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Nevada Circuit Rider Program

Year End Report for July 1, 2001 – June 30, 2002

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Core Communities

ALAMO

Lift Station

Alamo is a town showing it age. The CDBG funded PER was completed this year and AMEC did a good job on the updated PER. With the PER in hand, Alamo received a $200,000 grant from CDBG. This amount is sufficient to replace the aging lift station.

Roger Hatch is somewhat troubled with the proposed use of submersible pumps. The preliminary design has 3500RPM Flygt submersible pumps. With three thousand feet of four-inch force main, the pumps will need to operate at 140 feet TDH. This high a head may make submersible pumps a poor choice. The Circuit Rider will be assisting Alamo and AMEC during the design phase as requested.

Sewage Collection System

The 104(g) Circuit Rider assisted the engineer with the PER. Special attention was given to producing a map after locating most manholes. Roger has yet to have the county crews locate the manholes that were paved over.

Years of pump failures and blockages have allowed solids to accumulate throughout the sewage collection system. Flushing is warranted but the poor condition of the lift station is the main concern and will delay this project.

The sewage collection system is in good condition. A good set of maps showing line sizes, flow direction and construction material is very much needed. Many of the manholes are not located in paved areas and they can easily be lost or damaged.

Treatment Plant

Efforts were undertaken to measure the sludge depth in the primary pond. Sludge accumulation is not excessive. With the pond in continuous service for thirty years, solids accumulation should have mandated removal at an earlier date. Solids buildup is limited by the shallow pond depth, and the use of floating aerators with deep mixing and turbid pale green color that can limit algae production.

AUSTIN

Sewage Collection System

Rural populations are on the decline, which limits the impact on the collection system. The plant operator has a good understanding of the system and years of experience. Problem areas are well understood and receive routine inspection. Most sewers are in good repair.

Ray plans to make improvements to the plant headworks. The cover for the headworks vault was recently removed to improve access and ventilation. Grit removal and better flow monitoring are also needed. Grant funding should be pursued to accomplish these tasks.

Treatment Plant

The treatment plant is located in a difficult area. Land contours are extreme with large areas of cut and fill. The plant site is capable of receiving heavy overland storm flows. A bypass ditch routes storms flows around two sides of the large primary pond. Routine maintenance is required to insure that storm flows stay outside the treatment pond. The ditch is nearly flat on the north side and silt deposits easily from minor storm events. It appears that the north ditch is nearly full and needs immediate attention to avert problems.

The Austin pond is located at an extremely high elevation. Pond performance can be severely affected by cold winter weather. Over the last few years there has been mild weather and better overall treatment. Cold weather causes a cessation of treatment and heavy loads during the spring activation period. The generally lower flows and infrequent dosing of the disposal ponds allows samples to be collected when conditions meet the discharge requirements.

Better weed control is needed. The pond berms appear to be in good condition. A steep slope on the interior berms keeps cattails mostly under control. A few stands of cattails and bulrush have been established and special attention is needed. Weed growth in the disposal ponds has obscured their visual presence. It is no longer easy to define the locations due to the heavy growths of sagebrush. Even with the heavy growth, removal is not warranted at this time. Infrequent dosing allows little impact by the standing brush. Removal might prompt erosion or other difficulties.

BAKER

Sewage Collection System

Little attention has been given to the collection system. The newness of the system and the frequent flushing has assured few problems. An inspection of the system will be completed during the next year's visitation schedule.

Treatment Plant

Baker is experiencing a minor decline in population. This is unfortunate for the community and the treatment plant. The anticipated wastewater flow never materialized mainly because the Great Basin Park failed to build a facility in town.

The operator has found ways to compensate for these lower flows; outlet structures have been sealed to stop leakage. In addition, routine flushing of the sewer adds to the pond

depth. Many years in continuous service of the same primary pond has also helped seal the pond and add to the operating depth.

Fluctuating pond depths seem to deter the growth of cattail and bulrush. Weeds are heavy but none are woody types of plant growth.

Plant conditions were excellent. There was great color with no odors and an operating depth of about four feet near the end of the summer.

BEATTY

Treatment Plant

Beatty is a well-operated system with a very talented manager. Jim Weeks has been with the system over ten years and brings a lot of energy to the system.

Beatty has seen a thirty percent plus reduction in population. Jim has done a fine job preparing for the population change. He took full advantage of the population boom and now reaps the rewards of future planning. During the boom, water and sewer were improved as much as possible. The sewage plant was modified to a single pond with two large disposal basins.

A recent inspection completed by the NDEP has raised a few concerns about plant performance. Beatty has hired a consultant to help with a few of these problem areas. The 104(g) Circuit Rider will assist with these endeavors as requested.

CALIENTE

Sewage Collection System

Sewage flows have remained stable and better mirror the current population (170,000 – 250,000 GPD). Infiltration is still present but greatly reduced by the addition of the groundwater drainage system.

There are three or four areas in town where the sewers are poorly designed. This leads to slow flows and grease buildup; blockages occur routinely. Blockage rarely lead to spills since the system has more than one route available when the sewage level in the affected manholes rises.

Grease is still a major factor with blockages. It appears that low spots allow grease to adhere to the pipe. As bacterial action takes place the buildup eventually breaks loose in large pieces and this easily contributes to downstream blockages. Funding should be sought to redesign and construct these problem sewers. Monies are available if the solution can be defined and costs determined.

Labor is not always available to keep the sewers in good condition. Efforts were undertaken in recent years to investigate grease handling by large contributors. It was found that a grease ordinance was needed to insure that grease traps and grease interceptors were installed and cleaned routinely.

Treatment Plant

Effluent CBOD and TSS values have been controlled by greatly reducing aerator run times. It appears that by only operating a single aerator on the first aerated pond, the effluent quality can meet permit limits consistently.

The three treatment ponds operated in series after the first treatment pond will require no supplemental aeration. This is very much evidenced by the fact that the first pond attains a solid green color. Low sewage flows and low strength allows natural treatment to do the bulk needed for sewage stabilization. The single operating aerator in the first pond is used as much for mixing and control of floating material as it is for supplemental aeration. Over-aeration has led to a decrease in effluent quality, although odors in the first pond can occur without the use of at least one of the four mechanical aerators.

In an effort to achieve a better balance, the raw sewage is now split between two ponds (ponds one and three). This will reduce the overall load on the first pond and could allow all mechanical aeration to be turned off.

Treated effluent from the last treatment pond is discharged into storage pond #1. Nutrients discharged into pond #1 allows for some algae growth, which adds to turbidity. This is beneficial because it keeps aquatic plant growth under control. This benefit is not afforded to storage pond #2. It's extremely clear condition allows vegetation to flourish. We are starting to become concerned that the vegetation will migrate to pumping equipment and discharge irrigation equipment. Larry indicated that this has already occurred.

It may be possible to add chemicals to the ponds and kill the unwanted growth. Copper sulfate addition could be a solution. The chemical could be added at the end of the irrigation season when pond levels are lower requiring fewer chemicals.

Staffing, completing needed repairs and site maintenance are serious problems for the facility. As the system ages, additional attention is needed. Just the opposite is occurring. Competing needs for other city services has limited manpower availability. Poor initial attention to underground electrical connections and the effects of high groundwater on vaults and equipment has caused many of the recent system failures.

The City may want to seek grant funding for these nagging problems. There may be enough work involved to warrant an expense of $10,000-$20,000.

ELY

Treatment Plant

The Ely treatment plant is now on line. Improvements centered on treatment and solids handling.

The new aeration basin employs some innovative aerator design. The new submersible aerators provide a fine bubbler pattern with minimal mixing. Most aeration equipment provides too much mixing for the amount of oxygen provided. The big problem appears to be the reliability of the aerators themselves. We do not get the sense that these units have proven reliability.

The Circuit Rider spent quite some time at this facility. Even with this effort we were unable to get the process on track.

Some of the problems appeared to be with the clarifier; it appears to be undersized and weir overflow rates looked excessive. Solids would overflow the weirs even when the rest of the clarifier was clear. This would indicate a hydronic jump or short-circuiting.

Management of the aeration basin was also difficult. Both MLSS concentrations and aerator run intervals were difficult to determine for best operation. This is very unusual for a new facility. It appears that it will take some time for the bugs to be worked out.

Solids handling is accomplished with a new centrifuge. This requires a myriad of complicated equipment that could prove difficult to maintain in a town like Ely.

EUREKA

Sewage Collection System

The condition of the older sewers has yet to be addressed. Many sewers are older and in questionable condition. Sewers on the south side of town are located on the hillside and flow at a much steeper grade providing fewer chances for problems to develop.

Treatment Plant

There has been little need for the plant expansion with the decrease in mining activity. Only one of the two treatment ponds is in service and discharges to the disposal ponds occur only during the cooler months.

The pond effluent structure continues to concern me. Discharging at the surface could allow debris to clog the line or ice buildup to impede flow. In addition, poorer effluent quality usually occurs at the surface.

Both disposal basins were not constructed with a level bottom, which can decrease capacity. The inability to intermittently dose the basins creates other problems. With the current low flows, the disposal basins are hardly used.

The influent flow meter is an ISCO unit and may not be the most durable type. Cold weather is hard on the meter and battery power supply. This unit has not always been in continuous service. Calibration may also be difficult to assure.

GABBS

Sewage Collection System

The sewage collection system is in reasonably good condition. The generally low flow in many areas requires periodic flushing to insure unimpeded flow. Very little attention has been paid to the collection system in the past few years; a lack of money is the main reason. Gabbs is a community without a full time operator. Stan Howerton is providing the city his services with an agreement between Tonopah and the county. The Gabbs office manager has expressed an interest in becoming the certified operator for the system.

Treatment Plant

Gabbs is a community without a full time operator. Stan Howerton is providing the city his services with an agreement between Tonopah and the county. The Gabbs office manager has expressed an interest in becoming the certified operator for the system. Certification assistance has already been provided and will continue if desired.

Treatment is accomplished in a simple aerated facultative pond. A total of six ponds have been constructed and are available for use. Sewage flows have diminished to the point where a single pond can achieve a proper operating depth with minimal overflow to the second pond. During the warmer months, overflow ceases from high evaporation in the first pond.

Water quality appears excellent. The past operator spent much time controlling weeds and shaping the berms. Dry weather has minimized berm erosion. Although the pond site is currently in good condition, this will quickly deteriorate without the proper attention.

GOLDFIELD

Sewage Collection System

The sewage collection system was recently inspected and found to be wanting.

The water distribution system was in even worse shape and required immediate attention. Replacement of nearly the entire water distribution and storage system is now complete.

Attention can now be focused on the sewage collection system. With the recent TV inspection and cleaning, the needs of the collection system are well understood. The USDA rural development has made a financial investment in this community and I'm sure this effort will continue.

Treatment Plant

The sewage treatment plant consists of two equally sized facultative ponds. It is not possible to operate the two ponds in series because the lead pond cannot handle the loadings. As constructed, it is difficult to split the flow to both ponds. The best alternative has been to alternate lead ponds. This method of operation has provided consistent results with minimal attention.

The influent flow meter has been troublesome. The factory has seen this meter a few times. It does appear that recent efforts have provided better accuracy.

MCGILL

Sewage Collection System

Efforts continue to replace most of the sewage collection system. The existing system is failing, undersized, has poor access and is not constructed with legal right-of-ways. The new system will complement the nearly new wastewater treatment plant. In the new sewage collection system the major portion of the sewage will reach the treatment plant by gravity flow.

Treatment Plant

The treatment plant consists of a single aerated pond with a fabric partition. Aerators are run mostly at night when the demand is higher. McGill can be a very cold place. During a cold winter, ice cover can be so severe that aeration provides little benefit. The aerator near the inlet can be in use but the remaining aerators are "iced in" for the season. Treatment can be delayed until the spring warm up and may affect effluent quality. Effluent quality has been excellent during the last few average winters.

The five disposal basins have ample capacity. The infrequent dosing insures that the basins are never flooded and only remain wet while dosing.

Groundwater monitoring wells were not constructed to intersect groundwater. Wells are dry unless the adjacent disposal basins receive flow for a prolonged period. If operated in this fashion, nitrates can be detected. The monitoring wells are in very close proximity to the disposal basins and are only influenced by effluent disposal.

PIOCHE

Sewage Collection System

The sewage collection system dates back to the fifties. Manholes are made of brick with vitrified clay pipe. The Circuit Rider has not inspected the system for years. When last done most of the system was in near new condition.

Growth on the north side of town is provided sanitary sewer service. The collection system serving this side of town is constructed of modern materials. Growth is also taking place in areas not currently connected to the city system. Water service has been provided to these areas but sewer services would require the use of a lift station.

Treatment Plant

The in-service secondary pond is nearly surrounded by tall stands of bulrush and cattails. Without extensive weed barriers installed on the berms, weed growth is nearly impossible to control. A low cost alternative to this expensive reconstruction is to alternate ponds every three to five years. Since only one secondary pond is needed, removing the in-service pond from service would cause weeds to die out and allow time for minor repairs.

The plant operator may switch ponds this fall and return pond two to service. This pond has not been in use for the past four years.

TONOPAH

Sewage Collection System

The potable water system is slated for major improvements. This will greatly benefit the community but it will also add to the debt load and increase user fees. With much of the sewage collection system in poor condition, it may be too expensive to replace without a high

percentage of grant funding. Monies are now available to complete a PER for the sewerage system. This document should help give direction to management and lending agencies.

With the lower sewage flows, the system should be able to get along for years before replacement becomes a reality. The city crew has a good understanding of the major problem areas. Crews are routinely clearing blockages and keeping the system flowing.

Treatment Plant

The upcoming sewer system PER should help give guidance to the utility. Special attention needs to be given to regulatory goals, which may mandate future improvements. The NDEP appears to struggle with allowing a larger discharger to achieve only primary treatment.

This facility fails to consistently remove constituents mandated by the discharge permit. In addition, solids wasted to the sludge drying beds do not match process removal efficiencies in the permit or achieved from actual test results.

Up to ten percent of the plant effluent surfaces a mile or so below the plant. Although, this spring water appears to be in pristine condition, nitrogen values mirror a very high concentration of treated wastewater.

WINNEMUCCA

Sewage Collection System

Consistent growth from 1988 through 2000 has nearly doubled the size of the collection system. These new areas of service employ modern materials in near new condition.

Sewage lift stations are used throughout town. Of the approximately 1.0 MGD of daily sewage flow, it appears that only a small percentage has to be pumped. Even with these circumstances, these stations are aging and will require eventual replacement/rehabilitation.

Many sewers are older and require more attention. The sewers with the highest concern are located in the lower end of town in high groundwater.

Treatment Plant

The five treatment ponds provide consistent treatment to secondary standards. The ponds and related equipment are well operated and maintained. Weed control is excellent and requires a monumental effort.

Nitrogen removal is not a part of the treatment process. The monitoring wells are placed between the ponds and the Humboldt River. Nitrogen measured in these wells is not sufficient to take the remedial steps required in the discharge permit.

Since the treatment plant does consistently discharge about 20 ppm of ammonia, this nitrogen must be going somewhere. The City's consulting engineer is going to make an effort to try and determine how the river influences effluent disposal.

YERINGTON

Sewage Collection System

Yerington has experienced growth but it has slowed in recent years. The city has a progressive government and has been proactive in most areas in which they govern.

The collection system is in good shape for its age. The town has two lift stations. All of the town's sewage is pumped to the plant site from one of these stations and its condition must be insured at all times.

Treatment Plant

Effluent quality has consistently met state requirements for many years. The plant is well operated and maintained. The operations staff has been with system for many years and has a good understanding of operations and maintenance requirements.

Effluent disinfection requires periodic special attention to insure compliance with state requirements. This consists of flushing the very long larger diameter discharge main, which terminates at the wetlands. By terminating plant discharge for a few days, followed by a high rate of discharge that employs both of the effluent pumps, the effluent line can be cleaned of any settled material. If allowed to accumulate, the settled solids place a higher demand on the disinfectant and reduce its effectiveness.

Native American Communities

BATTLE MOUNTAIN BAND

Sewage Collection System

OLD TOWN

This area is dominated by high groundwater. A small hole in one of the manholes was providing up to ten GPM to the daily flow. This has been repaired. The problem was not all bad since it did allow the in-service treatment pond to attain a better operating depth. The pond levels have receded since the repair was completed.

The collection system is in good repair overall; cleaning is needed and is long overdue.

A single lift station serves the Old Town area. This is a newer unit with duplex Flygt pumps. I will be assisting the operator with flow monitoring of this station during the 2002-2003 contract period.

NEW TOWN

The collection system only serves a few homes and is in good condition. This site receives all of the flow from the Old Town lift station and flows through the gravity system and into the second lift station.

This second lift station pumps all the raw wastewater to the plant site. A failure of this new housing lift station would disable the Old Town system since the Old Town sewage has to be re-pumped to the plant site.

This new housing lift station has always had questionable reliability. The station appears to be homegrown without a major manufacturer. Station controls are poorly designed and poorly maintained. A power converter is used since three-phase power is not available. This is a low head station but pump failures occur frequently.

Treatment Plant

The minimal operating depth allows cattails to grow throughout the pond. Treatment is made difficult by the weeds and inadequate depth. Samples are not collected and there are no standards in place.

DUCKWATER

Sewage Collection System

Not all of Duckwater is connected to the sewer system. About forty structures have septic tank systems. We have assisted the community in their efforts to pump these tanks and handle the solids.

The collection system is in good condition. The operator needs to do routine inspections since we have found blockages. Debris found in the system should not have been able to enter through normal means. This indicates a problem somewhere, possibly vandalism.

Treatment Plant

The treatment plant consists of two equally sized ponds and a large secondary/disposal pond. Current flow allows for the use of only a single primary pond. The pond level is down; discharges to the secondary pond never occur. Pond levels are too low to insure proper treatment occurs at all times.

The operator has removed weeds and shaped the berms. A large tree was removed from the in-service pond but has been proven difficult to kill.

MOAPA

Sewage Collection System

NEW TOWN

The new housing collection system is in excellent condition. All manholes have been located and inspected. Some minor debris was found and easily removed.

All sewage from the new housing flows to a lift station for transport to the treatment plant. Site maintenance at the station is excellent. The condition of the duplex pump station is good but hour meters and cycle counters are needed to verify proper pump operation.

OLD TOWN

The Old Town area has an aging collection system. Its construction makeup is not well understood. The main interceptor is constructed of vitrified clay pipe. Few manholes exist, especially in the housing area. This hampers inspection. Blockages do occur and are sometimes resolved by excavation.

Treatment Plant

NEW TOWN

Efforts were undertaken to help with modifications to the plant site. The in-service treatment pond is very much oversized. A smaller pond adjacent to the in-service pond would provide adequate depth for proper treatment. To use this pond, a new inlet line would have to be installed. The operator feels that this could be done in-house with minimal expense.

OLD TOWN

Weeds have been removed and one of the two ponds drained. This effort was very much in need. Weeds were totally out of control. When the pond was drained, it was found to have minimal operating depth. Efforts to restore the pond are underway.

STILLWATER

Sewage Collection System

The collection system is in great shape. Two lift stations pump all sewage to the plant site. Each station pumps independently into a common force main.

Both lift stations are package units manufactured by Gorman-Rupp. My only concern is that the recessed stations are mounted directly over the wetwells. If a problem develops with the concrete wetwell covers, repairs are made all the more difficult. In addition, access to the wetwell is very much limited with the narrow barrel riser that leads to the wetwells.

Treatment Plant

The four-pond system consists of two equally sized primary ponds and two disposal ponds. The treatment ponds provide adequate treatment and remain full to overflow throughout the year.

Each individual treatment pond has insufficient capacity to provide treatment for the daily flow. The lead pond must be alternated at least monthly to insure that overloading does not occur.

The effluent disposal ponds have adequate capacity. High groundwater can impact these ponds during the winter months.