REVISED

ENVIRONMENTAL ASSESSMENT FOR THE TOWN OF HUACHUCA CITY'S EFFLUENT RECHARGE PROJECT

Executive Summary

This revised Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act (NEPA), 42 USC §4321-4370f, Council of Environmental Quality regulations implementing NEPA 40 CFR Part 1500, and U.S. Environmental Protection Agency (EPA) NEPA regulations found at 40 CFR Part 6. This revised EA examines the impacts of the Town of Huachuca City's (Town) proposal to construct and operate a new municipal wastewater holding pond and approximately 600 feet of gravity flow pipeline to convey untreated wastewater from the Town to Fort Huachuca's wastewater treatment plant (WWTP). The wastewater holding pond and pipeline will serve the Town's sewer service area.

In 2003 and 2004, EPA received $1,590,500 in EPA Special Appropriation funding for the Town's effluent recharge project. The purpose of the funding was to complete the connection between the Town's wastewater treatment facility with nearby Fort Huachuca's force main and lift stations. Providing funds for the Town's project triggers an environmental review under NEPA.

In July 2000, Fort Huachuca (Fort) issued an EA to evaluate the Fort's project to expand its treated effluent reuse distribution pipelines, upgrade its WWTP, implement artificial recharge projects, and improve erosion control and storm water management. In 2003 the Fort prepared a Record of Environmental Consideration (REC), based upon the 2000 EA, to construct approximately 40,000 feet of force main sewer pipeline and three lift stations which would connect the Town's wastewater treatment facility to the Fort's wastewater treatment plant. Subsequent to the release of the REC, the Fort constructed the force main sewer pipeline and lift stations.

In March 2010, EPA issued an EA for the Town's effluent recharge project. The Town's proposed project is a separate project from the recharge project conducted by the Fort. EPA's March 2010 EA, incorporated the EA and REC issued by the Fort. EPA's EA examined the impacts of funding the construction of the Town's new municipal wastewater holding pond and 600 feet of gravity flow pipeline. During the comment period for the EA, EPA received a comment which brought to the Agency's attention that an alternative that had been eliminated from further review due to financial infeasibility needed to be fully analyzed and included as a full alternative in the EA. In addition, there was a public comment regarding the impact to groundwater from closing the Town's existing unlined wastewater evaporation ponds and the Babocamori River which EPA determined needed to be addressed. Due to these public comments, EPA completed two new technical documents to: 1) examine the financial feasibility of the eliminated alternative (construction of a new wastewater treatment plant at the Town) and 2) review the hydrological connection between the Town's existing evaporation ponds and the river. (See Appendices B and C of the revised EA).

EPA is releasing this revised EA for the Town's effluent recharge project which replaces and supersedes EPA's EA issued in March 2010. This revised EA examines the environmental impacts of the alternative of installation of a new WWTP at the Town and addresses the impact to groundwater and the Babocomari River from closing the Town's existing unlined wastewater evaporation ponds. However, unlike the March 2010 EA, this revised EA does not examine the environmental impacts from the Fort's existing force main and lift station project. The revised EA only considers the environmental impacts from the EPA-funded project, although the Fort's 2000 EA for *Artificial Aquifer Recharge and Treated Effluent Reuse Management, Fort Huachuca, AZ* and the 2003 Record of Environmental Consideration (REC) are incorporated by reference in this revised EA.

The negative impacts associated with the Proposed Action are minor and many are of limited duration. The beneficial impacts associated with the Proposed Action result in long-term benefit to the regional aquifer and thus to critical habitat in the area. No significant cumulative impacts are anticipated to occur with the implementation of the Proposed Action.

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Appendix C *Draft Hydrologic Analysis of the Huachuca City, Arizona Wastewater* Ponds, prepared by Tetra Tech Inc. on behalf of EPA, February 18, 2011
Appendix D Comment Letters on EPA's March 2010 Environmental Assessment and Response to Comments

1. PURPOSE AND NEED

The Town of Huachuca City (Town) is required to upgrade its sewage treatment facility in order to comply with the requirements of its Aquifer Protection Permit (APP), required by the Arizona Department of Environmental Quality (ADEQ). The Town's current facility consists of three unlined wastewater evaporation ponds and one abandoned lined pond that are located within the 100-year floodplain of the Babocomari River. Only two of the ponds are currently in use. (The estimated treatment capacity of the two existing unused ponds is 150,000 gallons per day.) The APP limited the Town's wastewater treatment capacity to 220,000 gallons, although greater treatment capacity does exist at the Town's wastewater facility. The APP limited the treatment capacity of the Town because of the potential threat of leakage from the unlined ponds and the possible discharge of raw sewage into the environment during a 100-year flood which would negatively impact both ground and surface water quality.

The proposed project is to construct a lined wastewater storage pond and 600 feet of gravity pipeline, at the Town's wastewater treatment facility, which will connect to the Fort Huachuca (Fort) wastewater conveyance system. The Town's wastewater will be treated at the Fort's wastewater treatment plant and recharged at the Fort's East Range Recharge Facility. With the region's naturally arid climate, groundwater recharge is an important element in water management for the Upper San Pedro groundwater basin. The proposed project will effectively restore the Town's wastewater treatment capacity, as well as meeting the goal of increasing region's groundwater recharge. Finally, the proposed project will address the existing concern of contamination to ground and surface water through the construction of a lined storage pond.

1.1 Proposed Action

The proposed action is the construction of a lined holding pond at the Town's wastewater treatment facility along with approximately 600 feet of gravity flow pipeline to the Fort's wastewater conveyance system. Upon completion of the Proposed Action, the Town's existing evaporation ponds would no longer be used. Once dry, they would be closed and the APP would be amended to reflect the changes in this action.

The new storage pond would be partially situated within one of the existing evaporation ponds to be abandoned. The storage pond would be connected by the gravity flow pipeline to the first of three lift stations located on the Fort's property. The second lift station is located near the Town's landfill site and the third near the Sierra Vista Municipal Airport. The proposed project at the Town, as well as, the Fort's three existing lift stations and force main pipeline, were designed to accommodate for a population projected to be 3,600 residents within the Town's sewage service area by 2050 (or 100 gallons per capita per day of sewage). Since the design of the Town and the Fort's projects, certain housing developments, assumed in the population projection of 3,600, are now no longer viable. However, the proposed project will be designed to store and transport 360,000 gallons per day since it will effectively restore the wastewater treatment capacity currently existing at the Town's wastewater facility, along with assisting in meeting the region's goal of increasing groundwater recharge.

1.2 Background

The Town is a small community located immediately north of Fort Huachuca in southeastern Arizona (Exhibit 1). It is a member of the Upper San Pedro Partnership (USPP), a diverse consortium of twenty-one local, state, and federal agencies organized to coordinate and cooperate in the identification, prioritization, and implementation of comprehensive policies and projects to bring about sustainable water use in the Sierra Vista (SV) subwatershed of the Upper San Pedro Basin.

Since 2002, the Town has been required to upgrade its sewage treatment facilities in order to comply with the requirements for its APP, required by ADEQ. The Town's current wastewater facility consists of three unlined wastewater evaporation ponds and one abandoned lined pond that are located within the 100-year floodplain of the Babocomari River. Only two of the ponds are currently in use. The potential leakage from these ponds and the possible discharge of raw sewage to the environment during a 100 year flood threatens both ground and surface water quality. In addition, evaporation from the ponds results in the loss of up to several hundred acre-feet per year of reclaimable wastewater.

In July 2000, Fort Huachuca (Fort) issued an Environmental Assessment (EA) to evaluate the Fort's project to expand its treated effluent reuse distribution pipelines, upgrade its WWTP, implement artificial recharge projects, and improve erosion control and storm water management. In 2003 the Fort prepared a Record of Environmental Consideration (REC), based upon the 2000 EA, to construct approximately 40,000 feet of force main sewer pipeline and three lift stations which would connect the Town's wastewater treatment facility to the Fort's wastewater treatment plant. Subsequent to the release of the REC, the Fort constructed the force main sewer pipeline and lift stations within the Fort property.

As part of a 2007 Biological Opinion with the U.S. Fish and Wildlife Service, the Fort committed to implementing ways of decreasing water use and increasing groundwater recharge. Specifically, the Fort committed to mitigation of an additional 1,001 acre feet annually (AFA), including 116 AFA of additional conservation, 639 AFA of stormwater recharge, and 246 AFA of effluent recharge at the Fort's East Range Recharge Facility. With the implementation of water conservation measures on Fort Huachuca, there has been a substantial reduction of flow to the Fort's WWTP, resulting in the wastewater treatment plant operating at less than 50 percent of its design capacity of 2 million gallons per day (mgd). Reduced flow to the wastewater treatment plant has also resulted in less ability to recharge the aquifer at the Fort's East Range Recharge Facility.

In 2003 and 2004, Congress included in EPA's budget $1,590,500 in Special Appropriation funding for the Town's effluent recharge project. The Town proposed to use the EPA funding to complete the connection between the Town's wastewater treatment facility and Fort Huachuca's existing force main and lift stations. Providing funds for the Town's project triggers an environmental review under NEPA.

In March 2010, EPA issued an EA for the Town's effluent recharge project. In the March 2010 EA, EPA incorporated the Fort's July 2000 EA and REC, since the Town's proposed project is a separate project from the recharge project conducted by the Fort.

EPA's March 2010 EA examined the impacts of funding the construction of the Town's new wastewater storage pond and 600 feet of gravity flow pipeline. During the comment period for the EA, EPA received a comment which brought to the Agency's attention that an alternative that had been eliminated from further review due to financial infeasibility needed to be fully analyzed and included as a full alternative in the EA. In addition, there was a public comment regarding the impact to groundwater from closing the Town's existing unlined wastewater evaporation ponds and the Babocamori River which EPA determined needed to be addressed. Due to these public comments, EPA completed two new technical documents to: 1) examine the financial feasibility of the eliminated alternative (construction of a new wastewater treatment plant at the Town) and 2) review the hydrological connection between the Town's existing evaporation ponds and the river. (See Appendices B and C of the revised EA).

EPA is releasing the revised EA for the Town's effluent recharge project which replaces and supersedes EPA's EA issued in March 2010. This revised EA examines the impacts of the Town's proposal to construct and operate a new municipal wastewater holding pond and approximately 600 feet of gravity flow pipeline to convey untreated wastewater from the Town to Fort Huachuca's (Fort) conveyance system. The wastewater holding pond and pipeline will serve the Town's sewer service area. The revised EA examines the environmental impacts of the alternative of installation of a new wastewater treatment plant (WWTP) at the Town and addresses the impact to groundwater and the Babocomari River from closing the Town's existing unlined wastewater evaporation ponds. However, unlike the March 2010 EA, this revised EA does not examine the environmental impacts from the Fort's existing force main and lift station project. This revised EA only considers the environmental impacts from the EPA-funded project. This revised EA is also incorporating by reference the Fort's July 2000 EA and REC.

This revised Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act (NEPA), 42 USC §4321-4370f, Council of Environmental Quality regulations implementing NEPA 40 CFR Part 1500, and U.S. Environmental Protection Agency (EPA) NEPA regulations found at 40 CFR Part 6.

EXHIBIT 1. REGIONAL LOCATION

New Wastewater Storage Pond
Towns
Major Roads
Streams
Fort Huachuca
San Pedro Riparian NCA

2. ANALYSIS OF ALTERNATIVES

Three alternatives were considered in the development of this Environmental Assessment.

2.1 Alternative 1 - Proposed Action

The Proposed Action would include constructing a new wastewater holding pond at the Town of Huachuca City's wastewater treatment facility located within Huachuca City, Arizona, along with 600 feet of gravity flow pipeline. The pipeline will connect to the Fort's existing force main and lift stations. The storage pond would be constructed in the area of an unused pond within the existing treatment facility boundary (Exhibit 2). Upon the completion of project construction, the existing ponds would be dewatered and closed.

Wastewater Holding Pond

The pond would consist of two cells that would be square with rounded interior corners to avoid stagnant areas and would be interconnected by a concrete overflow weir. The finished footprint of the pond would cover approximately 128,000 square feet. The cells would have a capacity of 145,000 cubic feet, which is equivalent to the volume of three days of design flow. The operating depth of the cells would be six feet, with side slopes that are 3 horizontal to 1 vertical and a minimum freeboard of 3.5 feet. The cells would include a synthetic liner to minimize the potential for adverse impacts to groundwater quality. Sewage would flow to the pond via pipe through manually operated gates and would be monitored by the existing ultrasonic flowmeter located in a manhole immediately upstream of the existing sewage pond.

Outflow from each cell within the wastewater storage pond would be directed to Lift Station No. 1 through a gravity flow pipeline, which would be monitored by a magnetic flowmeter at the discharge line of the lift station. A trash rack would be placed at the head of the outlet structure to prevent debris from flowing to the lift station. An aluminum slide gate with electric actuator would be installed at the outlet structure to regulate the discharge by remote control through the Supervisory Control and Data Acquisition (SCADA) system. The gate would also be manually operable at the site. Signals from both meters would be transmitted to the operation center of the Fort Huachuca WWTP as well as to the holding pond site.

A mechanical aerator would be placed in each cell to prevent wastewater from becoming septic, to keep solids in suspension, and minimize odors. Each aerator would be equipped with a 5-horsepower electric motor that requires 230/460 volt, 3-phase power. The aerator would be placed on floats in the center of each cell and moored with cables attached to anchors around the cell embankment and removable for maintenance and repair.

Since the site is within the 100-year floodplain of the Babocomari River, the pond embankment would be constructed to an elevation at least 3.5 feet above the estimated water surface of the 100-year flood to maintain a sufficient freeboard for flood protection. The top of the pond embankment would be graded to support a roadway at least 16 feet in width.

Water surface elevation in each cell would be monitored by an ultrasonic level sensor. Signals from these sensors would be transmitted to the operation center of the Fort Huachuca WWTP. An alarm would be triggered at the operation center if the depth of liquid in the cell exceeds a pre-set level. In addition to the pond, a 200 square-foot insulated modular building would be located at the existing Town's wastewater facility. This building would be placed on a concrete pad on top of the pond embankment and equipped with lights, telephone, heating, and air

conditioning. The building would be used to store operation and maintenance manuals, flow records, electronic parts, tools, and other pertinent items necessary for the operation of the wastewater facility. Electricity for running the pond equipment, lift station and maintenance building would be supplied by Sulpher Springs Valley Electric Cooperative (SSVEC) and brought onto the site from the access road at the facility entrance. SSVEC would provide the pole, transformer, transformer ground, primary conductors, and the service meter.

Upon the completion of project construction, wastewater would be permanently redirected from the existing ponds to the new pond. The existing ponds would be allowed to dry out, which will take an estimated six months. Once dry, a Closure Plan detailing actions required to close the ponds would be developed and implemented. During the closure process, the sludge within the existing ponds would be tested for approximate quantities of chemical, biological, and physical characteristics, and an appropriate destination for the material, based on composition, would be selected and approved. The plan would include an accounting of the approximate quantities and chemical, biological, and physical characteristics of the materials that would remain at the facility, the methods used to treat any materials remaining at the facility, methods that would be used to control the discharge of pollutants from the facility, any limitations on future land or water uses created as a result of the facility's operation or closure activities, the method used to secure the facility, the estimated cost of closure and the schedule for implementing the Closure Plan. Once complete, a post-closure plan would be prepared and the Aquifer Protection Permit would be modified to reflect the new facilities and the closure of the old facilities.

EXHIBIT 2. LOCATION OF THE PROPOSED ACTION

New Wastewater Storage Pond

Sewer Force Main Alignment

River/Stream

Fort Huachuca Boundary

2.2 Alternative 2 – No Action Alternative

Under Alternative 2, the new wastewater holding pond and related gravity flow pipeline would not be constructed. Wastewater would not be pumped to Fort Huachuca's WWTP and the wastewater would not be recharged. Huachuca City's existing wastewater facility would continue to operate without upgrades to the current system. The existing ponds would continue to be used and would remain within the 100-year floodplain of the Babocomari River. Leakage from these ponds and the potential discharge of raw sewage to the environment during a 100-year flood would continue to be a threat to both ground and surface water quality. The loss of untreated wastewater to evaporation would result in less recharge of the regional aquifer.

2.3 Alternative 3 – *Installation of a New WWTP at the Town's Wastewater Treatment Facility Site*

Under Alternative 3, a package wastewater treatment plant or a series of package plants would be installed at the Town's existing wastewater treatment facility. The package wastewater treatment plant is a pre-engineered and prefabricated method of treating wastewater through an aerobic process. The package plant would utilize an activated sludge-type system with a dedicated nitrogen removal and effective disinfection process. The existing sewage ponds at the Town's wastewater treatment facility WWTP site would be dried and closed. (See Alternative 1 for additional information on the pond closure plan.) Sludge residuals from the treatment process would be stabilized and dewatered at the WWTP site prior to disposal. Since the site is within the 100-year floodplain of the Babocomari River, the package plant would be constructed at an elevation above the estimated water surface of the 100-year flood to maintain flood protection. After treatment, the effluent would then be conveyed via a 12 inch underground PVC pipeline approximately 108 feet to the Babocamari River for discharge. The WWTP would be designed to treat 365,000 gallons per day.

2.4 Other Alternatives Considered but Rejected from Further Consideration

EPA considered the alternative of rehabilitating the Town's existing wastewater treatment facility rather than constructing a new storage pond and gravity flow pipeline. This alternative was eliminated from further consideration since the language in the Congressional appropriation to the Town of Huachuca City specifically directed that the funding be used for "an effluent recharge" project. The Town's existing wastewater treatment facility utilizes evaporation ponds, which precludes the availability of wastewater for aquifer recharge.

3. PRESENT ENVIRONMENT

3.1 Community Location and Service Area

The Town a rural town situated along SR90 in the southeast corner of Arizona. The town is located approximately 64 miles south of Tucson, 20 miles north of the United States/Mexico border, and is just north and east of Fort Huachuca and Sierra Vista (see Exhibit 1). The Town was founded in 1954 and incorporated in 1958, and provides its residents with water, sewer, and solid waste services as well as police and fire protection. Electricity is provided to the Town's residences and businesses by Sulfur Springs Valley Electric Co-op. The Town's economy is influenced by Fort Huachuca. Major employers for the town include Town of Huachuca City, Fort Huachuca Army Base, Huachuca City Public Library, and the U.S. Postal Service.

The land adjacent to the Town's Wastewater Treatment Facility is predominantly undeveloped. There are widely scattered residences located to the west and south of the existing facility. The Babocomari River and undeveloped land occur immediately north of the facility.

According to the Town of Huachuca City's 2002 General Plan, potable water is provided from four municipal groundwater wells through the municipal water system. The main water reserve storage is a 750,000-gallon tank.

The Town's sewer system serves the existing residences and businesses within the Town. The current wastewater facility is located east of the Town off of Hunt Road. Present capacity is 17,612,247 gallons. The main sewer line is a 14" main, while lateral lines are 8", 10" and 12". It is estimated that the Town's existing wastewater treatment capacity is 370,000 gallons per day.

As of several years ago, two large residential developments had been planned. One development was to be located on the west side of SR-90, just south of the Babocomari River. By 2050, this residential development was planned to have 600 manufactured homes, which would have added approximately 1,200 residents to the sewage service area. The other development, known as the Babocomari Place, was to be located in the northeast corner of SR-90 and the Babocomari River. This subdivision would have been out of the Town's corporate limit, but would have been included in the Town's sewage service area. Babocomori Place development was intended to have 160 lots with 320 residents by 2050. These development projects are no longer considered viable projects [telephone communication on March 21, 2011 with Elizabeth Borowiec (EPA) and Michael Lockett (Town Building Official)]. These two developments were considered in the 2050 population projection of 3,600 for the Town were used in determining the design capacity of the Fort's lift stations and force main.

The Town's existing treatment capacity was set by the State of Arizona's Aquifer Protection Permit (APP) at 220,000 gallons per day. However, the Town's facility was designed to have a treatment capacity of greater than 220,000 gallons per day since two additional storage ponds exist at the site, but which are currently not being utilized. (The estimated treatment capacity of the two existing unused ponds is 150,000 gallons per day.) The limit of 220,000 gallons per day was set by the APP to prevent potential contamination of surface waters from the existing treatment ponds if flooding occurred. If permanent flood protection was provided at the Town's wastewater treatment facility, and approved by the State of Arizona, the Town would be able to treat a greater volume of wastewater.

The proposed project will be designed to store and transport 360,000 gallons per day since it will effectively restore the wastewater treatment capacity currently existing at the Town's wastewater facility, along with assisting in meeting the region's goal of increasing groundwater recharge. The Fort's lift stations and forcemain have a capacity to transport 360,000 gallons per day of wastewater.

3.2 Population

The population of the Town has been variable. According to the 2000 U.S. Census, 1,751 people lived in the Town, a decrease from the 1,782 that lived there during the 1990 census. More recently, the population has increased. In 2007, the population was estimated at 1,832 people. However, the rate of growth from 2006 to 2007 was only 0.4 percent (seven people). The SouthEastern Arizona Governments Organization (SEAGO) projects that the Town's population will increase to approximately 2,633 people by 2050.

3.3 Topography

The Town is situated at approximately 4,345 feet above mean sea level. The town is relatively level, gaining elevation towards the south. The Babocomari River is located immediately north of the proposed holding pond location. The San Pedro River and the San Pedro Riparian National Conservation Area are approximately 6.5 miles east of the Town's Wastewater Treatment Facility. Several mountain ranges occur in the region, including the Huachuca Mountains to the south, Tombstone Hills to the east, Mule Mountains to the southeast, and Whetstone Mountains to the north.

3.4 Geology

The Town is located within the Sierra Vista subwatershed of the Upper San Pedro Basin. The Upper San Pedro Basin consists of the northwest-trending San Pedro River Valley and the surrounding mountains. The geology in the area of the proposed holding pond and pipeline generally consists of unconsolidated to poorly consolidated basin fill sediments underlain by bedrock consisting of Paleozoic or older sedimentary, igneous, and metamorphic rocks. The upper unit of bedrock in the vicinity of the ponds is the Pantano Formation, a consolidated conglomerate. The depth of the bedrock is approximately 1,200 feet at the existing pond location, with the depth becoming as shallow as approximately 150 feet near the Fort Huachuca WWTP.

Overlying the Paleozoic bedrock is Holocene basin fill and floodplain alluvium of the Babocomari. The alluvial materials consists of silt, clay, sand, and minor gravel deposits. Estimates of its thickness vary from about 40 to 150 feet. Basin fill below the floodplain alluvium is dominated by sand and gravel material in the vicinity of the Town's wastewater ponds with a saturated thickness between 980 to 1,300 feet.

Depth to groundwater in the vicinity of the Town's wastewater ponds is approximately 50 to 100 feet. Groundwater generally moves downgradient along the Babocomari river channel toward the San Pedro River.

The Huachuca fault zone occurs to the southeast of the Town's Wastewater Treatment Facility. The most recent rupture associated with this fault occurred 100,000 to 200,000 years ago.

3.5 Soils

The soils at the pond location consist of Riveroad and Ubik Complex (0-5%) and Ubik Complex (0-3%). These soil types have a slight erosion hazard and some shrink-swell potential. The soils along the alignment consist primarily of Graveyard Sierra Vista Complex (0-8%), Libby-Gulch Complex (0-10%), and White House Complex (1-30%). These soil types have moderate erosion potential, with White House Complex having a severe erosion hazard rating, especially in areas

with greater slopes. All of the alignment soil types were identified as being unfavorable for shallow excavation indicating that some additional preparation work may be necessary during the installation of the 600 foot gravity pipeline.

3.6 Climate and Air Quality

The climate of the Town is characterized as temperate and dry. While temperatures can reach 100° Fahrenheit (F) in the summer, average summer high temperatures are typically in the upper 80s to low 90s. During the winter, high temperatures range from the low to mid 60s. Low temperatures on average range from 34° F in the winter to 66° F in the summer. Average annual precipitation is approximately 15 inches, with the majority (70%) falling between May and October. Average wind velocity is approximately 9 miles per hour. Gusty conditions are not uncommon and can result in winds of 20 to 30 miles per hour. The portion of Cochise County within which the project occurs is in attainment of all national and state ambient air quality standards for criteria pollutants.

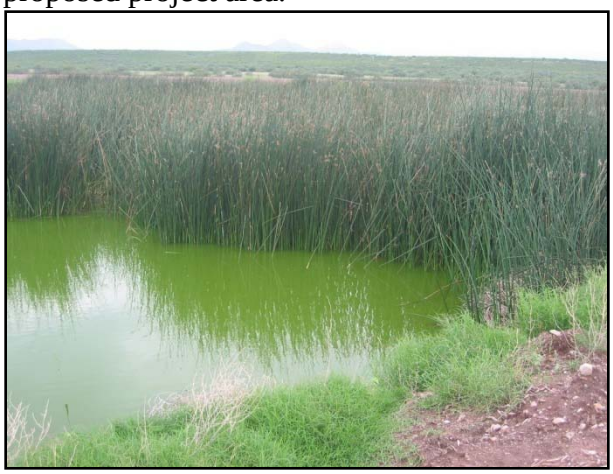
3.7 Surface Waters and Wetlands

San Pedro River headwaters begin about 20 miles south of the US/Mexico international border. Once it crosses into the US, the river flows approximately 125 miles before its confluence with the Gila River in Winkleman, Arizona. It drains about 4,720 square miles in the U.S. The river is fed by two major tributaries, the Babocomari River and Aravaipa Creek. The main stem of the Babocomari River begins at an altitude of about 4,800 feet above sea level and descends for approximately 1,000 feet, draining an estimated 310 $mi^{2.}$ It generally flows on Quaternary deposits over Tertiary basin fill sediments in the upper portion and late Tertiary/early Quaternary St. David Formation deposits in the lower reaches. Discontinuous bedrock channel sections are common in the 1-mile section upstream of the confluence with the San Pedro. The modern channel exists 3 to 20 feet below the historic floodplains due to downcutting.

Many sections of the San Pedro and Babocomari rivers are often dry or only slightly wet at the surface during much of the year. Perennial flows occur where the water table reaches the surface and regional and stream alluvial aquifers are hydraulically connected to the channel. This occurs primarily in areas where underlying impermeable strata force regional groundwater flow to the surface. Most of the base flow at the Tombstone gage on the San Pedro River (downstream of the confluence with the Babocomari and also near Fairbank) is derived from regional groundwater (74±10 percent) with the remaining derived from summer storm runoff stored in the alluvial aquifer. In the Babocomari near the Town there is no perennial flow, indicative of a poor connection between the river and underlying groundwater. This section of the Babocomari River is also a losing reach with surface water seeping into the water table and into the alluvial aquifer well below the land surface.

The two existing wastewater holding ponds currently in use have a combined estimated surface area of approximately 10 acres with a combined perimeter of 3,800 feet. While these ponds have characteristics consistent with wetlands, such as narrow bands of dense wetland vegetation including cattail (*Typha* sp.), rushes (*Juncus* sp.), various grass species and other wetland herbaceous species (Photograph 1), and the ponds are used by water fowl and other wildlife (Photograph 2), these ponds do not meet the hydrology requirement to be considered waters of the U.S. The continuous water supply within the ponds is the result of effluent discharge from

Town's sewer system. In the absence of effluent discharge, the area would not be inundated and would support vegetation that consists of desert grasses and weedy vegetation, as exemplified by the unused pond adjacent to the existing ponds. In addition, the Natural Resource Conservation Service (NRCS) Soil Survey does not identify hydric soils occurring anywhere within the proposed project area.



Photograph 1. Existing holding pond

Photograph 2. Existing holding pond with water fowl

3.8 Groundwater Resources

The aquifer system in the upper San Pedro consists of alluvial fill of varying types: the Pantano Formation, upper and lower basin fill, and floodplain alluvium (Figure 1). The primary regional aquifer is the upper basin fill (closer to the surface) and lower basin fill, sedimentary rock (Tsy) layers of sand and gravel with interbedded silt and clay in some locations. These deposits are overlain by Holocene (or Quaternary) alluvium surrounding and underlying the San Pedro and Babocomari rivers. Groundwater in the aquifers along the Babocomari occurs at depths from less than 50 up to 200 feet below the surface.

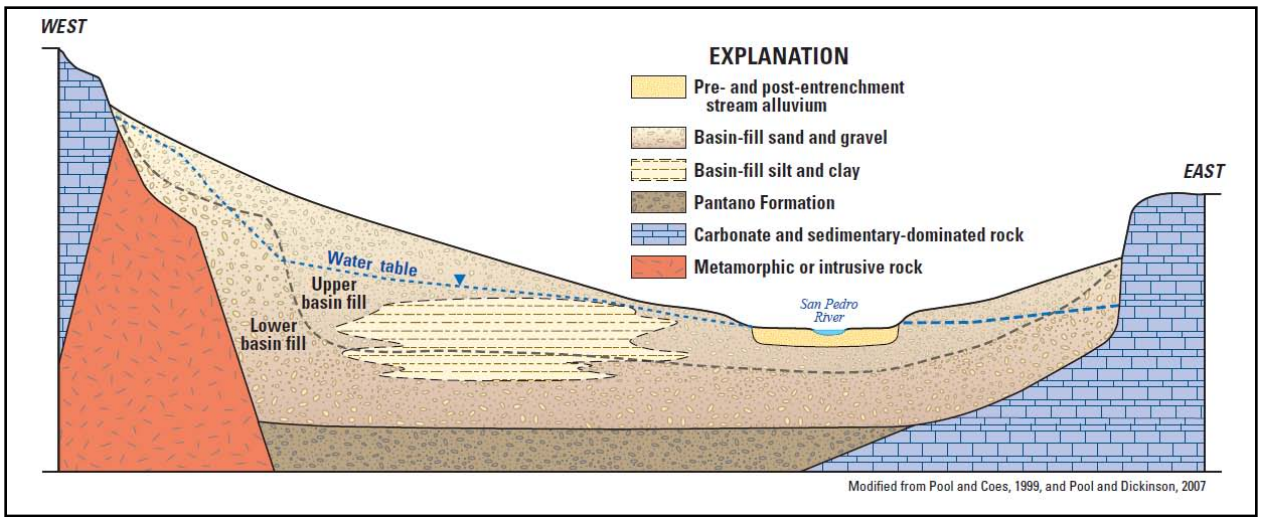


Figure 1. Generalized Cross Section (from Figure 2 in Thiros et al., 2010)

Recharge to the groundwater aquifer system occurs via percolation of precipitation that is in excess of evaporation, vegetative use through evapotranspiration, and runoff to surface waters. Natural recharge is concentrated at high elevations and in and near stream channels underlain by permeable materials. Pool and Coes (1999) describe three natural sources of groundwater in the San Pedro River watershed: 1) water recharged within the Holocene alluvium near the river; 2) recharge to the regional aquifer in Mexico and east of the river along the Mule Mountains; and 3) recharge to the regional aquifer west of the river near the Huachuca Mountains. Natural recharge estimates for 2002 are 21,500 acre feet per year for Sierra Vista sub-area, an area that includes 950 mi^2 from the international border to near Fairbank (AZDWR, 2005). By comparison, groundwater demand was estimated to be 29,850 acre feet per year including 60 percent for agricultural, municipal, and industrial uses.

Artificial recharge programs are common in the region. Irrigation water and treated sewage effluent are infiltrated to supplement the aquifer storage. Total artificial and incidental recharge was estimated at 3,500 acre feet per year for the Sierra Vista sub-area. Contributing to this total, effluent was recharged at the Fort in 2005 at a rate of approximately 426 acre feet per year.

Infiltration rates have been the subject of study by the USGS. Coes and Pool (2005) monitored infiltration fluxes through the basin floor in four boreholes within the Sierra Vista subwatershed. They found that infiltration fluxes down to several meters (i.e., below the depth typically affected by evapotranspiration) ranged from about one to six centimeters (0.4 to 2.4 inches) per year. USGS also conducted a numerical groundwater flow modeling study in the Sierra Vista subbasin (Pool and Dickenson, 2006). By layer, average hydraulic conductivity for the lower and upper basin fill was 3.2 and 11.4 feet/day, respectively. Interbedded (i.e., with silt and clay layers) regions averaged 2.8 feet/day. Average vertical anisotropy, the ratio of horizontal to vertical conductivity, was 26.8 and 10.8. Interbedded regions had somewhat higher values.

Groundwater within the primary regional aquifer is of potable quality. Wells within the aquifer are used to meet all the water needs of the communities within the basin. Groundwater level declines between 1990 and 2001 for the Fort Huachuca-Sierra Vista area have averaged about

0.5 to 0.6 feet per year, while the Fort Huachuca-Huachuca City area showed a decline between about 0.1 and 0.5 feet per year.

The declines in groundwater are reported to have a potential adverse impact on the San Pedro River. In an effort to reduce the impacts associated with regional groundwater withdrawal, Fort Huachuca has implemented a broad spectrum of water conservation, recharge, and reuse measures.

3.9 Floodplains

The site of the existing Huachuca City Wastewater Treatment Facility, including the proposed pond, occurs within the 100-year floodplain of the Babocomari River.

3.10 Vegetation

The vegetation of the project vicinity is representative of the basin and range region of southeastern Arizona. Vegetation in the immediate area of the project is dominated by desert grasses and weedy species. The majority of the force main on Fort Huachuca's property, which would convey the wastewater to the Fort's WWTP, is placed within a utility access road that is free of vegetation. Areas adjacent to the roadbed and areas where the lift stations occur consist of shrubland, shrub-grassland and mesquite-grass savannah. Desert shrubland plant community occurs at the north end of the force main alignment and dominant woody plants include creosote bush (*Larrea tridentata*), mesquite (*Prosopis spp.*), desert broom (*Baccharis sarothroides*), tarbush (*Flourensia cernua*), and whitethorn acacia. Other important species include bush muhly (*Muhlenbergia porteri*), black grama (*Bouteloua eriopoda*), blue threeawn (*Aristida purpurea*), fluffgrass (*Dasyochloa pulchella*), false goldfields (*Bahia spp.*), and twinberry (*Lonicera spp.*). Much of the force main alignment traverses an area characterized as mesquite-grass savannah and common species include velvet mesquite (*Prosopis velutina*), yuccas (*Yucca spp.*), sotol (*Dasylirion wheeleri*), rabbit brush (*Chrysothamnus nauseosus*), and a variety of grasses including gramas (*Bouteloua spp.*), lovegrass (*Eragrostis spp.*), and muhly (*Muhlenbergia spp.*). Cacti, such as cholla (*Cylindropuntia spp.*) and prickly pear (*Opuntia spp.*), pincushion (*Mammillaria spp.*), and hedgehog (*Echinocereus spp.*) are also common (USAGFH 2006). Shrub-grassland also occurs along the force main alignment, and this type contains many of the plant species listed above, but mesquite is not the dominant shrub species as in the mesquite-grass savannah.

3.11 Fish and Wildlife

Wildlife species with the potential to occur in the project area are those typical of the desert shrubland and grassland habitats on Fort Huachuca. Lizards are the most abundant reptiles on Fort Huachuca and common species that could occur in the project area include the Uta climbing lizard (*Urosaurus ornatus*), Sonoran spotted whiptail (*Aspidoscelis sonorae*), Sonoran alligator lizard (*Elgaria kingi*), and other whiptail lizards. Snake species likely to occur include the black-tailed rattlesnake (*Crotalus molossus*), western diamondback rattlesnake (*C. atrox*), gopher snake (*Pituophis melanoleucus*), and Sonoran whipsnake (*Masticophis bilineatus*).

Common bird species in the shrub-grassland habitats on Fort Huachuca include the mourning dove (*Zenaida macroura*), ash-throated flycatcher (*Myiarchus cinerascens*), northern mockingbird (*Mimus polyglottos*), grasshopper sparrow (*Ammodramus savannarum*), Botteri's sparrow (*Aimophila botterii*), and eastern meadowlark (*Sturnella magna*).

In response to declines in breeding birds in the United States, Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued on January 10,2001. This Executive Order requires Federal agencies to evaluate the effects of their actions and plans on migratory bird species of concern. The Department of Defense in cooperation with Partners-in-Flight (PIF) prepared a management plan for bird species of conservation concern (DoDPIF 2002) and provided lists of bird species of conservation concern by conservation region. Fort Huachuca is in Conservation Region 34. Thirteen bird species of conservation concern were detected on the shrub-grasslands of Fort Huachuca. Sparrows and related species accounted for seven of these species. The grasshopper and Botteri's sparrows were the most common species of conservation concern. Large mammals that could occur in the project area included the desert mule deer (*O. hemionus eremicus*) , Coues whitetailed deer (*Odocoileus virginianus couesi*), desert mule deer (*O. hemionus crooki*), pronghorn antelope (*Antilocapra americana*), collared peccary or javelina (*Tayassu tajacu*), mountain lion (*Felis concolor*), coati (*Nasua nasua*), and black bear (*Ursus americanus*). Small to medium sized mammals would include the desert cottontail (*Sylvilagus auduboni*), black-tailed jackrabbit (*Lepus alifornicus*), spotted ground squirrel (*Spermophilus spilosoma*), rock squirrel (*S. variegatus*), Sonoran opossum (*Didelphis virginiana californica*), coati (*Nasua narica*), and coyote (*Canis latrans*). Fort Huachuca has a very diverse population of mammals. At least 14 species of bats occur on the installation, many of which are Arizona species of special concern.

During field visits to the site, wild burros were observed just east of the proposed pond location. Hay is stored at the Town's Wastewater Treatment Facility site for feeding the burros. (These burros would be separated from the proposed pond location by a livestock fence.) Ducks, bullfrogs (*Rana catesbeiana*), red-eared slider turtles (*Trachemys scripta elegans*), and a hawk were observed on the existing wastewater treatment ponds. No fish are known to occur in the existing ponds. While some wildlife was observed using the ponds, it is expected that due to the polluted nature of the ponds, they provide only very limited habitat.

3.12 Endangered or Threatened Species and Critical Habitat

Several threatened or endangered species occur on Fort Huachuca and in the adjacent San Pedro Riparian National Conservation Area (SPRNCA). These species, their habitat needs, and discussions of critical habitat are addressed in the Fort's December 2006 Programmatic Biological Assessment (PBA) for Fort Huachuca, as well as in the *Artificial Aquifer Recharge and Treated-Effluent Reuse Management* Environmental Assessment and are hereby incorporated by reference. The PBA analyzed the potential effects of ongoing and future military operations and activities at and near Fort Huachuca on federally listed threatened and endangered species, proposed and candidate species and designated and proposed critical habitat. After receiving the PBA, the USFWS prepared a Programmatic Biological Opinion (PBO) in 2007. This section addresses species from the PBA that have a potential to occur in the vicinity of the lift stations and force main on Fort Huachuca's property. No endangered or threatened species and/or critical habitat are known to occur at the Town's wastewater treatment facility. The following information is being included since Town's proposed project is directly adjacent to the Fort property where these species have the potential of occurring.

One species that could occur in the area of the force main and lift stations is the federally endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*). The roost sites for this species are a few miles from the force main. This species forages on Palmer agave (*Agave palmeri*) and this plant species could occur near the force main. However, the principal agave use areas identified as agave management areas are located well away from the force main area; the closest agave management area is approximately 1.6 miles west of the proposed force main alignment.

The two existing sewage treatment ponds are not on Fort Huachuca land and biological surveys of these ponds have not taken place. Given that these bodies of water serve as holding ponds for raw sewage, their ability to support a diversity of flora and fauna is likely impaired. However, there is a robust growth of wetland plant species around these ponds as described above and a turtle (likely a red-eared slider [*Trachemys scripta*]) and waterfowl were seen on the pond during a reconnaissance survey. Three aquatic species that were determined to be endangered in 1997, the Canelo Hills Ladies' tresses (*Spiranthes delitescens*), Huachuca water umbel (*Lilaeopsis schaffneriana recurva*), and Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*), are discussed below. Additional information regarding these species can be found in the PBA.

The Canelo Hills Ladies' tresses (*Spiranthes delitescens*) occur in finely grained, highly organic soils that are seasonally or perennially saturated. Springs are the primary water sources, although at one location a creek contributes to the near-surface groundwater. This species occurs with other wetland plants such as speedwell (*Bidens* sp.), sedges (*Carex* sp.), rush (*Juncus* sp.), spikerush (*Eleocharis* sp.), cattail, blue grass (*Poa partensis*), and Johnson grass (*Sorghum helepenic*). This plant is known from five locations in the San Pedro River watershed and the total occupied habitat is an estimated 200 acres. This species is not known from Fort Huachuca and the closest population is along the Babocomari River cienega approximately 10 miles upstream from the two sewage treatment ponds. It is believed that the Canelo Hills Ladies' tresses do not occur in the wetland habitat around the two sewage holding ponds because of a lack of appropriate habitat.

The Huachuca water umbel (*Lilaeopsis schaffneriana recurva*) is found in healthy riverine systems, cienegas, and springs. In stream and river habitat it typically occurs in backwater areas, side channels, and at springs. This species was introduced into a pond on the San Bernardino National Wildlife Refuge and did well in places of low plant density. It naturally colonized another pond but decreased in numbers as open habitat around the pond decreased; species such as cattail and other wetland species that form dense growth will out compete it. The Huachuca water umbel occurs on Fort Huachuca, at the Babocomari River upstream from the project area. It is believed that the Huachuca water umbel is very unlikely to occur around the two sewage treatment ponds given 1) this species does not typically occur around ponds, 2) the polluted nature of the ponds, and 3) the dense growth of wetland species around the perimeter of the ponds.

The Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*) populations are currently found in lakes, ponds, and stock tanks. Historically, they may have inhabited springs, cienegas, and possibly backwater pools that held water long enough to support breeding and metamorphosis (at least two months), but ideally that were permanent or nearly permanent, allowing survival of

mature branchiates (aquatic forms of the tiger salamander). Three populations of Sonora tiger salamanders are known to exist in the nearby Huachuca Mountains. These salamanders occur in Scotia and Copper Canyons off-post, and in Upper Garden Canyon on-post. On Fort Huachuca, tiger salamanders are known from Upper Garden Canyon Pond near the crest of the Huachuca Mountains and the junction of Sawmill and Garden canyons. In addition, this species was found in evaporation ponds that were converted to the East Range Recharge Facility. Unlike the holding ponds at the Town, the evaporation ponds at Fort Huachuca contained treated water. This population was eliminated when the ponds were reconfigured as recharge basins. Although surveys for this or other species have not been conducted at the two wastewater treatment ponds, it is believed that the Sonora tiger salamander is very unlikely to occur in these ponds because of the poor water quality.

The 2006 Fort Huachuca PBA addressed other aquatic/wetland species, and these species were not considered because they occurred only in the east slope of Huachuca Mountains (Ramsey Canyon leopard frog [*Rana subaquavocalis*]) or occurred in wooded riparian habitat that does not occur in the project area (southwestern willow flycatcher [*Empidonax traillii extimus*] and yellow-billed cuckoo [*Coccyzus americanus*]). In addition, eight species of fish were considered in the PBA, but the aquatic habitat of the two sewage treatment ponds in use does not provide suitable habitat for these species.

3.13 Environmental Sensitive Areas

The Babocomari is a tributary to the San Pedro River in the Upper San Pedro Basin and drains portions of the Mustang Mountains, Canelo Hills, and the north end of the Huachuca Mountains. The Babocomari flows perennially over two reaches for a total of twelve miles, but is intermittent where it passes the Town's Wastewater Treatment Facility.

The San Pedro Riparian National Conservation Area (SPRNCA) is located approximately 6.5 miles east of the Town's Wastewater Treatment Facility location. The San Pedro River supports one of the largest expanses of southwestern cottonwood-willow riparian forest, serving as an important corridor for migratory birds. The Ramsey Canyon National Natural Landmark occurs approximately 15 miles south of the Town and is the closest National Natural Landmark to the project. No coastal resources or wild and scenic rivers occur near the proposed project.

3.14 Historic, Prehistoric, Architectural, Archaeological, and Cultural Resources

No historic documentation was found regarding any archaeological survey at the pond area at the Town's Wastewater Treatment facility prior to its construction. Since the Town's wastewater treatment facility is located on disturbed soil, it is not anticipated impacts from the proposed project to historical, prehistoric, architectural, archaelological, and cultural resources. However, if resources are identified, the Town will follow the Fort's Integrated Cultural Resource Management Plan.

3.15 Aesthetic Resources

The Huachuca City Wastewater Treatment Facility is fenced off from public access and is located in a remote location. There are very few developments located near the facility.

3.16 Hazardous Materials

No evidence of hazardous materials was identified within the Huachuca City Wastewater Treatment Facility during a reconnaissance survey. The Facility has been previously graded and supports desert grasses and weeds. No evidence of hazardous materials was identified.

4. EVALUATION OF IMPACTS

4.1 Surface Waters and Wetlands

Alternative 1 – Proposed Action

A minimal amount of land would be disturbed in the construction of the new storage pond and the 600 foot gravity flow underground pipeline. Ground disturbed due to the installation of the underground pipeline would be recontoured upon completion of the work. Soils would be stabilized to prevent sedimentation to the Babocomori River pursuant to Arizona's Pollution Discharge Elimination System (AZPDES) construction stormwater permit requirements.

Upon the completion of the proposed pond, wastewater that is currently being directed to two of the existing ponds would be redirected to the new storage pond. As a result, the existing ponds, which contain an estimated 0.4 acre of wetlands around the periphery, would dry out. Since the new pond would be raised, lined, and maintained, it would not develop new wetland vegetation.

There would be a beneficial impact from eliminating the risk of surface water contamination from a raw sewage spill from the existing ponds.

Alternative 2 – No Action Alternative

Under the No Action Alternative, the risk of surface water contamination from the existing raw sewage ponds will remain.

Alternative 3 –Installation of a New WWTP at the Town's Wastewater Treatment Facility Site

A minimal amount of land would be disturbed in the installation of the package wastewater treatment plant and 108 foot discharge pipeline. Ground disturbed due to the installation of the underground pipeline would be recontoured upon completion of the work. Soils would be stabilized to prevent sedimentation to the Babocomori River per Arizona's Pollution Discharge Elimination System (AZPDES) construction stormwater permit requirements. The existing sewage ponds at the Town's Wastewater Treatment Facility would be closed and a package plant would be installed at the site. As a result, the existing ponds, which contain an estimated 0.4 acre of wetlands around the periphery, would dry out.

There would be a beneficial impact from eliminating the risk of surface water contamination from a raw sewage spill from existing ponds.

4.2 Floodplains

Alternative 1 – Proposed Action

The proposed pond and maintenance building at the Town's Wastewater Treatment Facility would be located within the floodplain. The proposed project has been designed to

accommodate this by having a finished pond height 3.5 feet above the estimated water level of a 100-year flood. The maintenance building would also be constructed immediately adjacent to the pond, on the embankment above the estimated water level of the 100-year flood. By constructing within the floodplain, there is some impact to floodplain resources, but with the incorporation of the design considerations to ensure sufficient freeboard for flood protection, the Proposed Action would result in only a minor direct impact to floodplains. Prior to construction, a floodplain use permit will be obtained. No indirect impacts are anticipated.

Alternative 2 – No Action Alternative
Under Alternative 2, the new pond would not be constructed and the existing ponds that are located at grade within the floodplain would remain. The two ponds that are currently in use would continue to be used. Consequently, the potential would persist for the introduction of contaminants into surface waters in the event of a flood of sufficient magnitude to breach the ponds. This sequence of events would result in a direct adverse impact to surface water quality. No indirect impacts are anticipated.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Installation of a new WWTP at the Town's Wastewater Treatment Facility and discharge pipeline would be located within the floodplain. The plant would be elevated above the estimated water level of a 100-year flood. By constructing within the floodplain, there is some impact to floodplain resources, but with the incorporation of the design considerations to ensure sufficient freeboard for flood protection, the project proposed in Alternative 3 would result in only a minor direct impact to floodplains. Prior to construction, a floodplain use permit will be obtained. No indirect impacts are anticipated.

4.3 Significant and/or Important Farmlands
No significant or important farmlands occur within or near the proposed pond, maintenance building, lift stations, or force main alignment. None of the alternatives would result in any direct or indirect impacts to farmland resources.

4.4 Coastal Zones
No coastal zones occur within or near the proposed pond, maintenance building, lift stations or force main alignment. None of the alternatives would result in any direct or indirect impacts to coastal zone management.

4.5 Wild and Scenic Rivers
No wild and scenic rivers occur within or near the proposed pond, maintenance building, lift stations, or force main alignment. None of the alternatives would result in any direct or indirect impacts to wild and scenic rivers.

4.6 Coastal Barrier Resources
No coastal barrier resources occur within or near the proposed pond, maintenance building, lift stations, or force main alignment. None of the alternatives would result in any direct or indirect impacts to coastal resources.

4.7 Air Quality

Alternative 1 – Proposed Action
The proposed project occurs within an area that is in attainment of all national or state ambient air quality standards. Minor direct impacts to air quality would result during the construction of the pond, maintenance building, and gravity main due to the generation of fugitive dust emissions and reactive organic gases from the exhaust of heavy equipment. These impacts would be temporary and limited to the vicinity of the construction. Indirect air quality impacts could result due to the emission of reactive organic gases and dust, which could contribute to the development of ozone in the area. Standard dust suppression techniques, such as watering of active construction areas, stockpiled material, and cleared areas would substantially minimize these air quality impacts.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on air quality.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Alternative 3 involves the installation of a package wastewater treatment plant at the Huachuca City Wastewater Treatment Facility with a discharge pipeline to the Babocamori River. The Huachuca City Wastewater Treatment Facility is within an area that is in attainment of all national or state ambient air quality standards. However, minor direct impacts to air quality would result during the construction of the package wastewater treatment plant and discharge pipeline due to the generation of fugitive dust emissions and reactive organic gases (ROG) from the exhaust of heavy equipment. These impacts would be temporary and limited to the vicinity of the construction. Indirect air quality impacts could result due to the emission of ROG and dust, which could contribute to the development of ozone in the area. Standard dust suppression techniques, such as watering of active construction areas, stockpiled material, and cleared areas would substantially minimize these air quality impacts.

4.8 Vegetation

Alternative 1 – Proposed Action
The Proposed Action would result in a direct, adverse impact on vegetation in the areas where construction would occur. This impact would be minor and consist of the removal of common species such as desert grasses, weeds, creosote bush, and desert broom from the pond and gravity pipeline locations. All reasonable steps will be taken to ensure minimal disturbance of sensitive species. Any agave plants that occur within the project area will be avoided during all construction activities.

The Proposed Action would potentially result in indirect beneficial impact on vegetation since there would be an increase in the amount of water that is recharged into the regional aquifer which is anticipated to have a positive correlation with baseflow of the San Pedro River.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on vegetation.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site

Under Alternative 3, a new WWTP would be installed which would discharge to the Babocamori River. The discharge to the Babocamori would result in the presence of water year round which would have a potentially beneficial impact on vegetation.

With the installation of a new WWTP, the Town's existing wastewater holding ponds would be closed resulting in a direct, adverse impact on vegetation in the areas where construction would occur. This impact would be minor and consist of the removal of common species such as desert grasses, weeds, creosote bush, and desert broom. . All reasonable steps will be taken to ensure minimal disturbance of sensitive species at the Town's wastewater facility and the discharge pipe location. Any agave plants that occur within the project area will be avoided during all construction activities.

The Town's existing unlined holding ponds would be closed under this alternative. It is estimated that a small amount recharge may occur from these ponds to the Babocamori River. However, there is a low probability of this recharge contributing significantly to the riparian vegetation in the vicinity of Huachuca City. Any infiltrated water would join the larger pool of regional groundwater and would be subject to discharge a considerable distance downbasin (Draft Hydrologic Analysis of the Huachuca City, Arizona Wastewater Ponds, February 18, 2011)

4.9 Threatened and Endangered Species and Critical Habitat

Alternative 1 – Proposed Action

The Fort prepared a request for an informal consultation letter to the USFWS on June 3, 2008. On November 21, 2008 the USFWS concurred with the Fort that the proposed construction and operation of the new holding pond at the Town's Wastewater Treatment Facility, as well as the force main and lift stations located on the Fort's property would have no effect on the Mexican spotted owl, Sonora tiger salamander, and Huachuca water umbel because the semi-desert grasslands along the pipeline route do not provide habitat for these species. Further, it was noted that with the avoidance of any agave plants within the area of construction, the lesser long-nosed bat would not be adversely affected. Critical habitat would not be directly affected by this action.

The Proposed Action would potentially result in indirect beneficial impact on threatened and endangered species and critical habitat that occur along the San Pedro River. Increasing the amount of water that is recharged into the aquifer is anticipated to have a positive correlation with baseflow of the San Pedro River, resulting in a potentially positive impact on Huachuca water umbel populations along the San Pedro River. (*Draft Hydrologic Analysis of the Huachuca City, Arizona Wastewater Ponds*, February 18, 2011)

Aquatic and terrestrial wildlife use of the two existing sewage treatment ponds would decline and eventually cease when the existing open water habitat and associated wetlands are no longer being filled with wastewater after the new pond is completed. While the degree of wildlife use of these ponds is not known, it is likely somewhat reduced because of the polluted nature of the raw sewage water in the ponds. It is anticipated that terrestrial wildlife would use the land that formally supported the two ponds to some extent once they are dewatered and closed.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on threatened or endangered species. Likewise, critical habitat would be unaffected.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
No threatened or endangered species or critical habitat would be affected by the implementation of Alternative 3. On November 21, 2008, the USFWS concurred with the Fort that the proposed construction and operation of the new holding pond at the Town's Wastewater Treatment Facility, as well as the force main and lift stations located on the Fort's property would have no effect on the Mexican spotted owl, Sonora tiger salamander, and Huachuca water umbel because the semi-desert grasslands along the pipeline route do not provide habitat for these species. Since Alternative 3 also involves construction activities at the same location site it is reasonable to assume that there would be a similar no impact finding. As for the discharge pipeline to the Babocomori River, all construction activities would be underground.

Under Alternative 3, the existing sewage treatment ponds at the Town's Wastewater Facility would be closed. Due to the presence of 0.4 acres of wetlands at the periphery of these ponds, aquatic and terrestrial wildlife would decline and eventually cease when the existing open water habitat and associated wetlands are no longer being filled with wastewater. While the degree of wildlife use of these ponds is not known, it is likely somewhat reduced because of the polluted nature of the raw sewage water in the ponds. It is anticipated that terrestrial wildlife would use the land that formally supported the two ponds to some extent once they are dewatered and closed.

4.10 Topography

None of the elements of the alternatives would require large modifications to the terrain. None of the alternatives would have a direct or indirect impact on topography within the project or in nearby areas.

4.11 Groundwater Resources

Alternative 1 – Proposed Action
The proposed lined pond would replace the two unlined ponds currently in use. By discontinuing the use of the unlined ponds, the project would minimize the risk of pollutants entering and potentially contaminating the groundwater. Additionally, the project would result in an increase in wastewater reaching the Fort Huachuca WWTP and ultimately the artificial aquifer recharge facilities, which would result in a direct, beneficial impact on groundwater supplies.

It is estimated that only a small amount of recharge occurs from the existing wastewater ponds and the recharge that does occur has a low probability of contributing significant support for riparian vegetation in the vicinity of the Town. Local recharge rates are low and result in primarily vertical transport of water, with little influence on the surface channel and riparian vegetation of the Babocomari River in the vicinity of the Town. Any recharge that is occurring from the Town's existing holding ponds is likely to contribute to the regional aquifer storage and

to emerge further down in the basin at and/or below the confluence with the San Pedro. (*Draft Hydrologic Analysis of the Huachuca City, Arizona Wastewater Ponds*, February 18, 2011)

If all four treatment ponds were operational, it is estimated that the Town's existing wastewater treatment facility has a treatment capacity of 370,000 gallons per day. However, the Town is limited in its capacity to 220,000 gallons per day by the Arizona Aquifer Protection Permit (APP). The Proposed Action will allow the Town to increase its wastewater treatment capacity beyond 220,000 gallons per. Over time, the additional capacity may aid the Town in making additional sewer connections, thus increasing its population size. This would result in additional groundwater pumping to provide potable water necessary for new residences or commercial developments. However, the impacts to the regional groundwater aquifer from additional groundwater pumping will be minimal since the wastewater generated from the Town will be recharged at the Fort's East Range Recharge Facility and back into the same regional aquifer.

Alternative 2 – No Action Alternative
Alternative 2 would result in the continued use of the unlined ponds at the Town's Wastewater Treatment Facility. The existing facilities do not meet the terms of the State-issued APP. There is a potential of contaminating groundwater as a result of the wastewater infiltration. This would result in a direct adverse impact to groundwater.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Under Alternative 3, the two unlined ponds currently in use would be closed. By discontinuing the use of the unlined ponds, the project would minimize the risk of pollutants entering and potentially contaminating the groundwater.

As with Alternative 1, discharge from a new WWTP to the Babocomari River would result in an increase in wastewater resulting in a direct, beneficial impact on groundwater supplies. However, the discharge would be subject to a higher degree of evaporation than in Alternative 1 thus less water would be available to recharge to the regional aquifer.

4.12 Hazardous Materials

Alternative 1 – Proposed Action
No hazardous materials were identified as occurring at the new pond location. The proposed construction activities would not use or result in the production of hazardous materials. No direct or indirect impacts are anticipated to occur as a result of the proposed construction. If previously unidentified on-site hazardous substances are encountered during construction, activities in that portion of the project would cease until appropriate remediation efforts are completed.

Once construction is complete, wastewater would be redirected to the new pond. With no input of water, the existing ponds would dry out in approximately six months. Once dry, the sludge would be analyzed for chemical, biological, and physical characteristics, and an appropriate destination for the material (landfill), based on composition, would be selected and approved. It is estimated that 133,000 cubic yards of sludge and contaminated soils would be removed. An accounting of the approximate quantities and chemical, biological, and physical characteristics of the materials that would remain at the facility, the methods used to treat any materials remaining

at the facility, methods that would be used to control the discharge of pollutants from the facility, any limitations on future land or water uses created as a result of the facility's operation or closure activities would be identified within the Closure Plan.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on hazardous materials.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
No hazardous materials were identified at the Huachuca City Wastewater Treatment Facility. The proposed construction activities would not use or result in the production of hazardous materials. No direct or indirect impacts are anticipated to occur as a result of the proposed construction. If previously unidentified on-site hazardous substances are encountered during construction, activities in that portion of the project would cease until appropriate remediation efforts are completed. See Alternative 1 for Pond Closure Plan.

4.13 Environmental Sensitive Areas

Alternative 1 – Proposed Action
The nearest environmental sensitive area to the proposed activities is the Babocomari River, located immediately north of the project. Construction of the proposed pond and maintenance building would occur partially within an existing unused pond located south of the ponds that are in use. No erosion or discharge to the Babocomari would occur given the physical barriers (existing holding ponds) between the area to be disturbed and the river. Likewise, the San Pedro Riparian National Conservation Area (SPRNCA) would not be adversely affected by the project. The proposed activities would have no direct or indirect impact on the river.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct impact on environmental sensitive areas. If the existing ponds were to be breached by a flood while in use, there would be a potential indirect impact on the Babocomari River ecosystem.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
The nearest environmental sensitive area to the proposed activities is the Babocomari River, located immediately north of the project. However, at the conclusion of construction, disturbed areas would be stabilized in accordance with Arizona's Pollution Discharge Elimination System (AZPDES) construction stormwater permit requirements.

4.14 Geology, Seismic Considerations, and Soils

Alternative 1 – Proposed Action
Construction activities associated with the proposed action would not affect any existing geologic hazards and would not trigger seismic activity along existing faults. The potential for erosion to occur at the pond location would temporarily increase during construction when soil is loose and stockpiled. However, at the conclusion of construction, disturbed areas would be stabilized in accordance with AZPDES construction stormwater permit requirements. Based on this information, the proposed action would have a temporary, direct effect on soil stability.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on geology, seismic considerations, or soils.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Construction activities associated with the proposed action would not affect any existing geologic hazards and would not trigger seismic activity along existing faults. The potential for erosion during the installation of the package plant and discharge pipeline would temporarily increase during construction when soil is loose and stockpiled. However, at the conclusion of construction, disturbed areas would be stabilized in accordance with AZPDES construction stormwater permit requirements. Based on this information, the project under Alternative 3 would have a temporary, direct effect on soil stability.

4.15 National Natural Landmarks

No National Natural Landmarks occur within or adjacent to the location of the proposed activities and as mentioned above in Section 3.13, Ramsey Canyon National Natural Landmark would be unaffected. None of the alternatives would result in a direct or indirect impact on National Natural Landmarks.

4.16 Historical, Architectural, Archaeological, and Cultural Sites

Alternative 1 – Proposed Action
No sites of historical, architectural, archaeological or cultural importance are known at the Town's wastewater treatment facility. However, five sites of historical and archaeological importance were identified on the Fort's property, and were taken into consideration during the design of the force main and lift stations.

On August 28, 2008, the Arizona State Historic Preservation Officer concurred on the proposed project contingent that monitoring would be conducted at the five sites. As with construction on the Fort's property, a qualified cultural resource specialist meeting the Secretary of Interior's Standards (36 CFR 66) will be on-site to monitor all ground disturbing activities during the construction of the storage pond. In the event that any cultural resources are discovered during construction, construction activities will stop and consultation specific to these properties will ensue between Fort Huachuca, the Arizona State Historic Preservation Office (SHPO), and Tribal representatives.

With the monitoring by a cultural resource specialist, no direct or indirect impact to historical or archaeological resources is anticipated to occur as a result of the Proposed Action.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on historical, architectural, archaeological, or cultural resources.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site

Under Alternative 3, the majority of ground disturbance would occur at the Town's Wastewater Treatment Facility. Minimal ground disturbance would occur during the construction of the underground discharge pipeline since the pipeline is only estimated to travel 108 feet. However, since resources have been identified in the area a cultural resource specialist as identified in Alternative 1 will be made available during construction.

4.17 Aesthetic Resources

Alternative 1 – Proposed Action
The aesthetics of the pond location would be permanently modified as a result of the Proposed Action. This area is remote in location and currently has limited aesthetic value. Given the low number of viewers and low aesthetic value, the proposed action would result in a minor permanent impact at the pond location.

The proposed project will generate odors, noise, and dust during construction. It is anticipated that no noise or dust to be generated by operation of the proposed project throughout much of the year. There is a potential that some residents may experience an odor event periodically although the Town has not received any odor complaints about the existing sewage holding ponds. Only one residence is located within ¼-mile of the proposed (and existing) holding pond and this residence is located to the south whereas prevailing winds are to the west. Overall, the proposed project will likely generate odors consistent with or less than the existing sewage ponds since the footprint of the proposed two-cell wastewater holding pond (i.e., surface area exposed to wind) is less than the existing sewage ponds and the proposed holding pond cells will be equipped with mechanical aerators as opposed to the existing unaerated sewage ponds. Based on the nature of the proposed project and the population density in the area, no significant impact of odors is expected from the proposed project.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on aesthetic resources.

Alternative 3 – Package WWTP at the Town's Wastewater Treatment Facility Site
The aesthetics of installing a WWTP at the Town's Wastewater Treatment Facility site would be permanently modified since the existing wastewater ponds would be closed and a structure would be installed in its place. However, this area is remote in location and currently has limited aesthetic value.

Alternative 3 will generate some odors, noise, and dust during construction. After completion of construction, it is anticipated that there will be no substantial noise or dust generated by operation of the wastewater treatment plant since the plant will be enclosed. Only one residence is located within ¼-mile of the Town's existing holding pond and this residence is located to the south whereas prevailing winds are to the west.

4.18 Land Use and Zoning

Alternative 1 – Proposed Action

The Proposed Action would have no impact on land use or zoning. The proposed pond and maintenance building would occur within the boundaries of the existing wastewater treatment facility.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on land use or zoning.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Alternative 3 would have no impact on land use or zoning because it would be sited at the existing Town's Wastewater Treatment Facility.

4.19 Socioeconomic Impacts

Alternative 1 – Proposed Action
In 2003 and 2004, EPA received $1,590,500 in Special Appropriation funding for the Town's effluent recharge project. The EPA grant, along with the Town's contribution to the grant, will cover the cost of constructing the holding pond and gravity flow pipeline. The operation and maintenance of the holding pond and pipeline will be the responsibility of the Town. The wastewater conveyance system located on the Fort's property (i.e. lift stations and forcemain) will be the responsibility of the Fort. It is anticipated that there may be an increase in cost to the Town from operating the new facility due to an increase in energy demand with the implementation of the Proposed Action. However, the increase in cost is considered to be minor.

The Proposed Action would result in a temporary minor beneficial socioeconomic impact with the increase in employment during the construction of the project. Service to Huachuca City sewer customers would continue uninterrupted during construction of the new pond and gravity flow pipeline.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on socioeconomics of the local municipality or the region.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
To fully examine the financial impacts of implementing Alternative 3, EPA had prepared the *Financial Capability Assessment for the Huachuca City Wastewater Ponds Environmental Assessment (Financial Assessment).* (See Attachment B.) The Financial Assessment examined the potential burden to the Town to install and operate a new wastewater treatment plant. It assumed that the funding from the EPA grant could also be applied to the project identified in Alternative 3. The Financial Assessment found that there would be a medium burden placed upon the Town with the implementation of Alternative 3. The cost of constructing Alternative 3 would likely exceed the amount of funds available in the EPA grant, which would be the responsibility of the Town. In addition, there would be greater costs associated with operating and maintaining a full wastewater treatment plant as proposed in Alternative 3, resulting in increased user fees, utility rates, or taxes to the Town compared to the Proposed Action. Alternative 3 would result in a temporary minor beneficial socioeconomic impact.

There would be a temporary minor beneficial socioeconomic impact with the increase in employment during the construction of the project. Service to the Town's sewer customers would continue uninterrupted during the installation of the WWTP.

4.20 Utilities

Alternative 1 – Proposed Action
Electricity is provided to the Town's by the Sulphur Springs Valley Electric Cooperative (SSVEC). The pond is within the SSVEC service area and would receive electricity from this provider. Extending electrical lines at the holding pond location would require the installation of a single pole to support the aerial line. This installation would result in a negligible loss of habitat at the location of the pole. No other resources would be affected. The impacts associated with extending electrical service are minor.

No other utilities would be affected by the Proposed Action. No direct or indirect impacts to any other utility would occur.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on utilities.

Alternative 3 – Installation of a New WWTP at the Town'sWastewater Treatment Facility Site
Electricity is provided to Huachuca City by SSVEC. The pond is within the SSVEC service area and would receive electricity from this provider. Potentially, electric lines would need to be extended to the new WWTP. This installation would result in a negligible impact. No other resources would be affected.

4.21 Transportation and Access

Alternative 1 – Proposed Action
The Proposed Action would take place on Huachuca City property. These areas are not open to the public.

Alternative 2 – No Action Alternative
No direct or indirect impacts to transportation or access would occur as a result of Alternative 2.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Alternative 3 would take place on Huachuca City property. This area is not open to the public.

4.22 Climate

None of the alternatives would result in any direct or indirect change to the climate, since very limited change in existing conditions would occur from Alternatives 1 and 3.

4.23 Noise Considerations

Alternative 1 – Proposed Action

The Proposed Action would result in minor direct noise impacts during the construction of the holding pond and gravity flow pipeline. Sensitive receptors such as residential populations are not located immediately adjacent to the Proposed Action. In addition, noise impacts would be temporary and discontinue at the conclusion of construction.

The operation of the holding pond would generate some low-level noise, but these features would be located away from sensitive receivers and would be minor in magnitude. No significant noise impacts are anticipated during construction or operation of the Proposed Action.

Alternative 2 – No Action Alternative
No direct or indirect noise impacts would occur if Alternative 2 is selected.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site
Alternative 3 would result in minor direct noise impacts during the installation of the wastewater treatment plant and discharge pipeline. Sensitive receptors such as residential populations are not located immediately adjacent Huachuca City Wastewater Treatment Facility. In addition, noise impacts would be temporary and discontinue at the conclusion of construction.

The operation of the WWTP would generate some low-level noise, but these features would be located away from sensitive receivers and would be minor in magnitude. No significant noise impacts are anticipated during construction or operation.

4.24 Environmental Justice Considerations

The alternatives would have minimal effect on the public, and no population or group would be exposed to disproportionately high level of the impacts. No environmental justice issues are anticipated.

4.25 Tribal Issues

Alternative 1 – Proposed Action
Tribal consultations were initiated by the Fort, for the project located on both the Town and the Fort property, with representatives from the Ak Chin Indian Community, Fort Sill Apache Tribe, Gila River Indian Community, Hopi Tribe, Mescalero Apache Tribe, Pascua Yaqui Tribe of Arizona, San Carlos Apache Tribe, Slat River Pima-Maricopa Indian Community, Tohono O'odham Nation of Arizona, White Mountain Apache Tribe, and Zuni Pueblo on July 30, 2008 and concluded on September 11, 2008. This consultation included all tribal concerns, which include but are not limited to, Native American Graves Protection and Repatriation Act (NAGPRA), traditional cultural properties, and sacred sites. Final concurrence was received from each tribe.

Alternative 2 – No Action Alternative
Alternative 2 would have no direct or indirect impact on tribes or native people, traditional cultural properties, or sacred sites.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site

Alternative 3 would be located primarily at the Town's Wastewater Treatment Facility site. This site has already been disturbed and no cultural resources have been identified. No direct or indirect impacts on tribes or native people, traditional cultural properties, or sacred site through the implementation of Alternative 3.

4.26 Energy Use

Alternative 1 –Proposed Action

Electrical demand for the Proposed Action is minimal. The aerators for the proposed storage pond would require electricity. The proposed project, however, relies on the Fort's existing lift stations and force main to convey wastewater from the proposed storage pond to the Fort Huachuca WWTP. Electrical use to operate the lift stations is estimated to be 1,463 kWh/day.

In addition, if we assume, that the reclaimed water generated from the treatment of Town's wastewater at the Fort Huachuca WWTP will offset groundwater demand, electrical use by Fort Huachuca from groundwater pumping could decrease. Fort Huachuca currently uses an estimated 106 acre-feet/year of groundwater for irrigation of its sports fields. In excess of 200 acre-feet/year of groundwater is consumptively used for such activities as dust suppression, vehicle/equipment washing, fire hydrant testing, and construction water use. These consumptive uses could all be met with reclaimed water. Furthermore, Fort Huachuca greatly expanded its reclaimed water distribution system in 2003 such that the infrastructure exists to distribute reclaimed water to a variety of locations to offset groundwater use.

Alternative 2 – No Action Alternative

The No Action Alternative may not increase electrical usage over existing conditions. During the spring and early summer, Fort Huachuca uses most if not all of its reclaimed water to irrigate the Mountain View Golf Course and Chaffee Parade Field. Since Fort Huachuca will not have access to additional reclaimed water under this alternative, it would continue to pump groundwater to meet some of its water demands that would otherwise be satisfied with reclaimed water. As previously discussed, energy required to pump an amount of groundwater could decrease with the use of reclaimed water. This potential energy savings would not occur under the No Action Alternative.

Alternative 3 – Installation of a New WWTP at the Town's Wastewater Treatment Facility Site

Electrical use to operate the new wastewater treatment plant is estimated to be 400-800 kW per day. Peak demand is estimated to be in the range of 100 kW.

4.27 Summary of Impacts

The following table provides a summary of potential impacts from the alternatives. Resource areas to which no impact would occur have been eliminated from the table. No significant impacts would occur with the alternatives.

Table 1. Summary of Potential Impacts and Mitigation and Avoidance Measures

Resource Area	Potential Impacts Alternative 1 (Proposed Action)	Mitigation or Avoidance Measures for Proposed Action	Potential Impacts Alternative 2 (No Action Alternative)	Potential Impacts Alternative 3 (WWTP at the Town)
Surface Water and Wetlands	Elimination of an estimated 0.4 acres of man-made wetlands located in the existing Town's sewage ponds. Beneficial impact from eliminating the risk of surface water contamination from a raw sewage spill from existing ponds.	None.	Potential of surface water contamination from spillage of raw sewage from existing wastewater treatment ponds.	Elimination of an estimated 0.4 acres of man-made wetlands located in the existing Town's sewage ponds. Beneficial impact from eliminating the risk of surface water contamination from a raw sewage spill from existing ponds.
Floodplain Resources	Minor direct impact due to construction of pond and maintenance building in floodplain. No indirect impacts.	The pond would be constructed with a freeboard of at least 3.5 feet above anticipated 100-year flood water levels preventing a potential breech. The maintenance building will be built on the berm above the 100-year flood water level. A floodplain use permit will be obtained prior to construction.	Direct impact to surface water quality if a floodwaters breech of current ponds occurs.	Minor direct impact due during the installation of the wastewater facility. New WWTP would be elevated to offset potential impacts from flooding. No impacts from discharge pipeline since it would be constructed underground.
Air Quality	Temporary, minor direct impacts to air quality due to fugitive dust emissions and exhaust from heavy equipment during construction. Potential indirect impacts could include increased ozone precursors.	Standard dust suppression techniques, such as watering of active construction areas, stockpiled material, and cleared areas would substantially minimize air quality impacts.	None	Temporary minor direct impacts to air quality during installation of new WWTP and construction of discharge pipeline. Standard dust suppression techniques would be implemented to minimize impacts.

Resource Area	Potential Impacts Alternative 1 (Proposed Action)	Mitigation or Avoidance Measures for Proposed Action	Potential Impacts Alternative 2 (No Action Alternative)	Potential Impacts Alternative 3 (WWTP at the Town)
Vegetation	Minor direct impacts to common vegetation cleared from construction locations. Potentially beneficial impact to vegetation from increasing the volume of recharged groundwater.	Agave plants will be avoided during construction as stated in the USFWS November 2008 letter. Areas along the alignment disturbed during construction will be reseeded using native plant species or accepted sterile seed blends.	None.	Minor direct impacts to common vegetation from the installation of the new WWTP and discharge pipeline. Areas disturbed would be revegetated. Potentially beneficial impact to vegetation along the banks of the Babocamori River due to the year round discharge of treated effluent.
Threatened and Endangered Species and Critical Habitat	No direct impacts. Indirect beneficial impact resulting from an increased recharge to the aquifer contributing to improved base flow of the San Pedro River.	None.	None.	No direct impacts. Indirect beneficial impact resulting from an increased recharge to the regional aquifer, although less than in Alternative 1 due to evaporation.
Groundwater Resources	Direct beneficial impacts from minimizing the risk of groundwater contamination by using a lined storage pond and an increase in effluent that is available for aquifer recharge.	None.	Direct adverse impact due to continued use of unlined ponds, which could result in contaminants reaching the groundwater supplies.	Direct beneficial impacts from minimizing the risk of groundwater contamination by eliminating the unlined wastewater ponds and an increase in aquifer recharge due to discharge.
Hazardous Materials	If previously unidentified on-site hazardous substances are encountered during construction, activities in that portion of the project would cease until appropriate remediation efforts are completed.	None	None.	If previously unidentified on-site hazardous substances are encountered during construction, activities in that portion of the project would cease until appropriate remediation efforts are completed.

Resource Area	Potential Impacts Alternative 1 (Proposed Action)	Mitigation or Avoidance Measures for Proposed Action	Potential Impacts Alternative 2 (No Action Alternative)	Potential Impacts Alternative 3 (WWTP at the Town)
Geology, Seismic Consider-ations, and Soils	Temporary direct impact on soil stability resulting from construction activities. No indirect impacts.	Following construction, disturbed areas would be stabilized per AZPDES requirements.	None.	Temporary direct impact on soil stability resulting from construction activities, although disturbed areas would be stabilized per AZPDES requirements. No indirect impacts.
Historical, Architectural, Archae-ological, and Cultural Sites	Known cultural resources sites occur adjacent to project area on Fort property. No direct or indirect impact is anticipated with implementation of avoidance and monitoring measures.	Known cultural resources sites will be avoided by at least 50 feet, and construction will be monitored. If cultural resources are discovered during construction, activities will stop and consultation specific to these properties will ensue between Fort Huachuca, SHPO, and Native People representatives prior to starting activities again.	None.	Known cultural resources sites occur adjacent to project area. No direct or indirect impact is anticipated with implementation of avoidance and monitoring measures.
Aesthetic Resources	Minor direct impacts due to construction of structures in undeveloped areas. No indirect impacts.	None.	None	Minor direct impacts due to construction of new structures at Town's wastewater treatment facility and at the discharge pipeline. No indirect impacts.
Socio-economics	Minor beneficial impact due to a temporary increase in employment during construction.	None.	None.	Minor beneficial impact due to a temporary increase in employment during construction. Negative financial impact due cost of implementation and operation and maintenance of Alternative 3.
Utilities	No adverse impact on the availability or quality of electrical service would occur. No other utilities would be adversely affected. No indirect impacts.	None.	None.	No adverse impact on the availability or quality of electrical service would occur. No other utilities would be adversely affected. No indirect impacts.

Resource Area	Potential Impacts Alternative 1 (Proposed Action)	Mitigation or Avoidance Measures for Proposed Action	Potential Impacts Alternative 2 (No Action Alternative)	Potential Impacts Alternative 3 (WWTP at the Town)
Transportation and Access	Minor temporary impacts due to traffic delays due to construction of the storage pond and gravity flow pipeline. No indirect impacts.	None.	None.	Minor temporary impacts due to traffic delays due to construction of the storage pond and discharge pipeline. No indirect impacts.
Noise	Minor temporary direct noise impacts during construction for Town's residents and businesses located near the project area. Minor noise impacts would result from the operation of the pond. No indirect impacts.		None.	Minor temporary direct noise impacts during installation of the wastewater treatment plant and construction of the discharge pipeline nearby Town's residents. Minor noise impacts would result from the operation of the plant. No indirect impacts.
Energy	Minor increase in energy use from the aerators installed at the storage pond.	None.	None.	Increase energy required in operating the new WWTP.

4.28 Project Benefits

The Proposed Action would benefit both the Town and the Fort. The Town would benefit by bringing their wastewater treatment facility into compliance with the State-issued Aquifer Protection Permit by switching to the use of a lined pond. The risk of the existing ponds contaminating surface or groundwater supplies would be eliminated. In addition, the Town would not have to take on the financial burden of constructing, operating and maintaining a new WWTP. The area's subwatershed would benefit from the increase in recharge by improving the baseflow to the San Pedro River.

4.29 Short-term Use of the Environment versus Long-term Productivity

The benefit of the Proposed Action outweighs the use of the environment. The new holding pond would be situated within an abandoned existing pond. In return for this minor modification to the Town's WWTP site, the risk of contaminants entering either surface or groundwater from the existing wastewater ponds would be minimized and additional water would be recharged to the regional aquifer, helping to address a regional groundwater deficit and potentially reducing the capture of natural discharge that supports baseflow of the San Pedro River, a portion of which has been designated as critical habitat for the Huachuca water umbel.

4.30 Irreversible and Irretrievable Commitment of Resources

The electrical power required to operate the new wastewater pond would require a minor irretrievable commitment of resources. No other irreversible or irretrievable commitment of resources is anticipated to occur as a result of the Proposed Action.

5. Cumulative Impacts

According to the Council of Environmental Quality Regulations 40 CFR 1508.7, "cumulative impacts are impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

The cumulative impacts identified as part of the proposed project are (1) impacts to air quality and (2) impacts to groundwater. Implementation of the Proposed Action would result in some temporary fugitive dust and reactive organic gases (ROG) emissions during construction. This portion of Cochise County in which the project occurs is in attainment of all national and state ambient air quality standards. Even when the Proposed Action's emissions are considered together with the other development projects in the area, it is not anticipated that the air quality would degrade to a point where the national or state ambient air quality standards would be exceeded. As for groundwater, there will be a direct beneficial impact to local water quality from minimizing the risk of groundwater contamination by using a lined storage pond and increasing the amount of water that is available for aquifer recharge.

In addition, the Proposed Action will allow the Town to increase its wastewater treatment capacity beyond 220,000 gallons per day as limited by the Arizona APP. The additional treatment capacity may aid the Town in making additional sewer connections, thus potentially increasing its population size. This would result in additional groundwater pumping to provide the potable water necessary for new residences or commercial developments. With this said, the impacts to the regional groundwater aquifer from additional groundwater pumping will be minimal since the wastewater generated from the Town will be recharged at the Fort's East Range Recharge Facility and back into the same regional aquifer.

Overall, the negative impacts associated with the proposed action are minor and many are of limited duration. The beneficial impacts associated with the Proposed Action result in a long-term benefit to the regional aquifer and thus to critical habitat in the area. No significant cumulative impacts are anticipated to occur, even when these impacts are considered in combination with the impacts associated with other projects.