

## **Brief History of Colonial Pine Hills Sanitary District**

The Colonial Pine Hills Sanitary District (District) was organized and incorporated in 1983. Under South Dakota law a Sanitary District is a governmental entity with taxing authority and is operated under the statutes listed in SDCL 34A-5.

At the time of its incorporation the District included only the Whispering Pines subdivision that included Colonial Village Estates, Highland Hills, Whispering Pines and Pinewood Estates excepting homes on Highland Hills Drive that are not adjacent to Dunsmore Road. Prior to incorporation there were four community water systems that served this area. They were the Dunsmore system, Naylor system, Croyle system and the Highland Hills system. The Dunsmore system contained two 45,000 gallon concrete storage tanks. The new District were either deeded or purchased all but the Highland Hills system. It still operates as a separate community system on Highland Hills Road.

Over the years the three systems that came into the District were consolidated with interconnecting mains and all three wells were operated into the early 2000s. In 1993 Countryside South (CSS) was acquired by the District. This added two wells (Clarkson and CSS Main) and a 150,000 gallon concrete storage tank. Besides the homes within the CSS development, the acquisition included an additional eight homes in the Stonecrest addition, three homes on Bing Drive and five homes on Clarkson Road plus the Fire Station.

At the time of the CSS acquisition, and for several years after, the District maintained two distinctly separate water systems at differing pressures. With the acquisition the District Board increased from three to five Trustees. As time went by it became apparent that the developers of CSS did not adequately plan on enough water for the development and in 1995/6 they drilled a third well (Conifer). This was done before the development was built out.

But even after the drilling of the third well it was apparent that the storage capacity was not enough to provide for the roughly 180 homes. CSS was controlled by a rigid set of covenants (still current) that required green grass in the yards. Most of the yards were seeded or sodded with water hogging grass. In the late 1990s during the hot summer months CSS ran out of stored water almost nightly even with restrictions in place. By late 2000 the moaning and groaning of the CSS residents were so great that four of the District Trustees resigned in frustration.

In January 2001 a District Trustee election was conducted. There were eight candidates competing for four positions. As a side note four of the candidates resided in CSS and the other four resided in Whispering Pines (WP). All four Whispering Pines candidates won. This is not surprising when you look at the demographics. There were more voters residing in WP and they came out and voted. At any rate a new Board was seated. This Board threw away all resistance to spending money and all options were on the table. The first thing they did was hire an Attorney and an Engineer to guide them thru the concerns. For more than a year the Board met twice a month (first and third Tuesdays) at the Fire Hall and it was generally filled with residents.

At the time the employees consisted of two part time system operators, a part time District Clerk and a contracted Treasurer. Over the course of 2001 the Board hired a part-time temporary Manager. The person they hired had previously been the Manager of the Rapid Valley Sanitary District. The Board was warned that she was difficult to work with but hired her anyway on a four-month contract. She proved difficult and her contract was not extended. The Board then hired Jim Martin, who was already the District Clerk to be Manager. Along about this time the Treasurer retired and Martin inherited that job as well.

The twice monthly Board meetings were quite contentious with the CSS residents wanting more water storage capacity or more water quantity. The WP residents were concerned that CSS was getting all the attention. The Engineer did a very in-depth study of the problem and presented a lengthy set of options. At the time the Attorney investigated to see if the developers of CSS could be liable for the water shortage.

By the end of the year the Board had made three decisions: 1) Hired Weston Engineering of Upton, WY to evaluate current wells to ensure water availability was maximized; 2) Drill a new well on Lot 9 in WP (Nonanna) and lay an new eight inch pipeline down Dunsmore Road to carry water to CSS storage tank hooking up 38 homes with new services along the route; and 3) to sue Builder's Development, developers of CSS, for lack of water infrastructure quantity.

Weston Engineering evaluated the wells and determined that acidizing the Clarkson and Conifer might break up the formation enough to develop additional water. This did help the Clarkson slightly but did not affect the Conifer. Although this evaluation was somewhat expensive it did give us a better picture of our water sources.

The drilling of a well with a new pipeline was a costly objective but there were really no realistic alternatives. The District applied for, and received, a State Revolving Fund loan in the amount of \$633,844.65 with a 20 year term at three percent interest. This is SRF I. The repayment is to be made from water sales revenue and the repayment is \$11,070.80 quarterly.

Drilling of the Nonanna by Taylor Drilling was done in 2002. It is a Madison aquifer well pumping about 150 gallons per minute. RCS Construction built the well house. Mainline Construction laid an eight-inch pipeline down Dunsmore Road and hooked into the CSS main in the southeast portion of CSS. This was the first inter-connection between the two systems. Thirty eight homes along the pipeline route were given new services off the pipeline. This increased water pressure along the route significantly. However, this spelled the end of the Naylor well as its head pressure was not enough to pump against the higher pressure of the main and the water output of the Naylor was not enough to justify the cost required to upgrade the pump and motor. The Naylor has had all equipment and power removed but the well house is still there. It has been abandoned for all practical purposes although not capped.

When the Nonanna well was put into service in early 2003 this created two pressure zones in WP; low pressure for all except the 38 homes along Dunsmore serviced by the new pipeline and high pressure for those 38 homes. Pressure in CSS did not change.

A lawsuit was filed against Builder's Development. After months of affidavits, testimony from many people and tons of documents Builder's Development asked to settle out of court. Our Attorney recommended the settlement since, after the death of one of Builder's Development's Principal, the assets of the company had been dispersed and the company effectively no longer existed but they still had insurance but there were limitations on that. To make a long story short, a settlement took place in 2004 where the District was awarded \$705,000. This money was deposited and earned interest while the District decided what to do with it.

After considerable thought it was decided we needed to increase the size of our water storage capacity. The highest point in the area that was available was at the south end of Spring Canyon Trail, next to the CSS concrete tank. In acquiring the land for the new tank, the owner of the land agreed to trade the land (.96 acres) for the following: 1) We would hook him up to our system (He lives on Clarkson Road); 2) We would annex into our District some 45 acres of land (on both sides of Clarkson Road); and 3) We would allow up to six new hook-ups on this property in the future. The District agreed to this. Over the next year we negotiated the legal aspect of the agreement, hooked up his home to our system (about \$17,000) and hired Engineering America to build a 504,000 gallon glass lined steel storage tank. The top of the water column is about 43 feet.

At this time we were getting some flak from WP that all our attention was on CSS and that WP had needs also. With this in mind we designed and built a Pressure Booster Station at the WP Main (old Dunsmore well) with a pressure reducing valve along with a redundant setup at the Nonanna well house. This allowed us to move high pressure water into the low pressure zone and boost low pressure water to the high pressure zone. This essentially eliminated the two distinctly separate systems. At this point the District was a single water system.

Money from the lawsuit paid for the storage tank and the Booster Station. And we have never ran out of water since.

In the 2005/6 time frame we begin to look at the looping of several pipelines where we had deadends. We looked at looping Clarkson Road back to Barberry Circle, looping Snowberry Court, Barberry Court and Daisy Lane, looping Kerry Drive, Pinewood Drive and Croyle Avenue. We spend some \$35,000 surveying and designing the CSS looping. But other priorities got into the way of making this happen. The engineering is still on the shelf but not accomplished.

In 2008 the Board decided, suggested by the Engineer, that the production output of the Nonanna well might be increased by putting a larger horsepower pump/motor in the formation. This was done along with some pipe racetrack to increase chlorine contact time. The production increased from some 140 gpm to 165 gpm.

In 2008 there was intense rain between the District and Sheridan Lake along the Spring Creek watershed. After several years of near drought conditions flooding came and brought runoff from the farms into Spring Creek. One of the recharge zones for the Madison Aquifer is along Spring Creek just to the south of the District. In the early 2000s the USGS had completed a survey of the Madison Aquifer recharge zones with a series of dye testing when the creek was high. They had drilled several test wells to check for the dye. In one of the tests we had dye in the Naylor well within some six hours of the insertion of the dye into the creek. Further testing by the USGS revealed what they believe is an underground river that runs up from the creek under the Naylor well, just to the east of the Nonanna well and on a slightly east but mostly northern course toward Rapid City. They told us that should Spring Creek flood we would likely see dirty water rather quickly.

We had abandoned the Naylor well in 2003 but in 2008 we began to get dirty water in the Nonanna. We shut the well down immediately. The turbidity was at least 50 most of the time for about two months or more. We ran water to waste and tested it often and had samples sent to a lab in Denver to identify the particles in the water. Most were sediment of farmland with some ecoli. Once it stopped raining and flooding the well cleared up. After a couple of rounds of testing without problems we began using it again. Things were good until the following spring. 2009 brought us rain and new flooding. This time the Nonanna did not recover.

The State was out several times to assist and to test but the turbidity remained high and there was sediment but this time no ecoli. But the State ruled that the Nonanna well was ground water under the influence of surface water. This ruling then required that our turbidity be at or below 0.3 rather than a higher number allowed in ground water. We shut the well down and looked for another source.

The Board decided that drilling another well was the only answer to the problem. We looked at available places to drill and negotiated with land owners but in the end we purchased the land on Croyle Avenue for \$70,000 to drill what has become the Croyle II well. The financing for this well came from another State Revolving Loan of \$763,608.00 for a term of 20 years at an interest rate of three percent. Repayment is required to come from water sales revenue and the payments are \$12,561.30 quarterly. This is SRF II.

The Croyle II well was drilled by Taylor Drilling. We hoped it would bring in about 200 gallons per minute but upon drilling the production was only about 50 gallons per minute. After discussion it was decided we would attempt to fracture the formation. We rented six 5,000 gallon water tanks and brought in a frack truck from Gillette. We put food dye into the water tanks so we could monitor other wells in the area. The frack truck inserted this water and some diluted hydrochloric acid at some 3,000 psi into the formation and it fractured almost immediately. Dye was only seen in one well over on Dunsmore Road out of four monitored.

After getting the fracking truck out and putting the drilling rig back in we soon realized we had a well capable of pumping close to 200 gallons per minute. The well house was constructed by SECO

Construction and an eight- inch pipeline was laid by Quinn Construction from north of the old Croyle access road to Nonanna Street. The well house was designed with an extra bay to house a filtering system should the Croyle II become contaminated like the Nonanna. This well went into service in late 2010.

There was always some concern that we had a well (Nonanna) that was not producing any water but we still had an outstanding debt in the SRF I. At the end of 2010 that principal was slightly over \$432,000. So the Board looked for ways to filter the Nonanna water. Several options were considered but eliminated after discussion as being impractical. After lengthy discussion it was decided that we should construct a filtration treatment system in the space at the Croyle II well house and pipe the raw Nonanna water to it. The Engineer estimated that it would cost some \$705,000. It was decided that we would need a loan but wished to repay it with property tax revenue.

The County Auditor was approached and she told us what we needed to do to Opt Out of the tax system we currently were in and receive the revenue required. We held a Public Hearing to discuss with the people what we were proposing and then held a bond election for the tax assessment. The bond passed and we were on our way to receiving some \$120,000 annually in property tax revenue. We then applied for another State Revolving Loan in the amount of \$705,000 for a term of 20 years at an interest rate of three percent. Repayment would be from property tax revenue in the amount of \$24,766.02 semi-annually. This is SRF III.

After this loan was approved the Engineer decided that the sediment filters he has originally proposed would not be adequate for our purposes. He then recommended we purchase a micro-fiber filter skid similar to the ones used by Rapid Valley Sanitary District that takes water right out of Rapid Creek at a turbidity level of up to 200 and filters down to almost zero. Several of us visited the RVSD filtration treatment site and decided that was the way to go. Also about this time the Board decided to take the six inch raw water line down Pinewood Drive rather than Croyle Avenue and lay a new eight inch pipeline with 20 new services and loop it back over to Croyle Avenue. These two pipelines would be laid in the same trench.

But the money was short for this adjusted project. So the Board applied for a new State Revolving Fund loan in the amount of \$400,000. This loan was approved in 2015 and is for a term of 20 years at an interest rate of three percent. Repayment is made via a \$6.00 surcharge to each resident's water bill monthly. Repayment is in the amount of \$6,667.29 quarterly. This is SRF IV.

In May of 2018 the District completed the construction of an office building that had been in planning for 15 years. It is an office with an oversized, heated garage with a floor drain. The building has an office for the manager plus a conference table and several desks and filing cabinets. There is a rest room and a place for a small refrigerator and cabinet and shelf for a microwave and/or coffee maker. The floor plan for the building was designed by Jim Martin. Construction was done by Complete Concrete and the architectural drawings by Chamberlin Architects. The cost, including furnishings, was \$375,000. This project was paid for out of cash-on-hand. Over a period of several weeks following

completion most of the District's administrative and operational assets were moved into this building, along with all personnel. We even have our monthly Trustee meeting in the conference area.

In 2020 we began a multi-year project to replace all of our water meters with a Kamstrup Digital Radio-Read meter. There had been a years-long search for the right equipment for a small system and Kamstrup appeared to fit well. It is a Danish company that has a long track record with electronic meters in Europe who introduced their product to the USA in 2018. The meter has a higher volume flow of water than the comparable Sensus meter and does not require a separate smartpoint box to be installed on the side of the house. The Kamstrup meter transmits a signal from its location to a receiver driving down the street. One selling point for this meter is that it records the meter reading at mid-night on the last day of the month and that is what we read. Billing then will have a consistent cycle of a month at a time. There is also a reading that can be taken at any given moment and the meter holds some 420 readings that can be accessed should we require that information. As of the end of July of 2022 we have some 332 new meters installed of the total 430 meters.

Written and edited by Jim Martin, with assistance from Darlayne and Myron Buchli. They were present when the District was organized and suffered thru the frustrations and growing pains of the fledging system. Thank you.