount of surrounding vegetation. The pan evaporation was taken from an Evaporation Station in Animas, NM. The conversion constant was taken from AZMET Evapotranspiration Estimates. With 57 acres of lake surface area annual evaporation losses, as a result of the impoundment of water in the reservoir, are expected to be about 309 acre-feet per year. According to Shomaker's Hydrogeological Report (2011), lake evaporation rate is 50 inches per year (SCS, 1972). If the reservoir is approximately 30 acres, then the total evaporation would be 126 acre-ft. per year total.

#### Dam Safety Requirements

The Hazard Potential Classification for the proposed reservoir is significant hazard potential. There are substantial risks to property or assets such as US Highway 180 and several residential properties downstream of the proposed reservoir.

#### Watershed Yield

According to Shomaker's Hydrogeological Report (2011), Twin Sisters watershed's potential reservoir Sites 1 and 2 generates approximately 70 ac-ft/yr. of storm-water runoff. Due to the low permeability rocks in the vicinity of the reservoir site, seepage can be assumed to be negligible.

#### *Hydrogeology:*

A report is attached from Shomaker in support of this application entitled "Preliminary Hydrogeologic Evaluation of the Grant County Reservoir and Water Reuse Project". The report evaluates the impacts of the proposed project on the downstream groundwater, most particularly upon the Bayard and Santa Clara well fields. Approximately 400 ac-ft/yr. of treated effluent would be available for the Grant County reservoir and reuse project, with additional treated effluent potentially available in the future. Thus, the full amount of effluent can be utilized to effectively recharge the Bayard and Santa Clara Well Fields.

*Geology, Geotechnical:*

Ericson Engineering provided the following initial assessment pertaining to the geological characteristics of the preferred reservoir location and the two alternative sites:

There is a new Ft. Bayard Geologic map (2007/2008) available. I reviewed it and the 1916 geologic map for the Silver City to Santa Rita Area. I also reviewed the Grant County soil survey from 1983, map sheet 46.

The general geology of sites on Twin Sisters Creek consists of primarily igneous bedrocks that are dated in the Tertiary period more than 70 million years ago. These igneous rocks intruded into the Cretaceous sedimentary rocks (Colorado Shale). The creek channels and side slopes contain recent alluvium and colluviums. There is an apparent near vertical contact between the igneous rocks and the SW dipping sedimentary rocks in the area of the fault line on your map. There is some possible faulting west of the Snake Hill (preferred location) and lower Twin Sisters Creek site. The faulting is very old and is not expected to be a factor in the design of any dams in the area around Ft. Bayard. The Cameron Creek site bedrock geology is most likely characterized by westerly dipping sedimentary rocks.

The following summarizes the general soil survey (1983) data I found for each site. The soil unit descriptions are given below.

Lower Twin Sisters Site: From West side of channel to East; Units 60/59/44 and 57 in creek channel and banks/59

Cameron Creek Site, East of Ft. Bayard Hospital: From west to east: 63/33 in creek channel and banks/2

Preferred Site on Twin Sisters, Snake Hill Area: From West to east: 60/44 in creek channel and banks/63

Unit 2: Abrazo: 15 to 45% slopes, 0 to 27 inches cobbly clayey loam, greater than 27 inches weathered bedrock, probably shale and sandstone.

Unit 33: Monzano Loam: 1-3 % slopes, relatively deep alluvium, greater than 60 inches to bedrock (probably sandstone or shale), clayey loam, with low to medium plasticity, subject to flooding because it is in the flood plain.

Unit 44: Paymaster: 1-3 % slopes, alluvium in creek channels, 0 to 35 inches sandy loam, below 35 to 60 inches very gravelly loam, bedrock is typically deeper than 60 inches. Bedrock most likely weathered igneous rocks.

Unit 57: Sampson/Dagflat complex: 3 to 12 % slopes; sandy clayey loam, alluvium that extends to 60 or more inches. Underlain by weathered igneous bedrock, Dagflat component typically shallower with bedrock at about 31 inches.

Unit 59: Santa Fe Series: 5-15% slopes, sandy loam 0 to 18 inches, weathered bedrock (typically igneous) below 18 inches. Occasional to some weathered bedrock outcropping at the surface of this unit.

Unit 60: Santa Fe complex; 20 to 45% slopes, 0 to 16 inches, sandy, gravelly loam, residual soil over weathered bedrock, igneous, some to numerous bedrock outcroppings in the unit.

Unit 63; Santana Rock Complex: 1 to 25% slopes, typically 50% soil and rock outcroppings at surface, sandy loam 0 to 16 inches, below 16 inches weathered igneous bedrock.

All three sites appear to be geologically stable. Igneous rocks will likely be encountered in the Twin Sisters sites, while westerly dipping sedimentary shale and sandstone bedrock at the Cameron site. The alluvium depth in the creek channels for both the Twin Sister sites and the Cameron Creek sites appears to range from about 3 feet to greater than 5 feet, with the deeper alluvium at Cameron.

The availability of onsite borrowed materials for dam construction will likely be more limited at the Twin Sisters sites. The foundation soils at Cameron site appear to be deeper and more clayey than sites on Twin Sisters. There may be enough materials in the pond area to build a dam. Also some of the water storage volume could possibly be gained by digging out the creek soils upstream of the Cameron site. This could decrease the required dam height. Shallow bedrock is likely to be found in the Twin Sisters sites in the creek channel banks and spillway areas.

Based on this very preliminary review of available data there does not appear to be any fatal flaws with any of the three sites. Detailed site investigations will be required as part of any design of any or all of the sites. Some temporary dewatering of the alluvium in the creeks will likely be needed at all of the sites to excavate the foundations of the dams to bedrock.

*Water Rights Issues Arising from Construction of the Reservoir:*

Water rights should not be affected with construction of a dam. Any water that is intercepted or lost to evaporation as a result of dam construction will be offset by the addition of effluent water to Twin Sisters Creek.

**Environmental**

*Environmental:*

Parametrix performed a preliminary evaluation of the potential environmental impacts to the environment of the proposed project. A discussion of impacts is included under item number 4 below.

**3. Quantify estimated costs**

- a. **Quantify the proposal’s estimated costs, including planning, design, and/or construction, and administration or oversight.**

***Phase I: Preliminary Engineering Report, Engineering Design, Permitting and Right-of-Way Acquisition for Construction of Effluent Pumping Station and Transmission Line, Irrigation Laterals and Improvements to Ft Bayard Water System:***

Putting the effluent to beneficial use by using it to recharge the aquifer supplying Bayard and Santa Clara Well-fields, providing water for irrigation of recreational and landscape elements at Santa Clara and Ft Bayard and improving the Ft Bayard Water System is the first priority of the project. The County proposes to complete everything leading up to advertising the project for construction bids with Phase I.

Item	Quantity	Unit Cost	Cost
Preliminary Engineering Report	LS	\$75,000	\$75,000
Topographic Surveying and Mapping	LS	\$50,000	\$50,000
Design	LS	\$395,000	\$395,000
Right-of-Way Surveying and Mapping	LS	\$25,000	\$25,000
Permitting, Environmental Documentation	LS	\$75,000	\$75,000
Right-of-Way Acquisition	LS	\$50,000	\$50,000
<b>Total</b>			<b>\$670,000</b>

***Phase II: Construction of Effluent Pumping Station and Transmission Line, Irrigation Laterals and Improvements to Ft Bayard Water System:***

- 1) Construction of pumping facilities and a pipeline/s to carry effluent from the Bayard Regional Wastewater Treatment Plant (WWTP) to storage facilities in the vicinity of Ft. Bayard. This phase would also include the construction of lateral pipelines necessary for irrigation of ball-fields, parks and landscape elements in the vicinity of Santa Clara and Ft. Bayard and improvements to the Ft Bayard Water System.

The existing WWTP effluent discharge system is equipped with three – 30 HP pumps (800 GPM, 73 ft. TDH). The City of Bayard’s Master Plan for the effluent includes: 1) irrigation of ball-fields, parks and the cemetery within the City of Bayard with the first phase of the plan and 2) conveyance of the balance of effluent to the Santa Clara/ Ft. Bayard area for irrigation of ball-fields, parks and landscape elements as a second phase. This project implements and expands upon phase two. It is expected that the effluent line will need to be designed for a capacity of 500 GPM and will include a booster pumping station and tank,

a 10-inch pipeline along US Highway 180, and lateral pipelines for conveyance of irrigation water to Santa Clara and Ft. Bayard.

Improvements to the Ft Bayard Water System will include 1) fencing at the spring boxes and tanks to protect from human or wildlife intrusion or contamination, 2) rehabilitation of spring boxes, 3) rehabilitation of the elevated tank and 4) installation of backflow prevention devices to prevent contamination of the water supply. Some of the pipelines may also need to be replaced or upgraded. A study is underway to determine the future use of the old Ft. Bayard Medical Complex. Based on the outcome of this study the needs for water system improvements may grow. Regardless of the future plans for the facility, the deficiencies in the water delivery system, stated above, must be corrected. Accessibility, to multiple spring boxes and transmission lines, is limited and a great deal of handwork will be required.

Item	Quantity	Unit Cost	Cost
Booster Pump Pack, 85 HP, 500 GPM, 450 FT. TDH	LS	\$175,000	\$175,000
Pump House	LS	\$80,000	\$80,000
Electrical Power Supply	LS	\$30,000	\$30,000
6-inch PVC Pipeline Laterals	5,500 LF	\$45/LF	\$247,500
10-inch PVC Pipeline	18,500 LF	\$75/LF	\$1,387,500
Pipeline Accessories/Valves	LS	\$200,000	\$200,000
Highway Auger Bore Crossings	1,200 LF	\$300/LF	\$360,000
400,000 Gallon effluent Storage Tank	LS	\$275,000	\$275,000
Sub-Total			\$2,755,000
NM GRT (6.5%)			\$179,000
Contingencies @15%			\$440,000
Total Effluent Mainline/Laterals Construction			3,374,000
Access Hatches	15	\$800/Ea.	\$12,000
Backflow Prevention Device	1	\$12,000/Ea.	\$12,000
Site Security Fencing w/ 12 ft. Gates	1,500 LF	\$50/LF	\$75,000
Structural Deterioration Repairs	15	\$15,000/Ea.	\$225,000
Sub-Total			\$324,000
NM GRT			\$21,000
Contingencies @15%			\$52,000
Total Ft Bayard Water System Construction			\$397,000
Total Construction			\$3,771,000
Construction Engineering			\$188,000
<b>Total Phase II</b>			<b>\$3,959,000</b>

***Phase III: Study to evaluate alternatives and determine feasibility of Reservoir:***

A supplemental purpose of the project is to create recreational opportunities with the construction of a reservoir. This will enhance the economic development of the area. If the reservoir is used for recreational purposes, as intended, then the effluent may need to be treated to drinking water standards or blended with other available sources of water. The County recognizes that this portion of the project could have potential impacts to the environment and will take much longer to permit than phase II of the project. In order that it will not delay development and construction of elements pertaining to the primary purpose of the project, it has been separated from the other project objectives. The County is proposing that a study be conducted to determine the feasibility of a recreational facility prior to allocation of funding for engineering design, permitting and construction.

- a) Verification of the availability and quantity of effluent from the Bayard Regional Wastewater Treatment Plant that can be used for the project. Determination of the level of treatment that will be required. The unused water rights and fresh water

sources made available from the treated effluent reuse project will be identified, and determined if the reservoir could be supported by a conjunctive source plan. One example is irrigating Fort Bayard with treated effluent and freeing up fresh water for the reservoir and downstream recharge. Therefore, the conjunctive source plan identifies the most efficient method for using “new water” from the treated effluent, existing water rights, and existing water supply for the Tri-City area (Santa Clara, Bayard, and Hurley).

- b) Identification of alternatives for treatment, conveyance and storage of the effluent. Alternatives for a recreational complex, built around the storage facility/s, will also be identified.
- c) Use of groundwater modeling for evaluation of the downstream impacts of identified storage alternatives on the groundwater. There are several existing groundwater flow models of the area that can be used for the evaluation.
- d) A preliminary hydrologic investigation to determine storm runoff rates and effects upon the storage facilities.
- e) A preliminary geologic/geo-technical investigation of potential storage sites.
- f) Preliminary cultural resources and biological investigations.
- g) Elimination of any storage alternatives that could potentially damage the downstream groundwater condition.
- h) Evaluation of alternatives including positive impacts upon water supply, economic/recreational benefits, location/alignment, access, right-of-way requirements, development and construction costs, operation and maintenance costs, environmental impacts, public acceptance and other applicable criteria.
- i) Public input meetings
- j) Identification and evaluation of options for maintenance and operation of the facilities.
- k) Determination of a project priority/phasing plan.
- l) Development of joint powers agreements as necessary

Item	Quantity	Unit Cost	Cost
Preliminary Engineering Study	1	\$500,000.00	\$500,000.00
Total	1	\$500,000.00	\$500,000.00

***Phase IV: Design, Permitting and Construction of a reservoir for recreational use and to enable a continuous steady flow of water downstream and treatment of the effluent to comply with regulatory requirements.***

For the purposes of this application the dam is assumed to be an Dam with the following dimensions: Length – 400 ft. Height to Crest – 30 ft., Length of Spillway –50 ft., Height to Spillway –25 ft., Spillway Apron Length – 25 ft. Dimensions are based on rudimentary

hydrologic and flood routing computations and could change with more detailed study. The type of dam could also change with detailed engineering evaluations.

The reservoir will be designed so that a continuous steady flow of water downstream is sustained in order to recharge the aquifer in which the Bayard and Santa Clara wells are located. The preferred reservoir site is located within USFS land so close coordination with the USFS will be required from the inception of the project.

Testing of effluent from the WWTP has yielded good results with recent tests showing nitrogen levels of less than 5 mg/l. For the purposes intended, the effluent will have to be treated to drinking water standards. With this application it is assumed that a filtration together with disinfection will be required.

Item	Quantity	Unit Cost	Cost
Mobilization, Bonds, Testing, Staking, Misc.	LS	\$400,000	\$400,000
Erosion and Sediment Control	LS	\$20,000	\$20,000
Clearing and Grubbing	65 Ac	\$2,000/Ac	\$130,000
Foundation Preparation	LS	\$500,000	\$500,000
Earthwork – Excavation/Borrow	58,000	\$20/CY	\$1,160,000
Furnish and Place Mass Concrete	CY	\$1,000/CY	\$400,000
Gatehouse and Controls	400 CY	\$50,000	\$50,000
	LS		
Sub-Total			\$2,660,000
NM GRT			\$173,000
Contingencies @15%			\$425,000
Total Reservoir Construction			\$3,258,000
Package Plant Treatment Plant with	LS	\$1,000,000	\$1,000,000
Filtration and UV Disinfection			
Storage Reservoir - Excavation	5,000 CY	\$10.00	\$50,000
Sub-Total			\$1,050,000
NM GRT			\$68,250
Contingencies @15%			\$225,750
Total Treatment Plant Construction			\$1,344,000
Total Construction			\$4,602,000
Topographic Surveying and Mapping	LS	\$50,000	\$50,000
Design	LS	\$515,000	\$550,000
Right-of-Way Surveying and Mapping	LS	\$25,000	\$25,000
Permitting, Environmental Documentation	LS	\$120,000	\$120,000
Right-of-Way Acquisition	LS	\$50,000	\$50,000
Construction Engineering	LS	\$200,000	\$200,000
<b>Total Phase IV</b>			<b>\$5,579,000</b>



- b. If applicable, quantify the proposed project’s on-going administrative, operational, and maintenance costs.

***Estimated Annual Operation and Maintenance Costs***

Item	Quantity	Unit Costs	Cost
Parts and repairs (0.1% of Construction Costs)	0.1%	\$8,000	\$8,000
Equipment (10% of Parts and repairs)	10.0%	\$800	\$800
Daily inspections and maintenance (operator)	400 Hrs.	\$25/Hr.	\$10,000
Monthly Electrical Costs	12 Mo.	\$8,000/Mo.	\$96,000
Misc. training, insurance, etc.	12 Mo.	\$800/Mo.	\$9,600
Total			\$124,400

A portion of the estimated operation and maintenance cost above will not be new to the users of the Bayard Regional Wastewater Treatment Plant. The effluent is currently being disposed of by pumping to tailings dams at Chino Mines. Effluent will no longer be pumped to the mines after the proposed project is completed and in use. The user rates determined as part of the Tri-City Wastewater Treatment Plant agreement included costs for disposal of the effluent. Operation and maintenance costs will increase as a result of the following; 1) Electrical costs for pumping to the reservoir site will exceed those of pumping to the Chino Mines Tailing site, 2) An additional pumping station and tank will require operation and maintenance 3) The dam will require operation and maintenance and 4) Operation and maintenance of the effluent treatment system will be required. **It is expected that annual operation and maintenance costs will increase by less than \$50,000 per year.**

- c. Describe environmental compliance activities, and quantify the costs for environmental mitigation and restoration related to the proposal

Land ownership for National Environmental Policy Act (NEPA) compliance

- Bureau of Land Management (BLM): The preferred alignment for the pipeline transects BLM-managed lands. The County will need to comply with any BLM regulations to obtain right-of-way easements.
- New Mexico Department of Transportation (NMDOT) – The preferred alignment for the pipeline transects NMDOT highway right-of-way. The County will need to comply with any NMDOT regulations to obtain right-of-way easements.
- The preferred location for the reservoir is located on United States Forest Service (USFS) managed lands. The USFS will determine the level of effort required in order to comply with the NEPA. The level of effort is likely to include a USFS environmental assessment, as well as biological and cultural resources investigations.

The following are specific permits that will need to be obtained for the construction of the project:

- U.S. Army Corps of Engineers: Clean Water Act
  - Section 404 – The proposed project may require that the County obtain an Individual Permit (IP) from the USACE (if losing 300 linear feet or more of stream bed).
  - Section 401 – Individual Water Quality Certification will be obtained if an IP is required
- New Mexico Environment Department – Monitoring effluent water quality – the requirements and monitoring frequencies are dependent on the quality of reclaimed wastewater produced and the design capacity of the treatment plant.

**d. Quantify the AWSA funding sought for the proposal and for the pendency of the proposed activity's or project's duration**

Phase	Description		AWSA Funding	Time Period
I	<ul style="list-style-type: none"> <li>• Preliminary engineering report, engineering design, permitting and right-of-way acquisition for effluent mainline and laterals and Ft Bayard Water System Improvements</li> </ul>	\$670,000	\$670,000	2012, 2013
II	<ul style="list-style-type: none"> <li>• Construction of effluent mainline and laterals and Ft Bayard Water System Improvements</li> </ul>	\$3,959,000	\$3,959,000	2013,2014
III	<ul style="list-style-type: none"> <li>• Feasibility study for reservoir and treatment facilities</li> </ul>	\$500,000	\$500,000	2014,2016
IV	<ul style="list-style-type: none"> <li>• Construction of reservoir and treatment facilities</li> </ul>	\$5,579,000	\$5,579,000	2016,2017
Total		<b>\$10,708,000</b>	\$10,708,000	2012-2017

**4. If proposal impacts, beneficially or adversely, the environment of the Southwest Planning Region, the Gila River, its tributaries or riparian corridors, use the best available science to:**

- a. Describe and quantify how the proposal might impact the project site and environment, particularly state and federally-listed species.**

Phase II:

There is no proposed or designated critical habitat within or adjacent to the project location. The proposed project would have no effect on designated or critical habitat for the southwestern willow flycatcher, the Mexican spotted owl, the spike dace, or the loach minnow.

The proposed project is anticipated to increase the flow of Twin Sisters creek by 2 to 3 cubic feet per second. This change is not large enough to have a significant impact on Twin Sister Creek or the Gila Basin Watershed. Beneficial impacts to increasing the amount of water in this system would include the potential for the establishment of riparian vegetation, which would stabilize the creek and provide valuable wildlife habitat.

Potential impacts to cultural resources cannot be determined until an alignment for the transmission line is selected and a survey is conducted.

Phase IV: Construction of reservoir

The preferred reservoir location would alter the existing habitat type (and piñon-juniper shrub land) to create an open water area with surrounding wetland and riparian vegetation. Wetlands are a valuable resource which can provide wildlife habitat, filter out contaminants, and provide flood protection.

Based on information from the Biota Information System of New Mexico predicted habitat mapper, suitable habitat may be present for the gray vireo. This data is only provided for informational purposes and needs to be verified during the biological survey.

Any impacts to cultural resources would be determined after a 100-percent survey of the anticipated reservoir footprint has been completed.

- b. Describe and quantify the proposal's efforts to mitigate possible adverse impacts on the environment, particularly riparian areas and state and federally-listed species in the Gila Basin and at the specific location of the proposal.**

Phase II

It is anticipated that the preferred alternative would have no effect on state or federally-listed species in the Gila Basin. Phase II of the proposed project would not impact riparian areas.

Any impacts to cultural resources would be mitigated through avoidance of sensitive areas.

Phase IV: Construction of Reservoir

The County has proposed to replant areas around the newly created reservoir to create new riparian and wetland habitat. These actions would provide mitigation for loss of piñon-juniper shrub lands.

- c. Describe and quantify how the proposal may benefit the environment, particularly riparian areas and state and federally-listed species in the Gila Basin and at the specific location of the proposal.**

The proposed project would not have any beneficial or adverse impacts to state and federally-listed species.

Increasing the amount of water in the Twin Sisters Creek has the potential to create riparian and wetland habitat in this corridor.

Watershed Benefits: The benefits to the Gila Basin would be indirect in that the proposed project is expected to reduce human pressure on the natural water supply by recharging the groundwater. Currently, effluent from the WWTP is discharged into mine tailing ponds and lost due to evapotranspiration. Reuse of the effluent water will conserve the overall water supply.

- d. List any environmental statutes, rules, or regulations that may apply to the proposal, and demonstrate how the proposal implementation will comply with such laws, rules or regulations.**

Any surface flows intercepted by the reservoir would be offset by the release of effluent down Twin Sisters Creek. The County does not anticipate that construction of the reservoir will affect any water rights issues.

The proposed project would comply with the NEPA. This law ensures compliance with all state/federal rules and regulation, under the anticipated lead of the USFS, BLM, and NMDOT. These regulations include but are not limited to the following:

- Clean Water Act: The County will conduct a preliminary jurisdictional determination and will consult with the USACE if permitting for the project is required. If an Individual Permit is required the County will obtain a Water Quality Certification from the NMED – Surface Water Quality Bureau.
- National Pollutant Discharge Elimination System (NPDES) Construction General Permit is required to comply with Section 402(p) of the Clean Water Act and will be applied for in the case of soil disturbance activities that exceed one acre.
- NMED Groundwater Quality Bureau: The County will comply with any Effluent Reuse Regulations, including monitoring of wastewater that would be released from the reservoir.
- Section 106 of the National Historic Preservation Act – The County will contract with Parametrix, or another qualified environmental consultant to conduct a cultural resources survey and associated consultations to comply with Section 106 regulations.
- All vehicles and equipment will comply with 40 CFR; Part 85 entitled “Control of Air Pollution from Motor Vehicles and Motor Vehicle Engines”. No vehicle odors are anticipated beyond the immediate area of a particular active construction site. No hazardous air pollutants are anticipated to be released into the environment as a result of any construction associated with the project. If mitigation is required, the County will contact NMED’s Air Quality Bureau (AQB).
- The proposed project will comply with the migratory bird treaty act. A pre-construction nest survey will be conducted by a qualified biologist. If active nests cannot be avoided, the County will coordinate with the USFWS to obtain the proper removal permits.

Phase IV:

Any surface flows intercepted by the reservoir would be offset by the release of effluent down Twin Sisters Creek. The County does not anticipate that construction of the reservoir will affect any water rights issues.

**5. Describe any economic or cost analysis information and data for the proposal:**

- a. Quantify estimated economic benefits including environmental, recreation, value of water itself, value of water to the regional economy, increased economic growth, protection against loss of jobs, agriculture, ranching, local economic sustainability, or other.**

The NMED discharge permit requires that an alternative means of disposal must be determined and implemented. Additional operation and maintenance (O&M) costs over and above current costs may occur regardless of the means of disposal chosen. It is assumed at this point that any additional O&M cost of the proposed project will be approximately equal with any other means of disposal that is chosen. Some of the cost benefits of the project include the following:

- 1) Effluent will be used for irrigation of recreational facilities and landscape elements at Santa Clara and Ft Bayard. Use is estimated at approximately 86 Ac. Ft. per year. The effluent will replace potable water that would have been pumped from wells, disinfected, etc. Savings would be at least \$0.80/1000 Gallons for a total savings of \$22,418/Year.
- 2) Water levels in the Santa Clara and Bayard wells within the area have dropped up to one foot per year over long periods of time. The wells cannot be deepened because they tap the full aquifer thickness. Using effluent to recharge the well-fields will reverse this condition and potentially eliminate the need for importing water from a different part of the County. At least 650 Ac. Ft. per year is pumped from the well-fields. If groundwater levels drop an average one foot per year, then stabilizing or reversing the downward trend could result in average pumping cost savings of approximately \$16,000/Year.
- 3) The County wants to develop the old Ft Bayard Medical Center Complex. Restoration has great potential for creating more jobs in the County and income from use of the facilities for residential and commercial purposes. Without a dependable and sustainable water supply, development cannot take place. Until plans are finalized for future use of the facility it is difficult to quantify the economic benefits to the area, but the project could enable a significant injection of dollars into the local economy.

The copper mining industry, upon which Grant County is highly dependent for employment of its residents, as well as residents of adjoining counties of Luna and Hidalgo, continues to decline. Jobs have been lost. Between 1980 and 2010 the population declined approximately 9%. The County is in need of economic development.

In addition to providing for the sustainability of water sources for the communities of Bayard, Santa Clara and Ft. Bayard this project will provide recreational facilities and increase the attractiveness of Grant County as a tourist destination. A lake, approximately

the size of the Bear Canyon Dam (located northeast of Silver City,) will be included as part of the project. Other funds will be used to develop roads, trails, an RV Park, camping and picnic facilities.

**b. Quantify estimated costs, including planning, design, and/or construction, environmental compliance, operation, maintenance, repair, and administrative costs or other.**

- Quantification of estimated costs for planning, design and construction are shown in 3a above and summarized in 3d.
- Quantification of estimated costs for environmental compliance is shown in 3c above.
- Quantification of estimated costs for operation, maintenance, repair and administration are shown in 3b above.

**c. Identify the source of local contributions and demonstrate the commitment and ability to pay any local cost-share for project proposal, including any applicable exchange costs.**

This project will be the final phase of the Bayard Regional Wastewater Treatment Plant facility serving the communities of Bayard, Hurley, Santa Clara, Ft. Bayard and North Hurley. The community of Hanover is also in the process of the development of a project that would deliver their wastewater to the Bayard Treatment Plant as well.

**6. Describe how the proposal addresses the needs of a particular group or groups or interests on the issues of**

**a. Historic uses, traditions, cultures, and customs.**

Bayard has been pumping from the well-fields affected by this project since 1955 and Santa Clara since 1920. These well-fields are the primary source of water for Bayard and Santa Clara. Sustainability of the water supply for these two communities will be protected with the project.

The Cron Industrial Wells, which are located in close proximity to the Bayard well field, would also be affected by the project. This well has a capacity of 600 GPM and supplies water to the Cobre Mines near Hanover. This industrial use will be protected with the project.

The project will enhance the preservation and use of the historic Ft. Bayard Medical Complex, established in the late 1800s, by providing a safe and sustainable water supply.

The project also provides recreational opportunities that are readily accessible to those in the county with limited financial resources. Recreational opportunities provided include hiking, fishing and camping all of which are noteworthy among the customs, cultures and traditions of the residents of Grant County and surrounding Counties.

**b. Current and future demands for water in the Southwest Planning Region.**

The full amount of effluent can be utilized to affectively recharge the Bayard and Santa Clara well-fields in order to more effectively meet current and future demands for water in the Southwest Planning Region.

With Phase II, effluent water will be released directly into Twin Sisters Creek and allowed to flow down the creek. If a reservoir is constructed in phase IV and effluent is discharged into the reservoir, then the reservoir will be sized and designed so that water is released at a rate approximately equal to the rate of the natural storm water inflow.

Currently there is approximately 550 ac-ft/yr of treated effluent available for reuse. The Bayard reuse project and irrigation demands for the Grant County project will beneficially use 135 ac-ft/yr. There will still be 415 ac-ft/yr available for aquifer recharge. At full build out of the Bayard Regional WWTP there will be 820 ac-ft/yr of treated effluent available for reuse. This additional 300 ac-ft/yr could be used for reservoir filling while still allocating 415 ac-ft/yr to aquifer recharge. Once the reservoir is filled, the only demand from the reservoir would be to offset evaporation from the water surface (likely less than 300 ac-ft/yr).

**c. Flood Control**

A number (about 20) of residents located adjacent to Twin Sisters Creek immediately south of US Highway 180 fall within the 100-year flood plain. Construction of the reservoir is expected to decrease peak storm flows and reduce the susceptibility of residents to flooding damage. This could in turn be most beneficial to those residents.

**d. Fire protection, prevention, or suppression**

The USFS has an aerial tanker base at the Grant County Airport. Three helicopters with drop tanks are based at the airport that currently take water for suppressing fires out of Bear Lake, Bill Evans Lake and Bear Lake. The proposed project reservoir will provide an additional source of water for fighting fires. The immediate Silver City environment experienced several significant fires during the spring and summer of 2011 which resulted in substantial loss of homes and other property. A large source of water in close proximity would be advantageous to controlling any such fires in the future.



**e. Recreation**

With construction of a reservoir, the proposal provides for hiking, fishing, and camping opportunities. Irrigation of parks and recreational fields in Santa Clara enhances the recreational opportunities for the residents of Santa Clara.

**f. Environmental protection and/or enhancement**

The proposed project will enhance the environment downstream of the reservoir by creating a continuous steady flow of water which will in turn recharge the well-fields for both the Village of Santa Clara and the City of Bayard and enhance the Ft. Bayard site which is currently vacated. The proposed project will also help preserve wildlife in the area by providing elk that commonly visit Ft. Bayard/ Santa Clara areas with more drinking water.

Initially, with phase II, all of the effluent water, which is currently about 550 Ac. Ft./Yr. less approximately 135 Ac. Ft./Yr. to be used for irrigation, or about 415 Ac. Ft./Yr. of effluent would be discharged into Twin Sisters Creek and used to recharge the well fields. In addition, the watershed yields about 70 Ac.Ft./Yr. of runoff. The amount of water that would recharge the well fields would increase from approximately 70 Ac. Ft./Yr. to approximately 485 Ac. Ft./Yr. with implementation of Phase II of the project. The amount of effluent is expected to increase over time, however, with the addition of flow from Hanover and other communities to the regional wastewater treatment plant.

If the reservoir is constructed, then inflow will also be 485 Ac. Ft./Yr., but approximately 126 Ac. Ft./Yr. could be lost to evaporation, leaving about 359 Ac. Ft./Yr. for recharging the well fields. Construction of Phase IV has the potential to create additional wetland and riparian fridge habitat around the new reservoir. The reservoir would also provide a drinking water for numerous wildlife species.

**g. Others**

The Shomaker report states that the full amount of effluent from the City of Bayard Waste Water Treatment Plant (WWTP) can be utilized to affectively recharge the Bayard and Santa Clara well-fields. The project would not require an aquifer storage and recovery permit application with the NMOSE because the current water rights exceed water supply. The recharge project would help the Village of Santa Clara and the City of Bayard to use their existing water rights. The geologic units underlying the three proposed reservoir sites consist of low-permeability of rocks that would limit seepage from the reservoir footprint. No significant seepage is expected.

The reaches of Twin Sisters and Cameron Creeks proposed for recharge are hydraulically connected to the Lone Mountain Aquifer system (see attached report by Shomaker). Water

levels in the Bayard supply wells have historically responded to infiltrated storm water along Cameron Creek. The coarse-grained stream bed sediments and limited aquifer thickness and extent make for very efficient recharge with minimal losses to overland flow and evaporation. The treated effluent is expected to fully infiltrate along the drainages between Fort Bayard and the Bayard well field.

**7. List those supporting the application, including federal, state, and local government entities; Indian nations, tribes or pueblos; irrigation or conservation districts; non-profit organization; and other entities.**

A regional effort is being made to include all regional stakeholders.

**8. Describe whether the proposal would benefit one or more than one of the counties in the Southwest New Mexico Planning Region – Catron, Grant, Hidalgo, and/or Luna Counties.**

Although the project area is in Grant County, in closer proximity to Santa Clara and Bayard, a reservoir for recreation can be utilized by all residents in the four county area. Surrounding recreational lakes create the same opportunity with easier access as well as opportunity for Economic Development centered on these same recreational uses. By creating a recharge project in the Twin Sisters Creek area, water needs can be alleviated for Bayard and Santa Clara increasing availability of water for Economic Development and a potential small Industrial Park located within the project area. By meeting water demands and increasing availability of utility infrastructure will also increase the tri-city area and the surrounding area's capacity for development while maintaining a healthy watershed. This will benefit the users of the Mimbres Basin (Grant and Luna counties).

**9. Describe whether the proposal would support economic growth or benefit more than one of the following interests in the Southwest New Mexico Planning Region – agriculture, ranching, municipal, recreational, or other (specify).**

The copper mining industry, upon which Grant County is highly dependent for employment of its residents, as well as residents of adjoining counties of Luna and Hidalgo, continues to decline. Jobs have been lost. Between 1980 and 2010 the population declined approximately 9%. The County is in need of economic development.

The Cron Ranch well, which is a major production well for the Freeport McMoran Cobre Mines Division, sets within the same well-field area as the Bayard and Santa Clara wells. Recharging of the well-field with this project will aid in providing a sustainable water supply for the mines.

In addition to providing for the sustainability of water sources for the communities of Bayard, Santa Clara and Ft. Bayard this project will provide recreational facilities and increase the attractiveness of Grant County as a tourist destination. Other funds will be used to develop roads, trails, an RV Park, camping and picnic facilities.