ENVIRONMENTAL INFORMATION DOCUMENT FOR

Village of Pecos WASTEWATER TREATMENT PLANT

In the
Village of Pecos
San Miguel County, New Mexico

Prepared for:

Village of Pecos
Drawer 337
Pecos, New Mexico 87552
(505) 757-6511

October 2005

Prepared by:

WILSON & COMPANY
4900 Lang Avenue NE
Albuquerque, New Mexico 87109
(505) 348-4000

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

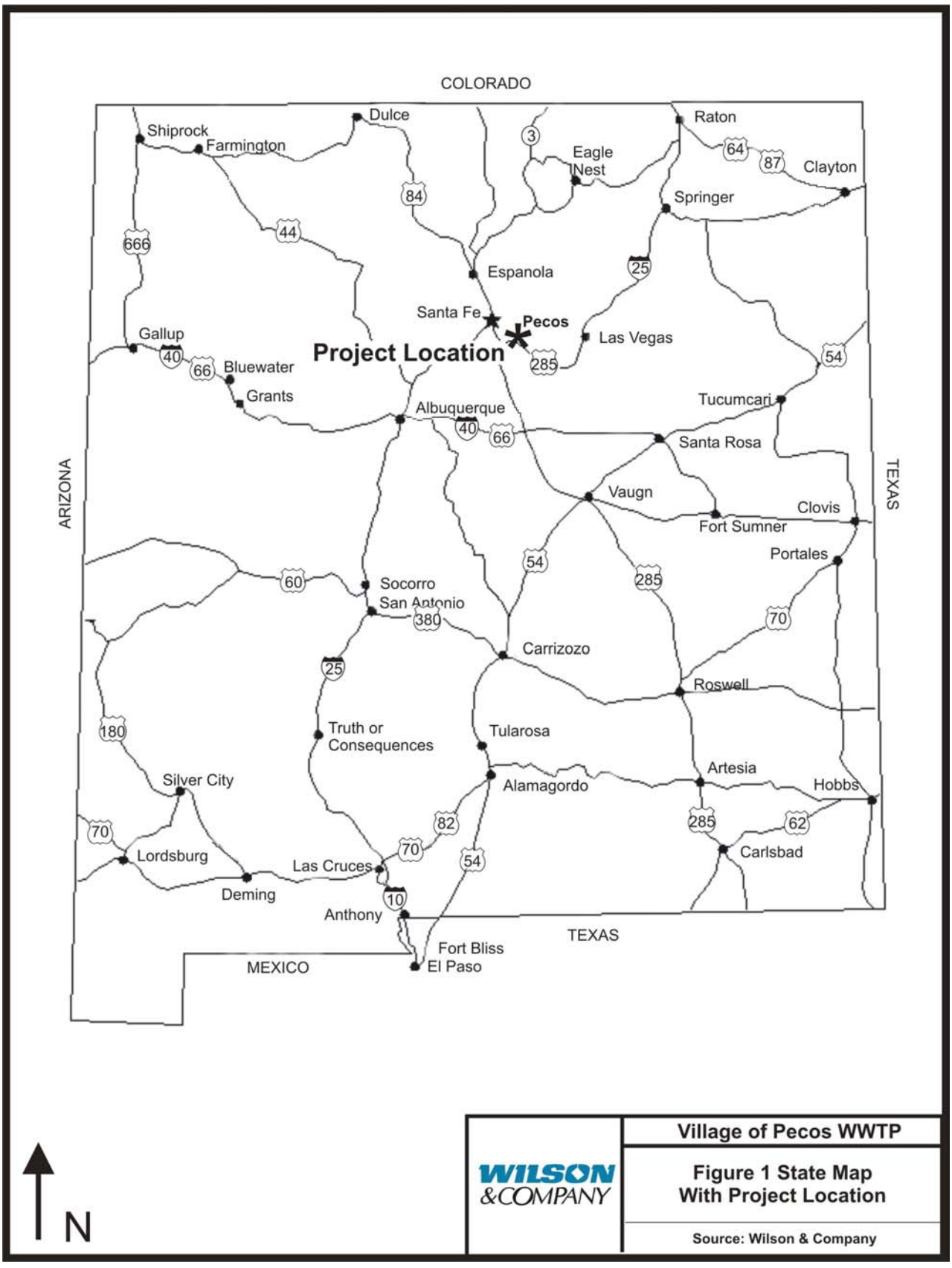
Introduction

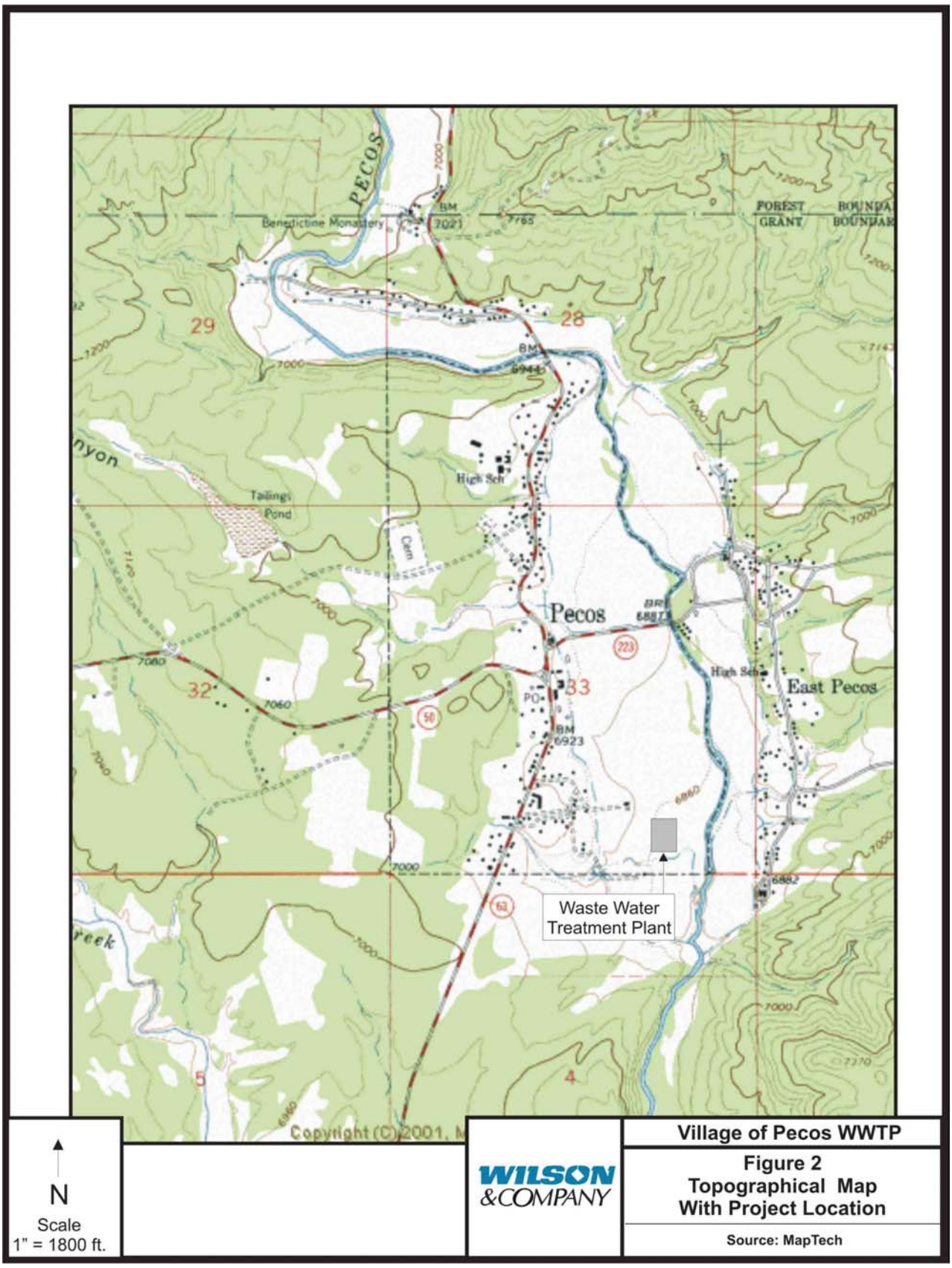
The Village of Pecos is located in the Pecos Valley of the Sangre de Cristo Mountains and to the east of Santa Fe, New Mexico. The Pecos Waste Water Treatment Plant (WWTP) is located in the southeast portion of the Village of Pecos (Pecos), San Miguel County, New Mexico. Figures 1 and 2 show the WWTP location on state and topographic maps. The project is located on the United States Geological Survey 7.5' Pecos, New Mexico Quadrangle. The proposed improvements to the WWTP will occur within the same boundary as the existing WWTP.

The current wastewater treatment system servicing Pecos was built in 1969, and underwent rehabilitation in the 1980's and 1990's. The treatment plant has been experiencing violations of the National Pollutant Discharge Elimination System (NPDES) permit in the past several years. These violations are on the requirements for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS), and fecal coliform levels. Because of these violations, the United States Environmental Protection Agency (USEPA) issued an Administrative Order (AO) in May, 2003, ordering Pecos to take appropriate action to get the WWTP facilities in compliance with the NPDES permit.

This Environmental Information Document (EID) was prepared to document the environmental impacts of improvements to Pecos wastewater treatment facility. It provides information on existing environmental conditions and effects of the proposed project.

This EID will allow Pecos to comply with the AO issued by the USEPA, the National Environmental Policy Act (NEPA) of 1969 (as amended), and other federal and state environmental regulations. This EID is prepared in accordance with standards set by the Safe Drinking Water Act, the Clean Water Act (40 CFR 25), State and Local Assistance (40 CFR 35), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500), and all applicable New Mexico state guidelines. The information compiled for this document followed guidelines provided by the Mew Mexico Environment Department Construction Programs Bureau (CPB) State Environmental Review Process (Revised 8/11/04).


COLORADO
Shiprock
Farmington
Dulce
Raton
Eagle Nest
Clayton
Springer
Espanola
Santa Fe
Pecos
Project Location
Las Vegas
Gallup
Bluewater
Grants
Albuquerque
Tucumcari
Santa Rosa
ARIZONA
TEXAS
Vaugn
Clovis
Fort Sumner
Portales
Socorro
San Antonio
Carrizozo
Roswell
Truth or Consequences
Tularosa
Artesia
Hobbs
Silver City
Alamagordo
Lordsburg
Las Cruces
Carlsbad
Deming
Anthony
TEXAS
Fort Bliss
El Paso
MEXICO
N
Village of Pecos WWTP
Figure 1 State Map With Project Location
Source: Wilson & Company


PECOS
Benedictine Monastery
BM 7021
FOREST GRANT
29
28
BM 6944
Tailings Pond
High Sch
Cem
Pecos
32
33
PO
BM 6923
223
50
East Pecos
Waste Water Treatment Plant
7000
7060
6880
6882
5
4
N
Scale
1" = 1800 ft.
Copyright (C) 2001, M
WILSON &COMPANY
Village of Pecos WWTP
Figure 2
Topographical Map
With Project Location
Source: MapTech

1.0 Purpose and Need for Project

1.1 Project Description

The existing facility consists of headworks and four lagoons. Photos of the existing WWTP are included below. The first two lagoons are for primary treatment by aerators (Lagoons 1 and 2), the third is for polishing the effluent water (Lagoon 3), and the fourth is a contact chamber for chlorine disinfection (Lagoon 4). The proposed treatment plant, intended to improve and eventually replace the existing WWTP will be built within the existing WWTP site. Improvements will be constructed in two phases. Phase I improvements are primarily intended to install new disinfection facilities so the existing facilities can be demolished following Phase II. However, some components of Phase 1 are also intended to bring the WWTP into compliance with the NPDES permit until construction of Phase II is completed. Phase II improvements will complete the necessary construction to replace the existing lagoon facilities with a biological treatment facility. Proposed improvements are as follows:

Phase I

- Refit the existing manual bar screen of the headworks with a new bar screen with mechanical cleaning system.
- Construct new Ultraviolet (UV) disinfection facility at a location between the existing Lagoon 4 and the outfall pipe.
- Reroute piping to the new disinfection facility.
- Demolish and fill Lagoon 4 to the adjacent grade elevation. Sludge removed from Lagoon 4 as part of the demolition will be placed in Lagoons 1 and 2.
- Reroute the influent flow into Lagoon 2, reducing the short-circuiting of flow through the pond and improving overall plant performance.
- Construct new building to house maintenance and office facilities, blowers for the future biological treatment process, and electrical controls for Phase I and II improvements

Phase II

- Construct a new Sequence Batch Reactor (SBR) facility including blowers and all necessary components.
- Reroute site piping from the headworks directly to the new SBR facility.
- Demolish and fill remaining lagoons to the adjacent grade elevation.

All construction will be completed while the existing plant is in operation to provide continuous service. All Phase I improvements will be incorporated into the future SBR facility except the temporary reroute piping into Lagoon 2. The new SBR treatment system will be constructed in the location of the existing Lagoon 4. Once construction of the new treatment system is complete, influent flows will be transferred to the new plant and all wastewater within the existing lagoons (1, 2, and 3) will be pumped into the SBR tanks. After the transfer to the new plant, all components of the existing plant that are no longer necessary will be demolished and removed.

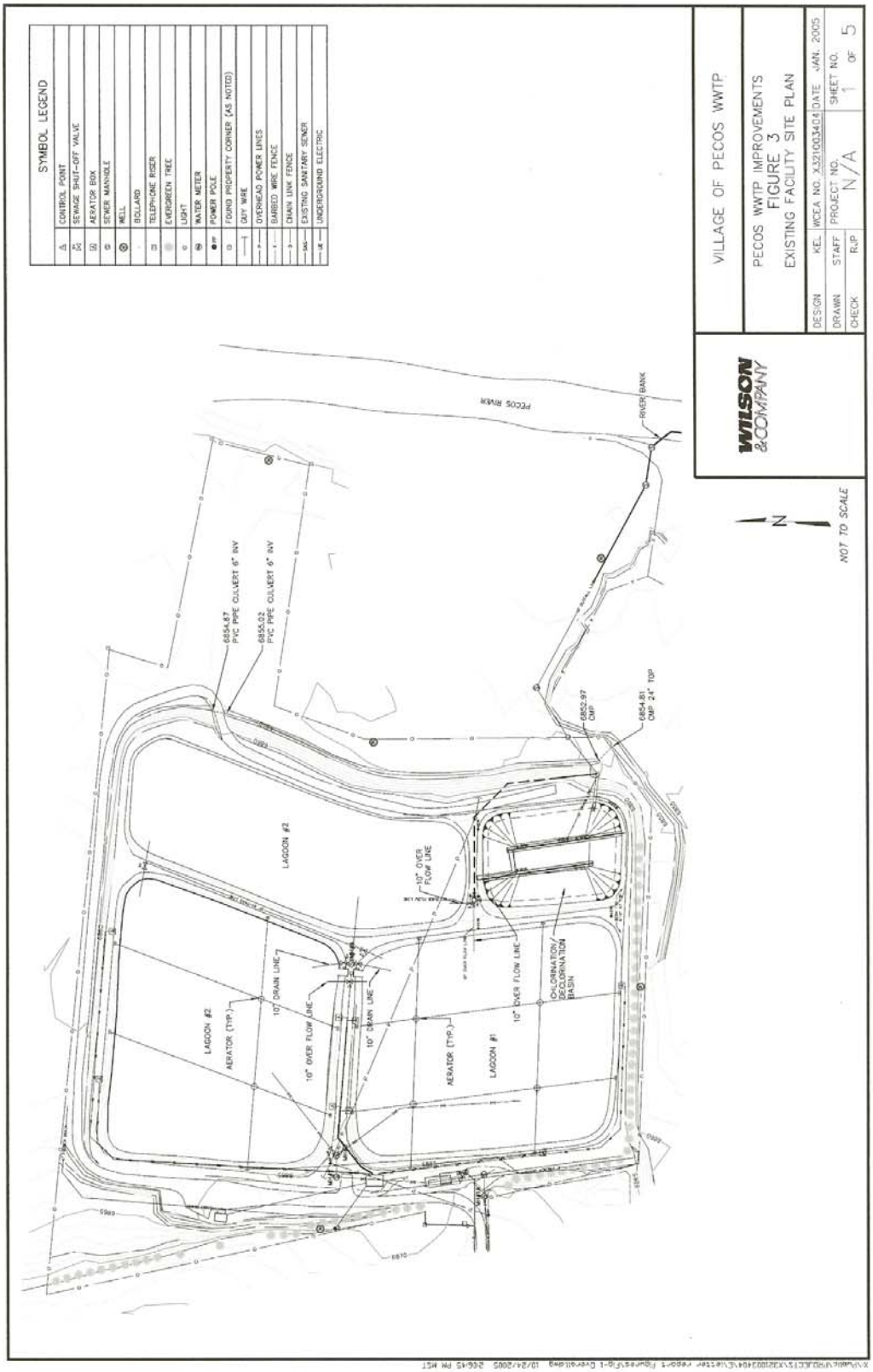
The proposed plant will have a greater capacity than the existing plant in order to compensate for the increased population of Pecos and the surrounding area, as well as, needed expansion of the collection system. Possible reuse of wastewater from the Pecos WWTP is under consideration. The pipelines and reuse system would be

funded and constructed under another project, and are not considered in this document.

Figures 3-5 show the existing WWTP layout, the Proposed Phase I and II WWTP layouts.

Photograph taken to Northwest showing existing lagoons.

Photograph showing lagoons.


SYMBOL LEGEND
CONTROL POINT
SEWAGE SHUT-OFF VALVE
AERATOR BOX
SEWER MANHOLE
WELL
BOLLARD
TELEPHONE RISER
EVERGREEN TREE
LIGHT
WATER METER
POWER POLE
FOUND PROPERTY CORNER (AS NOTED)
GUY WIRE
OVERHEAD POWER LINES
BARBED WIRE FENCE
CHAIN LINK FENCE
EXISTING SANITARY SEWER
UNDERGROUND ELECTRIC
PECOS RIVER
RIVER BANK
6854.87 PVC PIPE CULVERT 6" INV
6855.02 PVC PIPE CULVERT 6" INV
6855.97 CMP
6854.81 CMP 24" TOP
LAGOON #2
LAGOON #1
AERATOR (TYP.)
10" DRAIN LINE
10" OVER FLOW LINE
CHLORINATION/ DECHLORINATION BASIN
VILLAGE OF PECOS WWTP
PECOS WWTP IMPROVEMENTS
FIGURE 3
EXISTING FACILITY SITE PLAN
WILSON & COMPANY
DESIGN KEL
DRAWN STAFF
CHECK RJP
WCEA NO. X321003404
PROJECT NO. N/A
DATE JAN. 2005
SHEET NO. 1 OF 5
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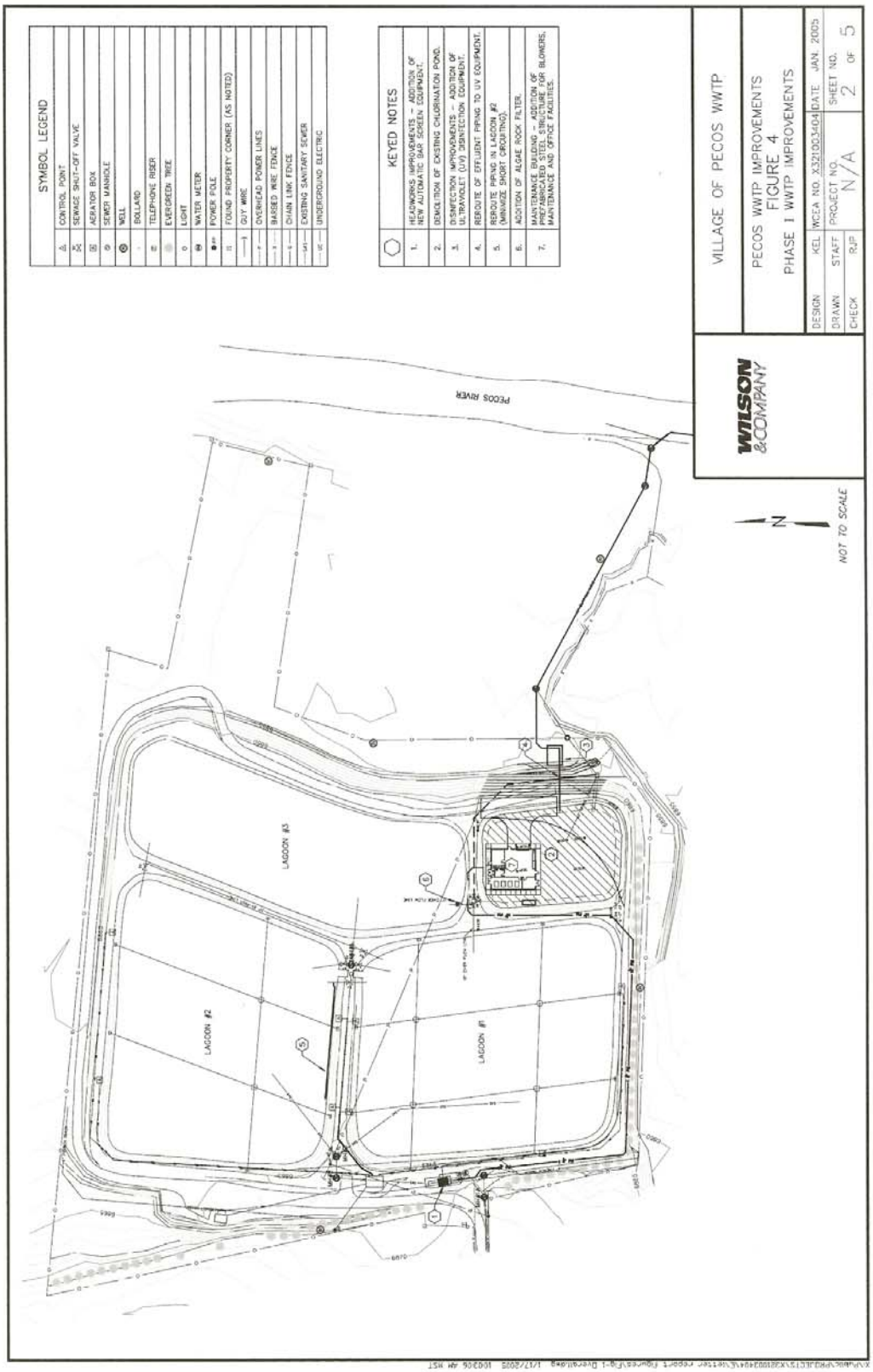
NOT TO SCALE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SEWER MANHOLE
WELL
BOLLARD
TELEPHONE RISER
EVERGREEN TREE
LIGHT
WATER METER
POWER POLE
FOUND PROPERTY CORNER (AS NOTED)
GUY WIRE
OVERHEAD POWER LINES
BARBED WIRE FENCE
CHAIN LINK FENCE
EXISTING SANITARY SEWER
UNDERGROUND ELECTRIC
KEYED NOTES
1. HEADWORKS IMPROVEMENTS – ADDITION OF NEW AUTOMATIC BAR SCREEN EQUIPMENT.
2. DEMOLITION OF EXISTING CHLORINATION POND.
3. DISINFECTION IMPROVEMENTS – ADDITION OF ULTRAVIOLET (UV) DISINFECTION EQUIPMENT.
4. REROUTE OF EFFLUENT PIPING TO UV EQUIPMENT.
5. REROUTE PIPING IN LAGOON #2 (MINIMIZE SHORT CIRCUITING).
6. ADDITION OF ALGAE ROCK FILTER.
7. MAINTENANCE BUILDING – ADDITION OF PREFABRICATED STEEL STRUCTURE FOR BLOWERS, MAINTENANCE AND OFFICE FACILITIES.
PECOS RIVER
LAGOON #3
LAGOON #2
LAGOON #1
N
NOT TO SCALE
WILSON &COMPANY
VILLAGE OF PECOS WWTP
PECOS WWTP IMPROVEMENTS
FIGURE 4
PHASE I WWTP IMPROVEMENTS
DESIGN KEL
DRAWN STAFF
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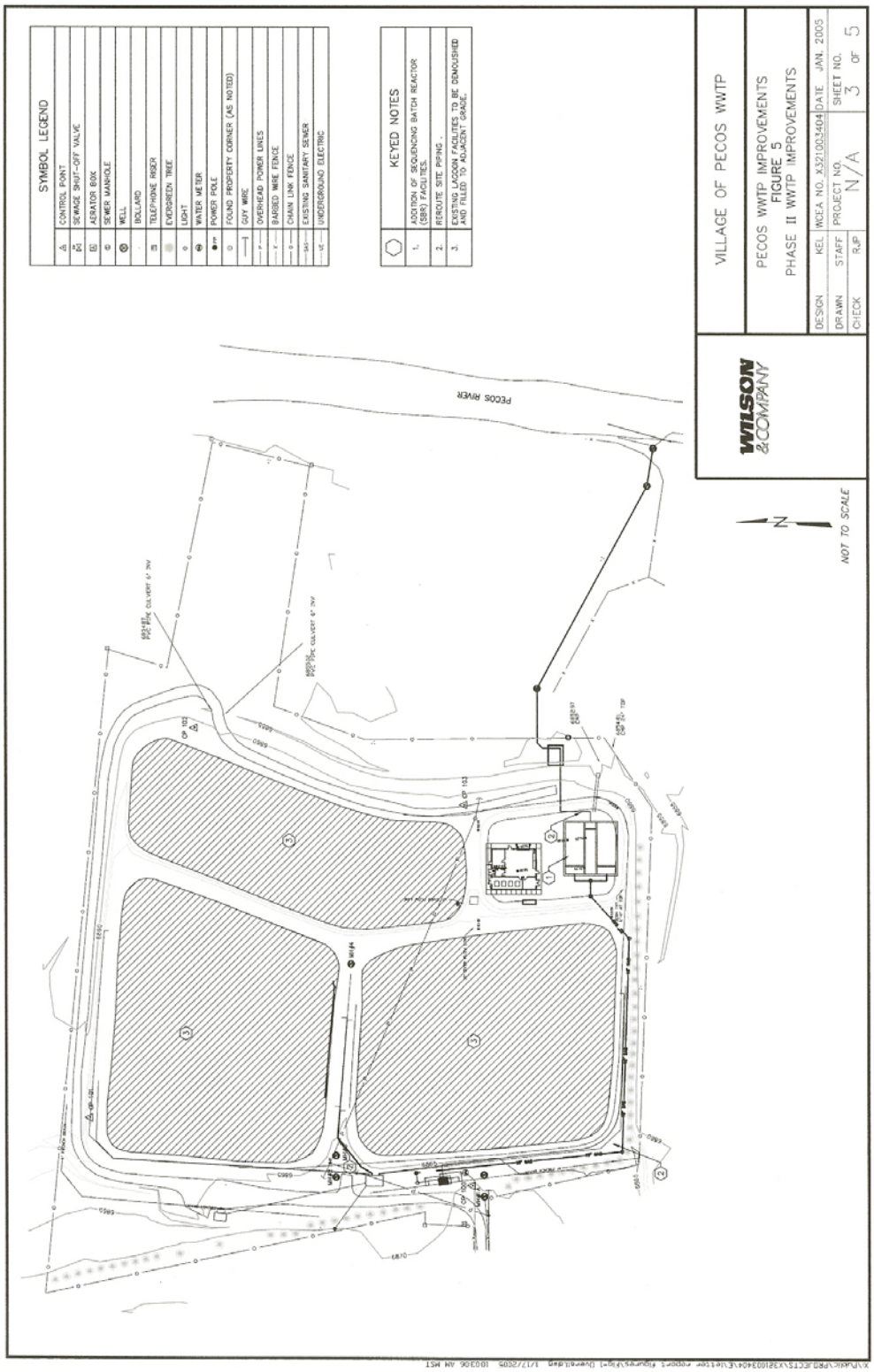
WCEA NO. X3210034.04
PROJECT NO. N/A
DATE JAN. 2005
SHEET NO. 2 OF 5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SEWAGE SHUT-OFF VALVE
AERATOR BOX
SEWER MANHOLE
WELL
BOLLARD
TELEPHONE RISER
EVERGREEN TREE
LIGHT
WATER METER
POWER POLE
FOUND PROPERTY CORNER (AS NOTED)
GUY WIRE
OVERHEAD POWER LINES
BARBED WIRE FENCE
CHAIN LINK FENCE
EXISTING SANITARY SEWER
UNDERGROUND ELECTRIC
KEYED NOTES
1. ADDITION OF SEQUENCING BATCH REACTOR (SBR) FACILITIES.
2. REROUTE SITE PIPING .
3. EXISTING LAGOON FACILITIES TO BE DEMOLISHED AND FILLED TO ADJACENT GRADE.
PECOS RIVER
VILLAGE OF PECOS WWTP
PECOS WWTP IMPROVEMENTS
FIGURE 5
PHASE II WWTP IMPROVEMENTS
WILSON & COMPANY
DESIGN KEL WCEA NO. X321003404 DATE JAN. 2005
DRAWN STAFF PROJECT NO. N/A SHEET NO. 3 OF 5
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1.2 Purpose and Need for Project

The proposed Pecos WWTP project intends to address immediate concerns with effluent non-compliance, bring the WWTP into compliance with the NPDES permit, and improve the reliability of the facility. In addition, the proposed improvements will enable Pecos to further extend its sewer collection system, preserving ground water and drinking water resources.

The Pecos WWTP has been experiencing failures to meet one or more discharge requirements since 1998. In order to keep within permit limits Pecos has prohibited all private septic haulers from discharging into the WWTP and has prohibited any expansion of the collection system. As a result of these restrictions the total flow of wastewater into the WWTP has not increased significantly or exceeded the WWTP total flow capacity since 1998.

Violations of fecal coliform in the effluent at the plant tend to occur in late fall and winter. The first violation of fecal coliform occurred in fall 2000. BOD violations occur regularly in the spring and fall, beginning in 1999. Since 2001 BOD has been in violation of the NPDES permit most of the time. Violations of TSS occur mainly in the spring. The WWTP has not been in violation of TSS requirements since May 2002. However, it is expected that NPDES permit requirements will become more stringent in the future. More stringent requirements will make the Pecos WWTP appear even more ineffective in treating effluent and will most likely result in further permit violations.

Currently, only 80 percent of Pecos residents are serviced by the collection system. The remaining 20 percent continue to discharge through individual septic systems into the rocky subsoil. If all residences in Pecos are connected to the collection system the total flow is estimated at 0.158 MGD, well above the maximum capacity of 0.142 MGD. Due to continued population growth in the area and the proximity of individual septic systems to municipal ground water wells and the Pecos River there is an immediate need for the expansion of the collection system to the remaining residences. The proposed improvements to the WWTP would enable Pecos to complete expansion of the collection system to all Pecos residents.

An inspection report dated March 26, 2003, found the effluent to be cloudy green where it is discharged into the Pecos River. The algal growth extends 15 to 20 feet downstream of the discharge pipe. Lagoons 3 and 4 are bright green in color from the algal growth in both ponds. The algae present in the discharge effluent can be directly attributed to problems associated with the inability of the WWTP to properly treat effluent and meet discharge requirements. In order to protect the river and its ecosystem, it is imperative to eliminate the discharge of poorly treated effluent.

2.0 Alternatives

This section describes the project alternatives considered, including the No Action alternative, the Preferred Alternatives, and those build alternatives that were considered but eliminated. NEPA requires that the No Action alternative be considered to provide a baseline against which the positive and negative effects of the build alternatives are

compared. All alternatives are assessed to determine if they meet the project need and purpose.

2.1 No Action Alternative

The No Action Alternative makes no changes or improvements to the WWTP operations or facility. Only routine maintenance of the WWTP would be allowed.

Lagoons 1 and 2 are primary treatment lagoons. When these lagoons are working in partial series, the wastewater flowing from Lagoon 1 into Lagoon 2 moves quickly into the polishing lagoon (Lagoon 3). This is due to a poor configuration of inlet and outlet pipes in Lagoon 2, causing a reduced treatment time for this effluent and a higher possibility of contaminants in the treated effluent.

In addition to the inefficiencies associated with the existing processes and current permit violations, the existing plant has exceeded the average life cycle of 20-years that most plants are designed for. The age of the plant is a cause of concern due to the increased possibility of plant failure. The possibility of plant failure is a major concern due to the location of the WWTP adjacent to the Pecos River and a municipal ground water well.

The no action alternative does nothing to address the increased possibility of plant failure due to the age of the existing facilities, the inability of the existing WWTP to properly treat effluent and remain in compliance with NPDES permit requirements, or expand the collection system to accommodate the remainder of Pecos residences.

2.2 Preferred Alternative – Partial Headworks Replacement, UV Disinfection, and Sequence Batch Reactor

2.2.1 Partial Headworks Replacement

This alternative will replace the existing manually cleaned bar screen with a mechanically cleaned bar-screen that will empty into a garbage can that would then be hauled to a landfill. The new bar screen will be more efficient than the existing unit and provide more sanitary removal of captured solids. Another improvement at the headworks is the addition of a flow totalizer at the existing Parshall flume. This will improve system operation by providing better data on sewage flow.

The net present value of this alternative is approximately $91,000.

2.2.2 UV Disinfection (Vessel Equipment)

A new ultraviolet (UV) disinfection facility will be constructed at a location within the existing WWTP boundary and between the existing disinfection pond (Lagoon 4) and the outfall pipe. This UV disinfection system will be based on in-pipe vessel equipment. This UV disinfection system will consist of three units in parallel. The third unit is redundant and makes the system more reliable by providing uninterrupted standby disinfection service. This system will treat provide destruction of pathogenic bacteria and reduce fecal coliform levels to meet the required NPDES permit levels.

The net present value of this alternative is approximately $144,000.

2.2.3 Sequence Batch Reactor

The sequencing batch reactor (SBR) is a single-basin process in which a complete-mix process takes place. The basin fills, then undergoes aeration, is allowed to settle, draws off effluent, and then wastes the sludge. Biological Oxygen Demand (BOD) removal, nitrification, and denitrification can also be accomplished in one basin.

The innate behavior of the SBR allows it to handle varying influent waste loads. However, because the basin cannot accept continuous influent during BOD, nitrification, and denitrificaiton, a two-basin design is typical. The cycles are timed so that one of the basins will always be capable of processing incoming wastewater. One advantage of this system is that the footprint is very small, and there is no need for secondary clarification.

The SBR chosen is a hybrid SBR variety that has been used successfully for many years. The basins consist of a pre-react zone, two reaction basins, and a sludge holding basin, all combined in one footprint. The basins will be constructed of concrete, and will be constructed below ground. Due to the configuration and phasing nature of this process, facility expansion would require only additional basins. Existing blowers and pumps from construction of the original SBR will be capable of supporting future basins. Another advantage of this system is that the necessary footprint is relatively small and construction of the proposed facility can be easily accomplished while the existing WWTP is in operation.

The net present value of this alternative is approximately $900,000 for the preferred SBR process.

2.3 Considered Alternatives

Current Pecos WWTP effluent toxicity issues were an integral part of the alternative selection process due to the potential environmental impacts. The use of existing facilities/equipment and new facilities/equipment are both considered options for enhancing the WWTP. A matrix of non-cost factors for biological treatment alternatives was developed to identify the preferred alternative. This matrix included reliability, energy use, expandability, ease of operation and maintenance, process complexity, and implementability.

Alternatives considered but eliminated include improvements to the headworks, disinfection systems, and new biological systems to replace the existing lagoon system. The alternative for the headworks was for replacement with fully mechanical headworks. The considered alternatives to the disinfection system include a Chlorine Contact Disinfection system and a UV Disinfection (Channel Equipment) system. Considered alternatives to the biological treatment system included an Extended Aeration system and an Oxidation Ditch. These alternatives are described as follows.

2.3.1 Mechanical Headworks

Several alternate mechanical systems were considered, including use of washer-compactors. The alternatives eliminated were considered to be larger than necessary for the size of the plant and effluent volume. The washer-compactor was also

eliminated as being not cost-efficient at this time. This unit can be added at a later date as funds are available.

2.3.2 Chlorine Contact Disinfection

The WWTP currently utilizes a Chlorine Contact Disinfection treatment system that dissolves tablets in the influent into the contact chamber. This system is not working sufficiently and a new chlorine disinfection system would be needed. The new system would require a new contact chamber, and all associated equipment for chlorine generation on-site by sodium hypochlorite. Since chlorine residual is not allowed in the effluent water, a chlorine removal system using sodium thiosulfate and a small basin is also required for this system. This system would require the construction of a concrete basin, chlorine and dechlorination generation equipment, pumps and blowers, and a building to house the control panels and generation equipment. It will also require storage of twice the number of bags of chemicals and salt than the system without chlorine removal.

This alternative was eliminated due to cost of the large number of buildings, equipment, etc. needed. In addition, this alternative is more energy consuming and complex than the preferred alternative.

2.3.3 UV Disinfection (Open Channel Equipment)

UV disinfection of effluent water consists of a channel in which a series of UV lights are immersed in the effluent stream. The UV light penetrates cell walls, killing the microbes. This produces no residual in the water, and therefore no further removal step is required. This equipment can be inside a building, or can be placed outdoors.

The UV In-Pipe Disinfection system was chosen over the Channel Disinfection system because it is more efficient, has better retention time, interior baffling, flow mixing, and better UV transmission.

2.3.4 Oxidation Ditch

The oxidation ditch, recognized by its racetrack shape, is considered a viable option for a treatment process serving small communities. The oxidation ditch is especially suited to flows of less than 1.0 MGD design flow for this project is 150,000 qpol. Mechanical aerators circulate wastewater through an oval shaped channel. The process can be operated under extended aeration and with long solids retention (sludge holding). A secondary clarifier is necessary following the oxidation ditch.

The oxidation ditch is an activated sludge process and operates under complete mix conditions. A large microorganism population can be achieved which allows for treatment of wastewaters where varying loads and cold temperatures may be expected, as in Pecos.

This alternative was eliminated from consideration because of the high costs required to expand this system in the future. An identical arrangement would be needed, including all equipment, and a splitter box would be added after the plant headworks.

2.3.5 Extended Aeration

This option consists of a package plant that would include an aeration basin, a clarifier, and aerobic digester. The required basins can be arranged in very compact footprint to fit a small ground area, and is ideal for small communities. This plant is designed as a circular tank divided into several sections, with a clarifier located in the center of the circle. The outer ring sections provide flow equalization, sludge storage, and extended aeration treatment. The plant basin would be fabricated of steel set on concrete footings.

This alternative was eliminated from consideration due to the high cost of expanding this system in the future, an identical arrangement would be needed, including all equipment, and a splitter box would be added after the plant headworks. In addition, if the new NPDES permit requires the WWTP to provide 10/10/10 effluent in the future, an additional tank providing an anoxic zone and gravity filter would be required at the time permit conditions change. This adds additional costs to the WWTP.

3.0 Affected Environment and Environmental Consequences

3.1 Environmental Setting

Pecos, New Mexico is located in the southern foothills of the Sangre de Cristo Mountains and the upper Pecos River Valley. The elevation in Pecos ranges between 6840 and 7000 feet and is 6850 feet at the WWTP. Pecos is located in the southern portion of the Southern Rocky Mountains Physiographic Region. (Dick-Peddie, 1997)

Climate in the project area places Pecos in the Northern Mountains region for climate. The average maximum and minimum temperatures in Pecos are 94 degrees and -12 degrees Fahrenheit. The average annual precipitation in Pecos is 16 inches. Most of this precipitation is received in July and August as monsoon type rains. Pecos has approximately 120 frost-free days per year and receives approximately 42 inches of snowfall annually.

3.2 Land Use

3.2.1 General

Impacts to land use may occur if proposed improvements do not conform to current land use plans or zoning ordinances. The proposed improvements will occur on the existing wastewater treatment site, and within existing utility lines. The WWTP has been located on the project area since 1969. The surrounding area is currently open land and residential. The proposed project will not change any current land uses or have any impact on land values.

3.2.2 Prime Farmland

Correspondence with the Natural Resources Conservation Service (NRCS) was completed to assure there are no prime farmlands within the project area. The NRCS responded that because the new facility is being placed within the boundaries of the existing facility there will be no impact to any prime farmland. (See Appendix A)

3.2.3 Soils

The NRCS and supporting agencies publish soil surveys detailing soil information for public and private lands throughout the United States. San Miguel County soils are detailed in the "Soil Survey of San Miguel County Area, New Mexico", issued in 1981. The Village of Pecos is not included in this official soil survey or in the soil surveys completed by the SFNF or Pecos National Historic Park.

An unpublished "Soil Map for Pecos Pueblo Grant Area" does map soils for the location of the WWTP. However, this map is unavailable from the NRCS. Soils information provided in earlier documentation (Turney and Sayre, 1987) is not specific in location of the existing WWTP and no map was provided. Therefore, it is inappropriate to utilize the information at this time.

No impacts to native soils are expected as a result of the proposed improvements. The existing WWTP is located on a slope and in order to construct the WWTP a considerable amount of fill dirt was placed to level the WWTP site. The proposed improvements will be constructed on this fill dirt and will not impact the native soils.

3.2.4 Formerly Classified Lands

The WWTP is not located in or directly adjacent to any formerly classified lands. There are three such designated areas in the surrounding areas.

The Pecos Wilderness Area is located in the SFNF and to the north of Pecos. The Pecos River, upstream from the Village of Pecos, is designated as both a Wild and Scenic River and as a Recreational River. 13.5 miles of the Pecos River, from its headwaters to the Pecos Wilderness boundary in the Sangre de Cristo Mountains north of Pecos is designated as a Wild River. The next 7.0 miles are designated as a Recreational River. This designation does not extend to the Village of Pecos. Due to the location of these areas to the north and upstream of the WWTP no positive or negative effects will result from the proposed improvements.

The Pecos Historical National Park, located to the south, was designated a national monument in 1965 and a national park in 1990. The national park is located on the Pecos River and downstream of the WWTP. Improvements to the effluent released into the Pecos River and overall quality of water in the Pecos River is important to the national park and will be a positive effect of the proposed improvements.

The proposed improvements to the WWTP will have no negative impacts on any current or planned land use, land values, prime farmland, or soil. No mitigation is required for any of these issues.

3.3 Floodplains

Executive Order 11988 protects designated floodplains from being filled in or removed from the floodplain. The Federal Emergency Management Agency (FEMA) was contacted to get a Flood Insurance Rate Map (FIRM) for the location of the WWTP. However, according to FEMA, there are no available FIRM maps for the Village of Pecos. The Village of Pecos, San Miguel County, and the New Mexico State

Floodplain Coordinator were also contacted to provide mapping of known floodplains. Floodplain maps are unavailable for the Village of Pecos and the project area.

Wastewater treatment plants are considered to be "critical facilities" and have increased regulations for their location in proximity to 100 and 500-year floodplains. Although Pecos's Wastewater Treatment Plant is located in close proximity to the Pecos River, it is located on a filled area above the surrounding ground elevation. No additional surrounding land will be filled; therefore no mitigation for removal of land from a floodplain is needed. In addition, by replacing the existing lagoon system with the proposed WWTP facilities, plant failure during a flood event will be decreased significantly. No impacts to any 100 or 500-year floodplains are expected.

3.4 Wetlands

A field survey of the WWTP was completed in January 2005, to determine the presence of any wetlands. No potential or jurisdictional wetlands were located within the lagoons or the impacted portion of the project area. There is a wetland, characterized by cattails (*Typha angustifolia*), coyote willow (*Salix exigua*), and other hydric plant species located in the far northwest corner of the WWTP site. This wetland area appears to have become established due to a lack of drainage for stormwater and runoff.

A stand of coyote willows is located along the northern WWTP boundary fence. These willows are growing where the overflow water from the wetland makes its way down hill to the east. This stand of willows does not appear to be a wetland.

A second stand of coyote willows is located along the southern property boundary fence. This stand of willows is associated with the irrigation ditch located outside the WWTP property and parallel to the southern fence line.

The proposed improvements do not include the wetland located in the northwestern corner of the WWTP in the area of affect and no additional work is proposed in the wetland location. Therefore, no wetlands will be lost and mitigation is not required.

Wetland located in the northwest corner of the WWTP. Willows and cattails are visible in center.

3.5 Water Resources

Impacts to water quality can occur to surface or ground water if accidental release of effluent occurs.

3.5.1 Surface Water

The Pecos River in the Village of Pecos is classified as use for domestic water supply, fish culture, high quality cold-water fishery, irrigation, livestock watering, wildlife habitat and secondary contact. In addition, the Pecos River provides recharge for a regional aquifer system. Maintaining the water quality in the Pecos River is extremely important. Impacts to surface water quality are a main concern in the planning and need of the proposed improvements.

The Pecos WWTP has been experiencing failures in water quality standards for treated effluent being discharged into the Pecos River since 1998. These failures include elevated levels of fecal coliform, BOD, and TSS. In addition, the treated effluent being discharged into the Pecos River was found to be green and cloudy in March of 2003. This algal growth extends 15 to 20 feet downstream of the discharge pipe and is a direct result of the WWTP inability to properly treat the effluent.

Photograph showing outfall pipe into the Pecos River and algal growth extending downstream.

The elevated levels of these compounds reduce the water quality and overall health of the Pecos River. Mitigation to bring lower the levels of these compounds is required. Construction of the proposed improvements will lower these levels and increase the quality and health of the Pecos River.

3.5.2 Ground Water

Releases to the ground water can occur through holes in the lagoons or other WWTP facilities and pipes or through recharge of the ground water from the Pecos River. There are currently no known releases to ground water from the WWTP plant. However, because the WWTP has exceeded the 20 year life cycle expected for waste water treatment plants the possibility of future failures is increasing.

The Village of Pecos is located in the Pecos River Basin (above the Gallinas River). The water in the Pecos River provides recharge to a large continuous regional aquifer system. The recharge area extends from the headwaters of the river down through the Roswell Artesian Basin. This recharge occurs through fractures and dissolutions in the underlying sedimentary rocks of limestone, shale, and sandstone. The aquifers in the project area are considered to be relatively protected from potential surface water contamination. However, it is of great importance to prevent any wastewater pollution from reaching the underground aquifers.

Ground water contamination can also come as a result of septic systems and the inability of the ground/soil to properly treat and filter the leach material before it reaches the ground water. Twenty percent of residents in Pecos discharge through individual septic systems into the rocky subsoil. The existing WWTP is unable to service all the residences due to the maximum capacity of the WWTP. There are currently concerns that effluent from the individual leach fields is reaching the ground water and municipal ground water wells. Eventually this ground water also mixes with the Pecos River. There is an immediate need for the expansion of the collection system to the remaining residences. The proposed improvements to the WWTP would enable Pecos to complete expansion of the collection system to all Pecos residents.

3.6 Coastal Resources

There are no coastal resources in the project area; therefore no impacts will occur to any coastal resource as a result of the proposed improvements.

3.7 Air Quality

Air quality is currently an issue at the WWTP due to the odor of the wastewater during treatment. The NMED Air Quality Bureau was contacted for any comments regarding the improvements to the WWTP (see Appendix A). According to the Air Quality Bureau, San Miguel County is currently considered in compliance with National Ambient Air Standards. The proposed improvements will make the treatment process more efficient. It is therefore expected that the new treatment process will reduce the odor and improve the overall air quality for those areas in close proximity to the WWTP. Due to earth moving activities, air quality may decline temporarily during certain stages of construction of the proposed improvements. No negative impacts to air quality will occur and no mitigation is required.

3.8 Biological Resources

3.8.1 Vegetation

Vegetation at the WWTP varies greatly throughout the property area. The majority of the WWTP property has, at different times, been disturbed by construction and other activities. Only one area of the WWTP property is relatively undisturbed. This area is located in the northeast corner of the WWTP property. One additional area in the northwest portion of the WWTP property has been undisturbed for a long amount of time and has become a wetland area due to the presence of an irrigation ditch and drainage issues associated with the irrigation ditch. A second irrigation ditch is located outside the project area directly adjacent to the southern property boundary fence.

Pecos is located in the Coniferous and Mixed Woodland vegetation type (Dick-Peddie 1993). Vegetation in the project area is consistent with this vegetation type. Vegetation in the project area seen in the main portion of the WWTP include mostly native grasses and small forb species, including annual brome grass (*Bromus tectorum*), western wheatgrass (Agropyron smithii), blue grama (Bouteloua gracilis), pigweed (*Amaranthus hybridus*), kochia (*Kochia scoparia*), scarlet globemallow (*Sphoralcea coccinea*), Russian thistle (*Salsola kali*), alfalfa (*Medicago sativa*), annual

sunflowers (*Helianthus annuus*), mullein (*Verbascum thapsus*), and wavyleaf thistle (*Cirsium undulatum*). Shrub species located within the project area include bigelow sage (*Artemesia biglovii*) and coyote willow. Three species of trees are located within the project area. Several cottonwoods (*Populus deltoids* ssp. *Wislizenii*) are located in the wetland area and Rocky Mountain junipers (*Juniperus scopulorum*) are located in the northeast corner (the undisturbed portion of the WWTP property). The third tree species is an ornamental juniper type tree that was planted by the Village of Pecos to provide landscaping and visual aesthetics to the WWTP.

No noxious weeds were found during the biological survey.

The biological survey was completed in January 2005, outside the growing season for Pecos. It is expected that numerous other annual and some perennial plant species can be found on the WWTP. Disturbance of the ground will result in the temporary loss of vegetation from the soil surface. However, the proposed improvements will result in the permanent fill of the lagoons and provide more suitable habitat for native plants. No permanent negative impacts to native vegetation will occur.

3.8.2 Wildlife

Wildlife presence at the WWTP is limited due to the location of the WWTP and a six foot chain link fence that surrounds the WWTP property. The WWTP is located in behind a residential area and in the center of Pecos. Wildlife that may occur on the WWTP property includes birds, rodents, rabbits, and other small animals.

Several ravens were seen in a group of cottonwood trees in the northwest corner of the WWTP. A group of ducks was seen on one of the lagoons during the biological survey. The ducks live at the WWTP for part of the year and don't migrate any further to the south. In addition, trees located in the northeast corner of the WWTP property provide suitable nesting habitat for other bird species. No birds or nests were seen in the trees during the biological survey.

No small animals were seen during the biological survey and no burrows, holes, or other signs of small animals were seen.

No negative impacts are expected to occur to any wildlife species as a result of the completion of the proposed improvements.

3.8.3 Threatened and Endangered Species and Migratory Birds

To determine the presence of sensitive species in the project area, federal and state natural resource agencies were consulted. In addition, websites of the United States Fish and Wildlife Service (USFWS) Endangered Species List, the New Mexico Game and Fish (NMGF) Biota Information System of New Mexico (BISON-M), and the New Mexico Rare Plant database provided by the New Mexico Rare Plant Technical Council (RPTC). Agency correspondence and the species lists are included in Appendix A. The pedestrian field survey conducted in January 2005, of the WWTP site also surveyed biological resources and for the presence of sensitive species.

The USFWS, under authority of the Endangered Species Act (ESA) of 1973 (as amended), maintains a list of animal and plant species that have been classified as endangered, threatened, candidate, or as a species of concern. Candidate and species of concern are not afforded protection by the ESA but are considered possible candidates for federal protection. The USFWS provided a list of the species that are known to occur in San Miguel County or that have designated critical habitat within San Miguel County. The USFWS recommends that we consider candidate and species of concern in our surveys. Candidate species, as well as those species of concern, may decline in numbers due to certain activities. Species considered sensitive by the NMGF or Species of Concern by the FWS are included in the species lists provided by the FWS and NMGF in Appendix A.

The Migratory Bird Treaty Act protects all migratory birds, prohibiting the taking of migratory birds or their nests or eggs.

Consultation with NMGF was also conducted. Because the proposed improvements to the WWTP will be completed within the current property boundary of the existing WWTP, NMGF does not have any concerns regarding the presence of any threatened or endangered species.

Twenty-three animal species known to occur within San Miguel County were identified as being threatened or endangered by either the USFWS or the NMGF. One plant species known to occur in San Miguel County was identified by the USFWS as being federally threatened or endangered. Six additional plant species were identified as rare by the RPTC. These species and their federal or state designations are included in Table 1.

Table 1 – List of Sensitive Species

Common Name	Scientific Name	Agency Status *		Present/Absent
		Federal	State	
American marten	*Martes Americana origenes*		T	Absent
American peregrine falcon	*Falco peregrinus anatum*		T	Absent
Arkansas river shiner	*Notropis girardi*	T/CH	E	Absent
Baird's sparrow	*Ammodramus bairdii*	SC	T	Absent
Bald eagle	*Haliaeetus leucocephalus*	T	T	Absent
Black-footed ferret	*Mustela nigripes*	E	Ex	Absent
Boreal owl	*Aegolius funereus*		T	Absent
Broad-billed hummingbird	*Cynanthus latirostris magicus*		T	Absent
Brown pelican	*Pelecanus occidentalis carolinensis*		E	Absent
Common black-hawk	*Buteogallus anthracinus anthracinus*		T	Absent
Gray vireo	*Vireo vicinior*		T	Absent
Holy ghost ipomopsis	*Ipomopsis sancti-spiritus*	E		Absent
Lake fingernailclam	*Musculium lacustre*		T	Absent
Least shrew	*Cryptotis parva*		T	Absent
Long fingernailclam	*Musculium transversum*		T	Absent
Mexican spotted owl	*Strix occidentalis lucida*	T	S	Absent

Common Name	Scientific Name	Agency Status *		Present/Absent
Mountain plover	*Charadrius montanus*	SC	S	Absent
New Mexico stickseed	*Hackelia hirsuta*			
Paper pondshell	*Utterbackia imbecillis*		E/Ex	Absent
Pecos fleabane	*Erigeron subglaber*		R	Absent
Pecos mariposa lily	*Calochortus gunnisonii var. perpulcher*		R	Absent
Sapello canyon larkspur	*Delphinium sappellonis*		R	Absent
Spiny aster	*Eurybia horrida*		R	Absent
Southwestern willow flycatcher	*Empidonax traillii extimus*	E/CH	E	Absent
Suckermouth minnow	*Phenacobius mirabilis*		T	Absent
Weatherby's spikemoss	*Selaginella weatherbiana*		R	Absent
White-eared hummingbird	*Hylocharis leucotis borealis*		T	Absent
White-tailed ptarmigan	*Lagopus leucurus altipetens*		E	Absent
Whooping crane	*Grus Americana*		E	Absent
Yellow-billed cuckoo	*Coccyzus americanus occidentalis*	C		Absent

Due to the concerns of the USFWS and the RPTC, all candidate, species of concern, and species considered to be rare were also given consideration during the field survey. No candidate, species of concern, threatened, endangered or rare species were found during the field survey and there is no designated critical habitat for any of these species located within the project area. The only migratory birds found in the project area were ducks that spend a portion of the year living at the WWTP. These ducks are not migrating as expected and are not nesting at the WWTP. It is assumed that following construction of the proposed improvements to the WWTP the ducks will resume a more natural migration pattern. No mitigation for the ducks is recommended. No impacts will be made to any sensitive species and no mitigation is required.

3.9 Socio-Economics and Environmental Justice Issues

Executive Order 12898 was issued on February 11, 1994 and intends to address concerns over disproportionate environmental and human health impacts on minority and low-income populations. The impetus behind environmental justice is to ensure that all communities, including minority, low-income, or federally recognized tribes, live in a safe and healthful environment.

The existing WWTP has been in its current location since 1969. All improvements to the WWTP will be completed within the existing property boundaries. The proposed improvements will eliminate the current release of toxic material into the Pecos River and will therefore increase the health and safety of communities and environment located downstream from the WWTP. In addition, the proposed improvements are expected to reduce the odor of the WWTP and improve overall air quality in the area near the WWTP. No negative impacts will be made to any community including minority, low-income, or federally recognized tribe and no mitigation will be required.

3.10 Other Resources

3.11.1 Public Health and Safety

The health and safety of the public is the primary concern for completing the proposed improvements to the WWTP. Current failures in proper waste water treatment pose a health risk to the public, as well as the environment as a whole. The proposed improvements will eliminate the existing risks to the public health and safety and ensure that the WWTP can continue to operate safely in the future.

3.11.2 Energy

Improvements to the WWTP will require more energy to operate. The energy consumed by the WWTP is an unavoidable loss of natural resources. However, the energy is available for the WWTP and is necessary to improve the quality of treated effluent released into the environment.

3.11.3 Transportation

No changes to transportation in Pecos or the immediately surrounding area will occur.

3.11.4 Visual Impacts

Impacts to visual resources may occur if the proposed improvements cause permanent modifications that change the appearance of the WWTP, its landscaping, or substantially alter the views available to residents or other individuals. Due to the topography of the WWTP and the surrounding area the WWTP is relatively hidden from view. The proposed improvements will cause minimal change to the visual aesthetics of the WWTP. In addition, the improvements to the WWTP will not alter the view of any residence, roadway, business, etc. No negative impacts will occur as a result of the completion of the proposed improvements.

3.11.5 Noise Quality

Noise quality is not considered to be an issue with the operation of the existing WWTP. Noise levels are not expected to increase as a result of operation of the proposed WWTP. Noise levels during construction will increase temporarily. In addition, no residential areas containing sensitive receivers are located near the WWTP site. Because no permanent negative impacts to any receivers are expected and no sensitive receivers are located within the project vicinity, no mitigation for noise is required.

3.12 Cumulative Impacts

Cumulative impacts to the environment are impacts caused as result of the proposed improvement in combination with other continuous actions or projects and any known future actions or projects. Cumulative impacts have been considered and have been determined to be only those impacts caused by this improvement project itself. There are no other ongoing actions or projects within the project area and no known future projects within the project area.

The most significant cumulative impact of operation of a WWTP within a watershed is water quality. The proposed improvements to the WWTP will improve water quality downstream of the treatment facility. Cleaner and safer discharges will enhance aquatic ecosystems, provide safer recreational facilities, and provide healthier irrigation waters.

The modernized wastewater treatment plant and collection system will be able to handle increased flows from projected population increases, and meet or exceed effluent standards specified in the NPDES permit.

4.0 Summary of Mitigation

Construction of the proposed improvements to the Pecos WWTP is not expected to have any negative impacts on any social, economic, or environmental resources. Completion of the proposed improvements will, however, improve the quality of water discharged as treated effluent, as well as, air quality. These improvements will also eliminate the existing toxicity problems in treated effluent discharged into the Pecos River, and reduce the chance of plant failure. In addition, the new WWTP will run more efficiently and maintenance costs will be lower.

Because no negative impacts are expected to occur no mitigation is necessary.

5.0 Consultation, Coordination, and Public Involvement

5.1 Agencies Consulted

Agency correspondence was completed in accordance with the guidelines recommended by the CPB for preparing environmental information documents. Agency scoping letters were sent to several interested agencies and Native American organizations to request comments and concerns with the proposed improvements.

Responses have been received from fifteen agencies and two Native American groups. None of the responding agencies have significant concerns or expect negative impacts as a result of the construction of proposed improvements to the WWTP. Table 2 provides a list of all responding agencies and Native American organizations with their comments and concerns.

A complete list of all agencies and Native American organizations sent scoping letters and an example scoping letter are included in Appendix A. A complete Agency Coordination Tracking Table is also included in Appendix A.

Table 2. Agency Responses and Comment Summary

Agency	Comment
State Historic Preservation Office	No concerns if improvements stay within the existing WWTP boundary.
New Mexico Department of Cultural Affairs, Historic Preservation Division	
NM Environmental Department (NMED), Environmental Review Coordinator	Supportive. (See NMED agencies below.)
NMED, Air Quality Bureau	San Miguel County is currently in attainment with National Ambient Air Quality Standards.
NMED, Ground Water Quality Bureau	Supportive. Recommends incorporating improvements into new permit applications.

Agency	Comment
NMED, Surface Water Quality Bureau	Supportive. Make sure there is a back-up power source.
New Mexico Department of Game and Fish	No anticipated impacts to wildlife or sensitive habitats. Minimize the number of trenches and leave animal escape ramps if open over night.
United States Fish and Wildlife	Request that we include candidate species and species of concern in our surveys and that all construction occurs outside the migration period of March to August if possible.
NM Energy, Minerals, and Natural Resources – Forestry Division	No concerns. No sensitive plant species are located in the project area.
Natural Resources Conservation Service	No comments on WWTP.
National Park Service, Pecos National Historic Park	No concerns.
US Forest Service, Santa Fe National Forest	No concerns.
NM State Engineer's Office	Improvements do not involve the State Engineer's Office.
US Army Corps of Engineer	Any discharge of materials into Pecos River will require Nationwide Permit 404 application.
NM Department of Transportation	No comments on WWTP.
Pueblo of Isleta	No impacts to religious sites will occur. Would like notification of any Native American findings during construction.
Comanche Tribe NAGPRA	No concerns. Would like any archeological reports completed and notification of any human remains found during construction.

5.2 Public Involvement

The Village of Pecos has been planning improvements to the WWTP for many years. Documentation was completed in 1987 to expand the WWTP. The plan for expansion of the WWTP was not constructed. However, public involvement at that time included a public hearing. The residents of Pecos were in favor of making improvements to the WWTP at that time.

Since May 2003, Pecos has been under Administrative Order to make the needed changes and bring the WWTP into permit compliance. Since this time Pecos has been involved with getting funding and professional services to make the necessary improvements. The Village of Pecos holds Village of Pecos Board of Trustees meetings every month. These meetings are open to the public with the agenda and meeting information posted in Pecos. Improvements to the WWTP have been included on every monthly meeting agenda since December 2003. Several examples of the meeting minutes have been included in Appendix B.

In addition, due to the current restrictions on adding additional sewer service from residents to the WWTP there are residents waiting for construction of WWTP improvements to get sewer service. Residents waiting for sewer service include those residents along Rincon Road, in Pecos. Residents along Rincon Road have been contacted by the Village in preparation for future sewer line placement and are extremely excited about the propose improvements.

The public involvement plan for this project is based on several factors including known support from residents, limited changes to visual aesthetics, and numerous other quality of life improvements for the residents in Pecos. The EID will be published and put forward for public review. The EID will be available to the public at the Village Offices and the Pecos Post Office. A public hearing will only be scheduled if requested by the public.

5.3 Responsiveness Summary

The Village of Pecos has had a very positive response from both agencies and residents regarding proposed improvements to the WWTP. Agencies that have responded with comments have had no special concerns or issues regarding construction of the improvements. These agencies have voiced their support of the project and given direction and recommendations.

Through Village of Pecos Board of Trustees meetings and individual contact with Pecos residents, a positive response has been received. Residents currently using leach field septic systems that are waiting for Village sewer service are very excited about the improvements to the WWTP. Improvements to the WWTP must be completed before any additional residences can be added to the Village sewer service.

Any additional responses and comments from agencies and the public as a result of the public review of this document will be taken into account and responded to appropriately with a letter of receipt of the response and any additional information that was requested. Additional comments and Wilson & Company responses will be attached to this report as an addendum.

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