Southwest Pipeline Project Transfer of Ownership

North Dakota State Water Commission

April, 2020

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Certification

Southwest Pipeline Project Transfer of Ownership

North Dakota State Water Commission

Apex Project Number 18.110.0178

Certification

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.

Mike Berg
Signature

Mike Berg
Typed or Printed Name

4/8/20
Date

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1.0 Introduction

The Southwest Pipeline Project (SWPP) is in Southwest North Dakota serving all or portions of approximately 13 counties. These include Adams, Billings, Bowman, Dunn, Golden Valley, Grant, Hettinger, Mercer, Morton, Oliver, Slope, Stark and a portion of McKenzie County. Additionally, the SWPP provides wholesale water to Missouri West Water System in Morton County and to Perkins County Rural Water System in South Dakota.

Southwest North Dakota is an area with limited water resources. Groundwater, where available, is generally of a poor quality and the small rivers in the region have flows that are considered inadequate for development. The SWPP was conceived to bring high quality treated Missouri River water to users in this area. It was initially planned to be a wholesale water supply system, servicing only entities under contract, such as cities and rural water systems within the project area. The SWPP was later expanded to service individual rural customers to improve overall efficiencies.

The SWPP is owned by the North Dakota State Water Commission (SWC). Preliminary planning and design began in 1981 and construction was authorized in 1985. Continued construction on the project is dependent on funding from the North Dakota Legislature and is anticipated to continue through 2028. In 1996, Operations and Maintenance (O&M) responsibilities of the SWPP were transferred to the Southwest Water Authority (SWA) through a Transfer Agreement. The SWA is a political subdivision governed by a 15-member board of directors.

1.1 Purpose

In April 2019, the SWC authorized this Ownership Transfer Study in order to determine the advantages and disadvantages of transferring not just O&M responsibilities, but full ownership of the SWPP from the SWC to the SWA. The study has been divided into two phases. Phase 1 will investigate the current Capital Repayment model of the SWPP and develop possible alternatives. The effect of those alternatives on water rates will be discussed. A comparative analysis of the capital financing model and governance model of the SWPP to the other large regional water systems in North Dakota will be conducted.

Phase 2 will investigate effects of ownership transfer on the ownership of land and associated facilities, construction contracts, water supply contracts, easements and permits, other agreements, and necessary legislative changes associated with the transfer of ownership. Phase 2 will proceed at the discretion of the SWC.

1.2 Scope

This report will focus on Phase 1 of the Ownership Transfer Study. The Capital Repayment Evaluation will include a review of the existing capital repayment model for the SWPP and an evaluation of potentially equitable options for adjustments to the capital repayment if ownership were transferred or retained. The study will evaluate the additional work required by the SWA to perform construction management functions and additional staff requirements that would result with the transfer of

ownership. The potential impact to existing water user rates will be evaluated. The funding framework currently used by the SWPP will be compared with the frameworks used by the Western Area Water Supply, Northwest Area Water Supply, and the proposed Red River Valley Water Supply Project. The governance models of each of the water systems will also be compared. Finally, the relative merits or demerits of the State divesting ownership of the SWPP to the SWA based on the above analyses will be evaluated.

Preliminary technical memoranda on these tasks have been presented to the SWC. A 30-day comment period following that presentation resulted in various comments from the public and the SWC. Those comments will be addressed in this final report as warranted and are presented in full in the Appendix.

2.0 Capital Repayment Evaluation

Funding for the project has come from state and federal sources. The primary funding source from the State for the SWPP has been the Resources Trust Fund (RTF). The RTF is funded principally through annual deposits from the Oil Extraction Tax (OET) and Capital Repayments from Regional Water Systems, such as the SWPP. The local share of the project is provided through capital repayment. This section of this technical memorandum will analyze the Capital Repayment model for the SWPP.

Both the State and SWA use the terms "Capital Repayment" and "Return on Investment" interchangeably in various reports and publications. For simplicity and clarity, this analysis will refer to these payments to the State only as "Capital Repayment." Methodology for capital repayment and initial rating baselines were established in a 1982 study (Heider Study) by financial advisor Chiles, Heider & Company, Inc. A portion of this analysis will summarize the Heider Study and highlight long-term implications of the rating methodology employed in 1982.

2.1 Initial Capital Repayment Model

A 1981 Preliminary Engineering Report (PER) by Bartlett-West/Boyle determined an Operation, Maintenance, Management and Replacement (OM&R) cost of $1.11 per-1,000 gallons for the initial 24 towns in the project area. Per the PER, the project would not be self-supporting and would require initial State backing.

USDA Rural Development (RD), formerly Farmers Home Administration (FmHA), frequently finances water projects for which user fees are inadequate to repay all capital costs. Water utilities financing capital improvements through USDA RD qualify for various grant assistance based on income limitations and a comparison of water rates between similar systems in the area. While there was some initial involvement in the SWPP from USDA RD, it has been withdrawn due to the project's access to other funding resources, primarily the RTF.

The impetus of the October 1982 Chiles, Heider & Co. report (Heider Study) was to determine a fair and affordable means of repayment to the State by users in the project area. The Heider study cites an FmHA method for determining a reasonable capital repayment rate in which to charge users a fee based on a percentage of their income, on par to that paid by users of similar projects, i.e. ability to pay.

Ability to pay as an economic principle suggests that the expense an individual pays should be dependent on the level of burden that expense will create, relative to the wealth of the individual. Thus, per-capita income was used as the baseline metric for determining ability to pay. The 1980 Weighted average per-capita income within the project area and State were $6,111 and $6,643 respectively. Incomes in the initial project area were 8% less than the average per-capita North Dakota Income, which indicates 8% diminished ability to pay relative to State averages.

Willingness to pay is a qualitative metric and thus more difficult to define than ability to pay. Willingness must anticipate and forecast individual's inclination to make future payments without fully

understanding the benefits they might receive. Existing water in the project area was generally poor in quality, requiring extensive treatment expense. Additionally, water was difficult to locate and costly to pump in many instances. The existing weighted average cost per-thousand gallons in the project area was determined to be $0.77, while the weighted average cost was $0.68 in selected communities throughout the remainder of the State.

The 1982 study circulated 2,000 questionnaire surveys in order to gain a better understanding of willingness to pay within the project area. A consensus supported the assertion that the project area had been economically impaired due in part to existing water conditions. In addition, many residential responses explicitly indicated a willingness to pay more for water, assuming the additional cost would be fair, equitable, and extendable over a long period of time. Most people, however, could not relate what the cost of their own residential water bills would be as a result of the project. Thus, any specific additional amount that individuals were willing to pay was impossible to quantify.

In summary, the 1982 Heider report presents an impaired ability to pay in the project area, albeit a perceived willingness to pay more due to the area's stifled economic growth as a result of a lack in water availability and existing poor quality. In mutual agreement with the PER, the Heider study deemed State financial assistance essential, especially in the early years of the project.

Rather than espousing the 3-State average capital repayment rate of $0.59/1,000 gallons, the Heider study endorsed the Bartlett-West recommendation to initially reduce the capital repayment rate by 25% and establish a rate of $0.44/1,000 gallons. This was due in large part to the project area's relatively high projected OM&R of $1.11/1,000 gallons compared to other similar systems. Furthermore, bonded debt levels within the project area were also considered higher than State averages, diminishing customers' ability to pay.

Table 1 1980 Weighted Average Cost

1980 – Weighted Average Cost to Project Users ($ per-1,000 gallons)			
	Total	**OM&R**	**Capital Repayment**
Project Area	$1.70	$1.11	$0.44
North Dakota	$1.60	$0.84	$0.76
3-State Area	$1.38	$0.79	$0.59

The capital repayment rate would subsequently be adjusted annually by the Consumer Price Index (CPI). Thus, capital repayments to the State RTF would generally reflect inflationary trends and keep pace with customers' increased ability to pay.

In 1991 the SWC expanded the authority of the SWPP to include individual rural customers in the project area. This expansion of authority took advantage of demand diversity and economies of scale to provide retail service in the project area. The capital repayment rate for individual rural customers was established at $20/month for a standard service, regardless of the amount of water consumed. This

fixed fee capital repayment is also adjusted annually by the CPI adhering to the concept that capital repayments increase with customers' "ability to pay".

However, this capital repayment model has some unique long-term implications that will be discussed in the remainder of this section. It is imperative to note that users in the project area would pay the CPI-indexed rates, either per-1,000 gallons on their actual water use or per service for individual customers. Consequently, as the user base continuously expands, water usage among existing customers increases, or usage increases due to population growth, capital repayment will outpace inflation. This is a major deviation from any similar systems studied for comparison that use termed and subsidized debt payments. Those systems pay a fixed annual capital repayment charge (i.e. debt service payments) with devalued dollars, regardless of their water usage or customer base. This results in a strong incentive to expand the customer base effectively reducing the capital repayment per customer or per-1,000 gallons as the system grows.

In addition, the absence of capital repayment terms styles the capital repayment arrangement analogous to that of a perpetual annuity with escalating payments for the benefit of the State. The 1996 Transfer Agreement and subsequent amendments shifted OM&R responsibilities to the SWA. Particularly regarding the replacement responsibilities, the SWC divested itself of future capital outlays related to replacements. This is another significant difference from similar systems where the Owners of the facility are responsible, at least financially, for replacing those assets.

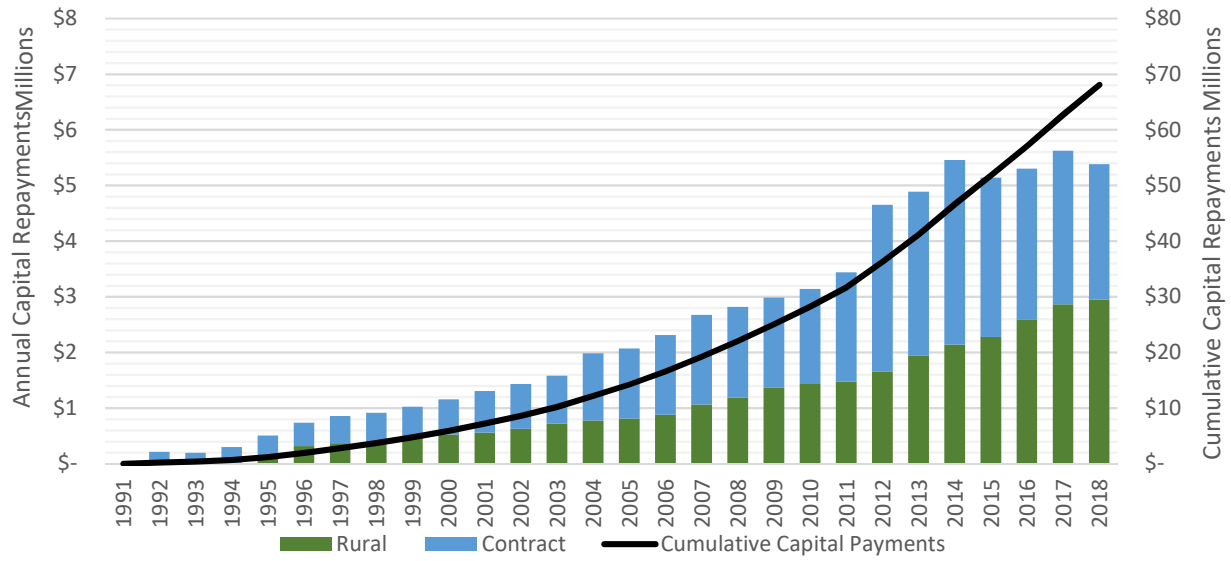
Finally, as part of the 1996 Transfer Agreement, the State required the SWA to make separate payments into the Replacement and Extraordinary Maintenance Fund (REM Fund). Various practices have developed over the years to identify what types of expenses qualify for REM Funds. In general, these are infrequent/extraordinary maintenance expenses greater than $20,000. Based on conversations with SWC staff and a review of historical expenses, items include any major replacement of capital that does not expand or increase capacity. Where capacity is increased or expanded it is funded through the RTF funds as part of the original authorization. In circumstances where an asset is replaced and capacity is increased at the same time, efforts are made to allocate the costs accordingly.

Critical to the analysis is that both the State and the SWA appear to be planning for these major capital replacements by pre-funding the REM Fund in addition to the capital repayments. This is a significant difference from other water utilities that predominantly use debt instruments for major replacements. Using debt ensures the customers that are utilizing an asset are paying the cost of that asset. By prefunding replacements, current SWPP customers are not only making capital repayments on the existing facilities, in perpetuity, but are also making payments on assets that are yet to be placed in service.

2.2 Capital Repayments Made to Date

Capital repayment history from 1991 through 2018 is included in Appendix A of this report and summarized below in **Figure 1**. The values shown include all capital repayments made by SWPP customers including those that were deposited into the RTF or used to make loan or bond payments.

Figure 1 Capital Repayments by Customer Class 1991 - 2018



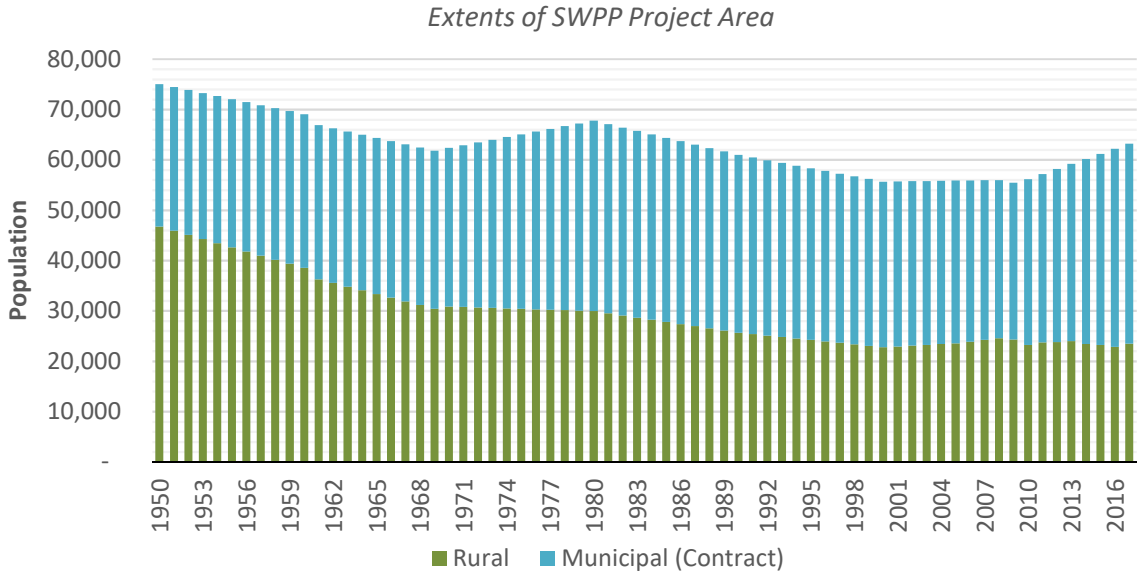
2.3 Forecasting the Current Capital Repayment Model

This analysis expands upon previous attempts by others to forecast future capital repayments made to the State (RTF), updating the existing model. The most significant modification is that the updated model accounts for changes in user base in addition to rate changes. Several demographic metrics are identified, analyzed, and used to define assumptions which are discussed below.

2.3.1 Population

Population data for the Project area from 1950 to the present is shown in **Figure 2**. The general pattern since the 1950's indicates a population shift in the project region from that of predominantly Rural to predominantly Municipal. The current total population in the project area is approximately 63,000. This is 85% of the population in 1950 and about 93% of total population in 1980.

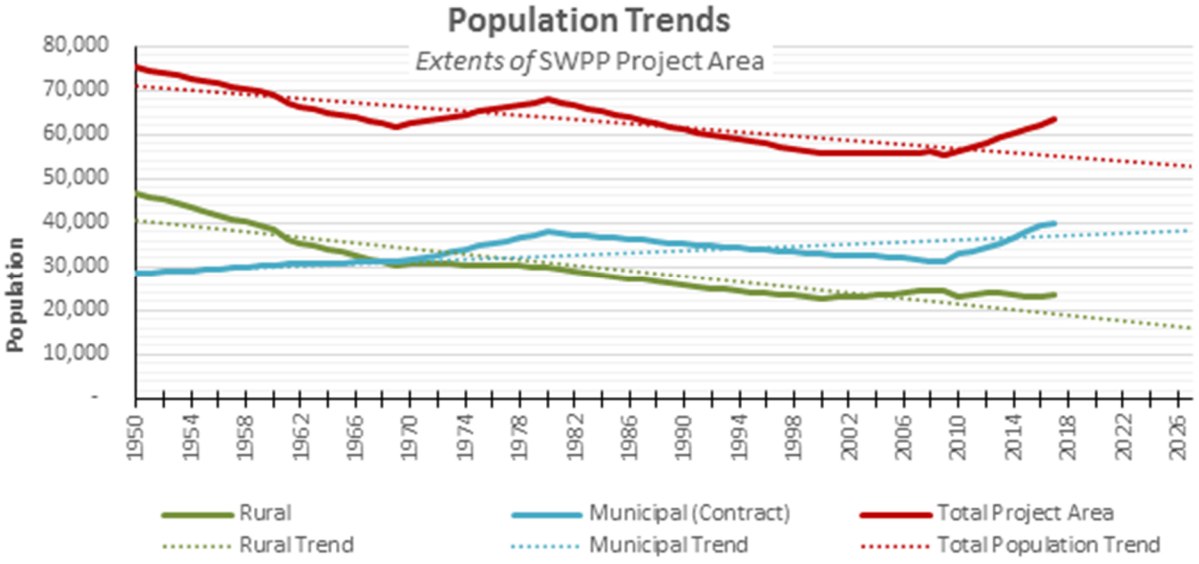
Figure 2 Total Population



Population trends are shown in **Figure 3** where the change from rural to municipal becomes even more evident. A linear trendline of each user group is projected using the entire dataset. However, the current 10-year trend of total population is positive. The rural population consistently trends downward from 1950 through the late-1990's and has remained relatively stable since about 1998.

Municipal population increased to an inflection point of about 37,800 in 1980, after which it declined until 2009. The long-term annual population growth rate since 1950 is approximately 0.5%. Since 2009 the municipal populations have been growing at approximately 3.1% per year.

Figure 3 Population Trends



The Capital Repayment for contract users is based on consumption and is therefore dependent on municipal population trends. The updated Capital Repayment Model conservatively assumes a continuation of the long-term municipal population trend from 1950 to the present of approximately 0.5% and a stable rural population. This equates to population growth of approximately 175 people per year throughout the project area.

2.3.2 Individual Rural Services Projections

Capital repayment from rural users is based on the number of accounts, and therefore not a direct function of population trends. The number of rural services depends on rural housing units, pastured livestock, and other rural commercial agriculture water demands. Rural service began in 1992 and new rural service areas continue to be added each biennium depending on State funding from the RTF.

SWPP defines individual rural service into four main categories including Standard Service, Pasture Taps, High Consumption, and Seasonal. A current breakdown of types of services is shown in **Figure 4**. Trends of cumulative rural accounts (net of disconnects) through 2019 are shown in **Figure 5**.

The SWC anticipates the addition of 4,000-6,000 new rural accounts, including all types by project completion in 2029, or around 500 per year. This approximation was based on a comparison between billing records and 911 addresses within the project area. At the current Capital Repayment Rate of $36.97 per account per month, this would result in an increased annual capital repayment in 2019 dollars of approximately $1.8 – $2.7 Million from new rural services.

Figure 4 SWPP Rural User Breakdown

7,194 Total Services (2019)

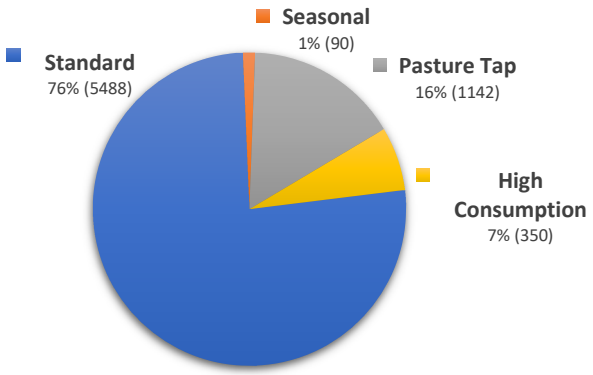
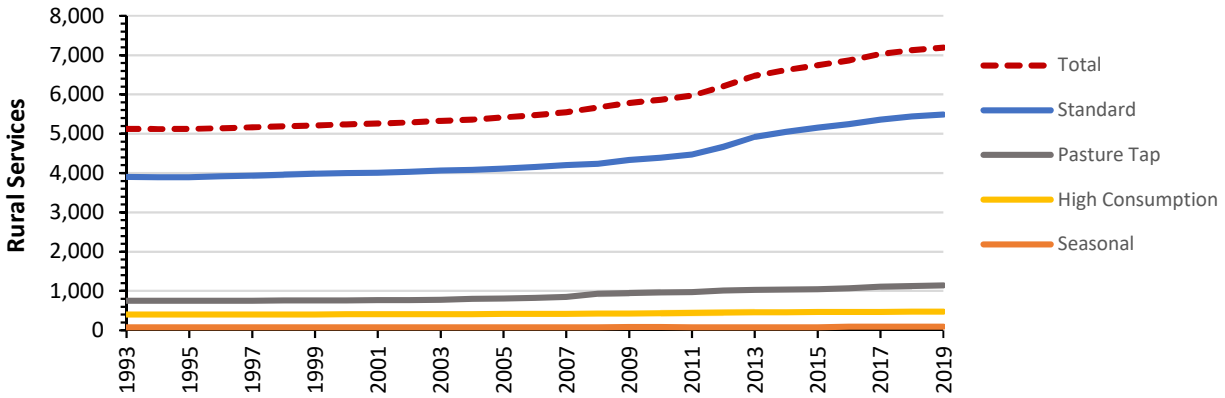


Figure 5 SWPP Rural Service Trends

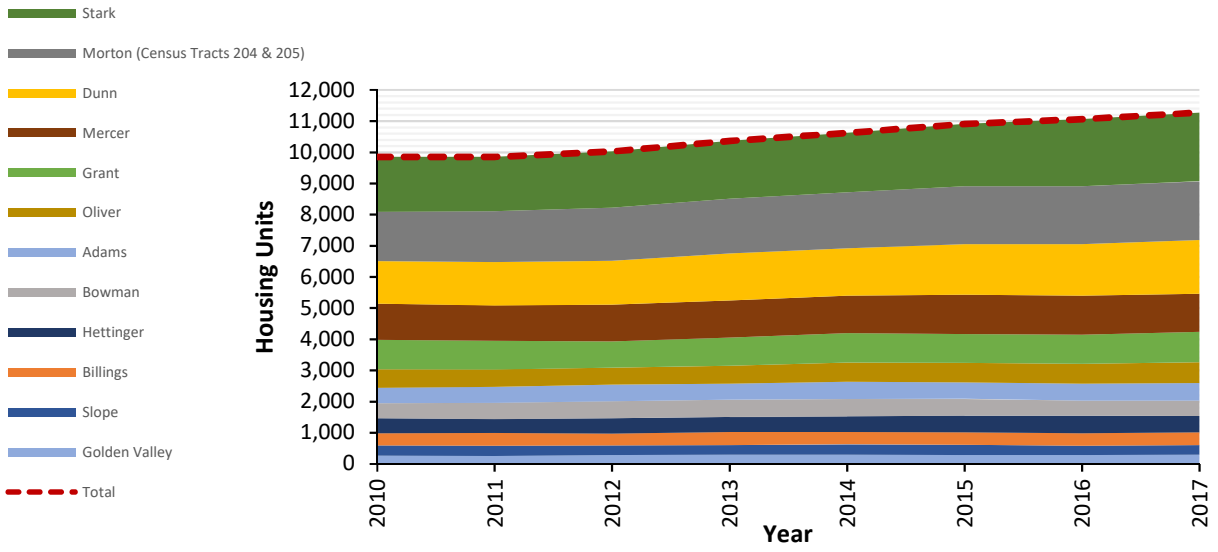
(Cumulative, Net of Disconnects)



The updated Capital Repayment Model uses an alternative method of approximating the magnitude of new accounts by attempting to forecast growth of rural accounts by account type. SWA classifies rural dwellings, trailers, or places of business as Standard Rural Services. Thus, it is reasonable to compare the count of standard services with the number of rural housing units in the project area to approximate market penetration and, ultimately, the potential for added accounts. **Figure 6** shows an annual count of rural housing units in the SWPP project area, by county, from 2010 to 2017. The number of rural housing units in 2017 was 11,200. Morton County excludes Census Tracts 201-203 which are associated with Mandan and the surrounding area which are outside SWPP service boundaries.

Figure 6 Rural Housing Units

SWPP Project Area, by County



The current trend in rural housing units is positive despite steady to declining rural population estimates. The average number of rural housing units in the SWPP service area from 2010 to 2017 is 10,497, as shown in **Figure 7**. The number of rural housing units is estimated to stabilize in the future at around 11,750, as shown in **Figure 8**. This is compared to the current count of Standard Services in 2019 of 5,488 as shown in **Figure 4**. This suggests a market penetration of approximately 52% for standard rural services, based on the average number of housing units.

Figure 7 Rural Housing Units by County

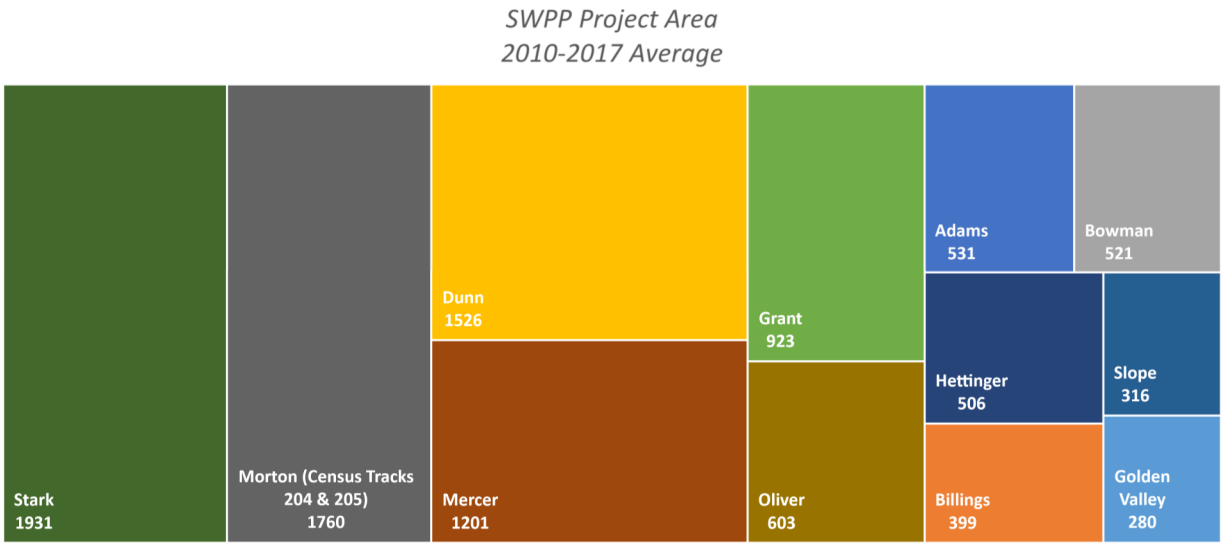


Figure 8 SWPP Projected Standard Rural Services

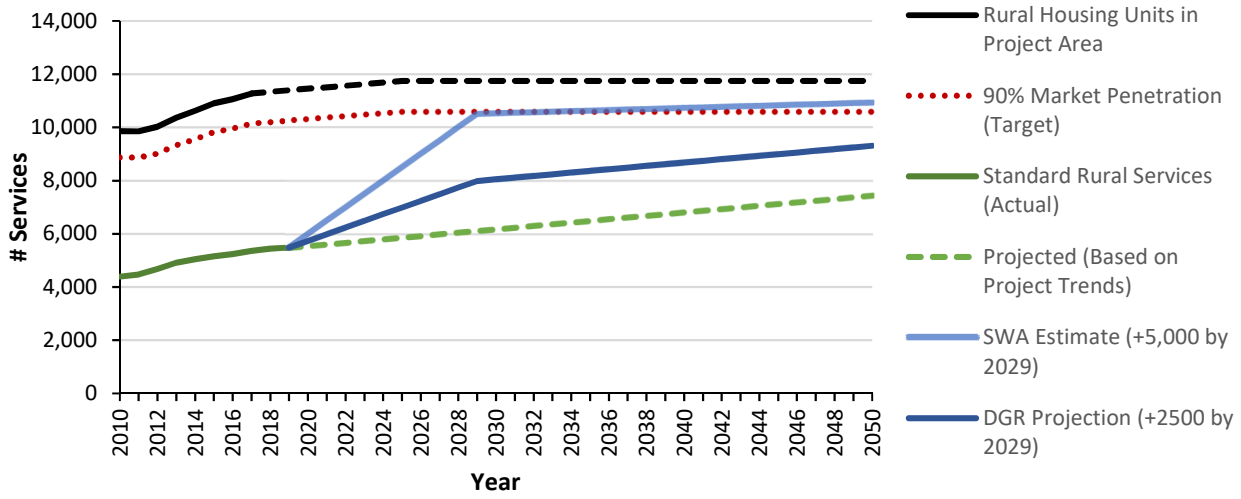


Figure 8 provides an illustration of various methods to project Standard Rural Services. The midpoint of SWA's estimate for additional services is 5,000 over the next 10 years and is a close approximation to a 90% market penetration of the Rural Housing Units in the project area. However, the maximum standard services added to the system in any given year so far is only 255. Therefore, the model conservatively anticipates the actual number of new standard services added in the next 10 years to be comparatively modest at +2,500. In comparison to fully built systems with policies that actively encourage new customers, the model estimates that 90% is a reasonable target for market penetration for long-term planning. However, it will likely take more than 10 years to develop.

The model estimates the same percentage of rural services as the existing system. Therefore, the model includes the following new services each year for the next 10 years.

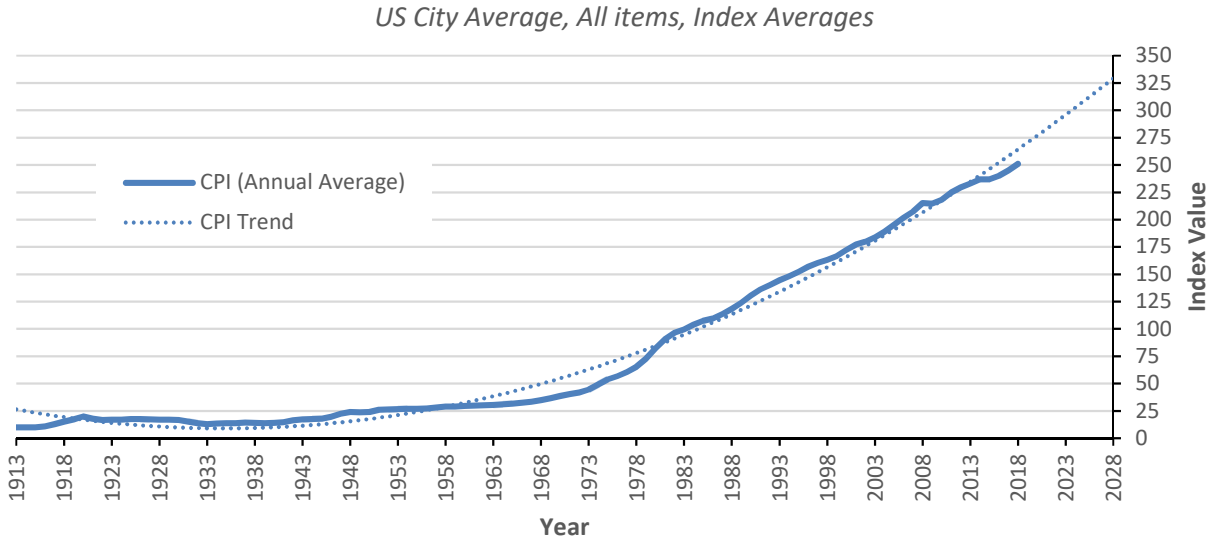
Standard Service: +250/year
Pasture Tap: +53/year
High Consumption: +23/year
Seasonal: +4/year
TOTAL = 330/year

The updated Model shown in **Figure 8** estimates 10,430 Individual Rural Services (all types) by 2029, assuming 90% market penetration. We conservatively estimate an approximate annual growth of approximately 0.5% thereafter or about +50/year.

2.3.3 Consumer Price Index

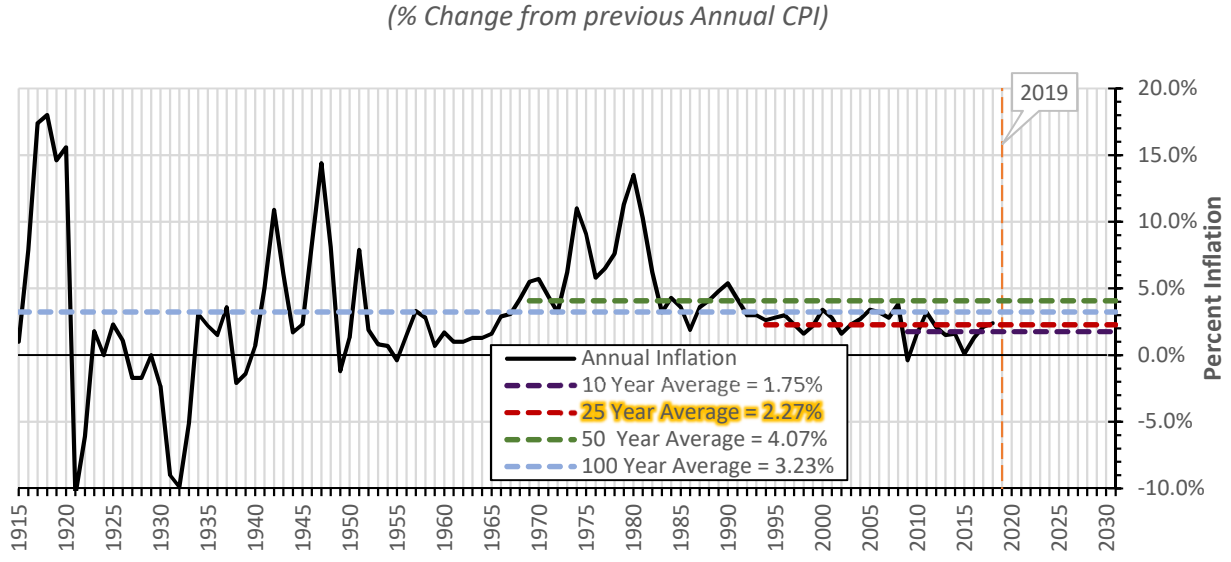
A Consumer Price Index (CPI) measures changes in the price level of a market basket of consumer goods and services purchased by households. The annual percentage change in a CPI is generally used as a measure of inflation. Thus, the CPI can be used to index the real value of wages and to deflate monetary magnitudes to show changes in real values. It is also a commonly used means of price regulation, as is the case with the current SWPP capital repayment model. Annual CPI data for all urban consumers (CPI-U) from 1913 to present is summarized in **Figure 9**.

Figure 9 Historical CPI for All Urban Consumers (CPI-U)



Percent change from previous annual CPI is shown in **Figure 10**. Inflation has varied wildly over the 100+ years of data collection, however it has shown less volatility since the mid-1980s. The updated capital repayment model utilizes a 25-year average for annual inflation, or 2.27%. The 25-year average value was chosen as it most closely aligns with the SWPP project timeline.

Figure 10 Average Annual Inflation



2.3.4 Water Usage

Per capita water usage amongst the municipal contracts has followed an upward trajectory. **Figure 11** shows the 20-year trend for per capita water usage for SWPP is slightly positive, with a large spike in

2012. The average is 109 gallons per capita per day (gpcpd) and a maximum of 144 gpcpd. The updated capital repayment model utilizes a fixed per capita water usage of 120 gpcpd for contract customers.

Figure 11 Municipal Water Usage

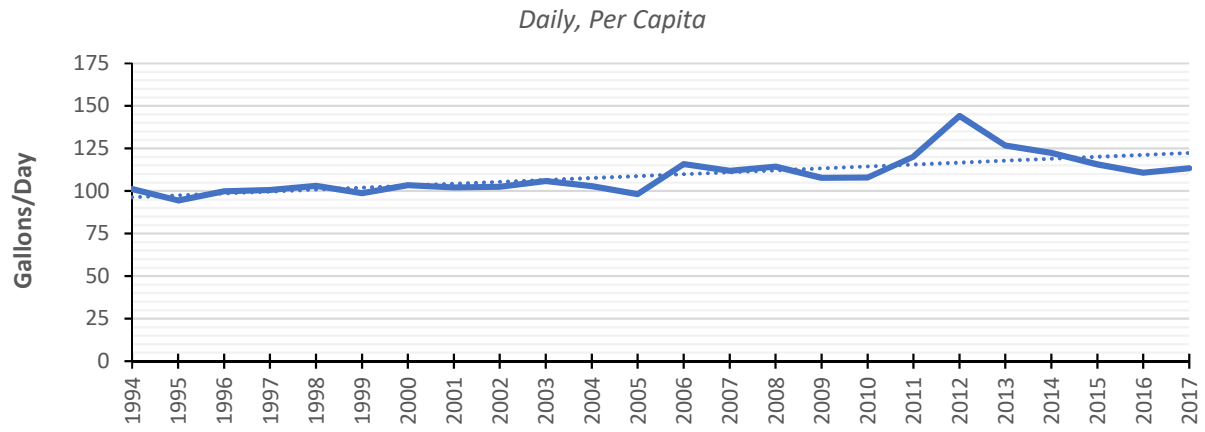
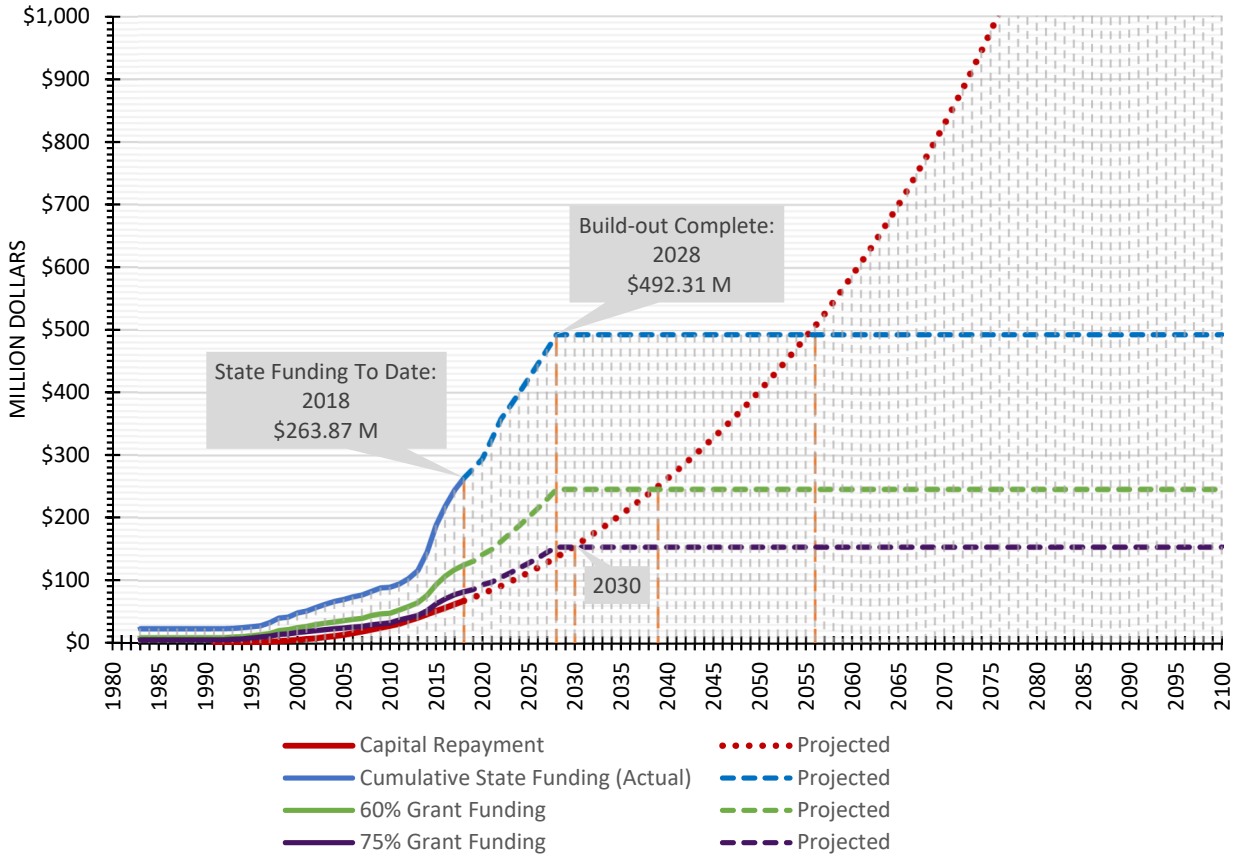


Figure 12 Cumulative State Funding vs. Capital Repayment



2.3.5 Forecast Results

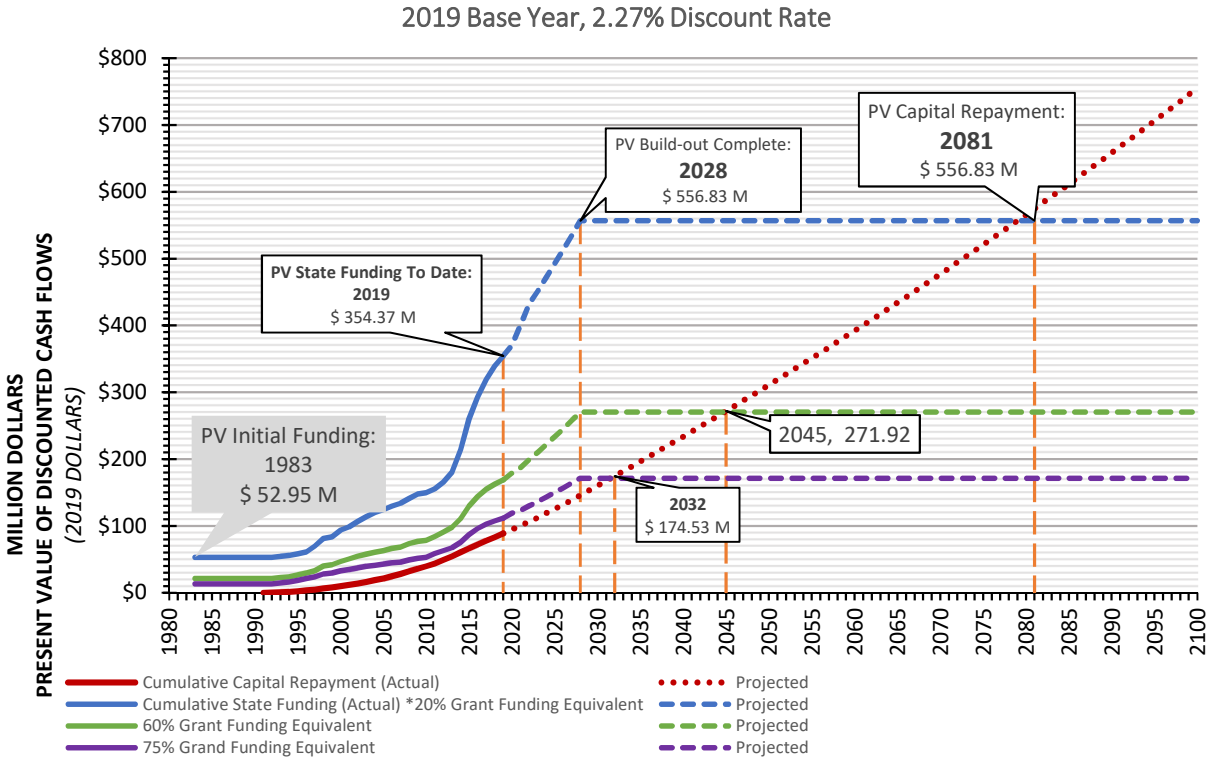
In July of 2018, SWC Staff prepared an Ownership Transfer Memo in which they developed a Capital Repayment Model. This Capital Repayment model was updated with the inputs previously described in this report and shown in **Figure 12**.

The model shows total cumulative project funding excluding grants. Current grants represent approximately 32% of project funding to date. However, future project funding is expected entirely from the RTF, which reduces the overall grant percentage without State cost share to approximately 20%. Additional lines are provided for reference showing project funding assuming State cost-share to achieve 60% grant funding or 75% grant funding. Finally, the cumulative capital repayments from all SWPP customers are shown.

In general, the models are very similar in the early years and both predict repayment of project funding with a 75% grant in 2030 and a 60% grant in 2039. The updated model includes several growth-related additions that the previous model did not. Most of the assumptions have remained relatively conservative. Nonetheless, the updated model predicts full repayment of State funding by 2056, approximately 10 years earlier than the previous model. It is noted that financial projections made this far into the future are highly speculative and lack much precision.

Due to the time-value of money, early investments and future capital repayments have been adjusted to present values. A version of the Capital Repayment model is shown in **Figure 13** that adjusts project spending and capital repayments to present value in 2019.

Figure 13 Cumulative State Funding vs. Cumulative Capital Repayment



The results show that the “payback” is generally delayed a few years under the State grant funding scenarios compared to the nominal dollars chart of **Figure 12**. Full repayment of the State funding in adjusted dollars is delayed until approximately 2081.

3.0 Capital Finance Plan Used by Each System

Each of the regional water systems were developed for different reasons and had vastly different stakeholders during their development. Furthermore, federal authorization and support has varied for each of the systems. Therefore, the customer base is different as well as the capital financing models and rate structures for each system.

This section provides a summary of the capital financing plan used by each major regional water system in North Dakota and a brief look at other rural water and municipal systems.

3.1 Northwest Area Water Supply

The Northwest Area Water Supply (NAWS) was authorized under the Garrison Diversion Reformulation Act of 1986 and received funding through the Municipal, Rural and Industrial (MR&I) Grant Program. The project financing model was set up for 35% local share and 65% federal share through the MR&I Grant Program.

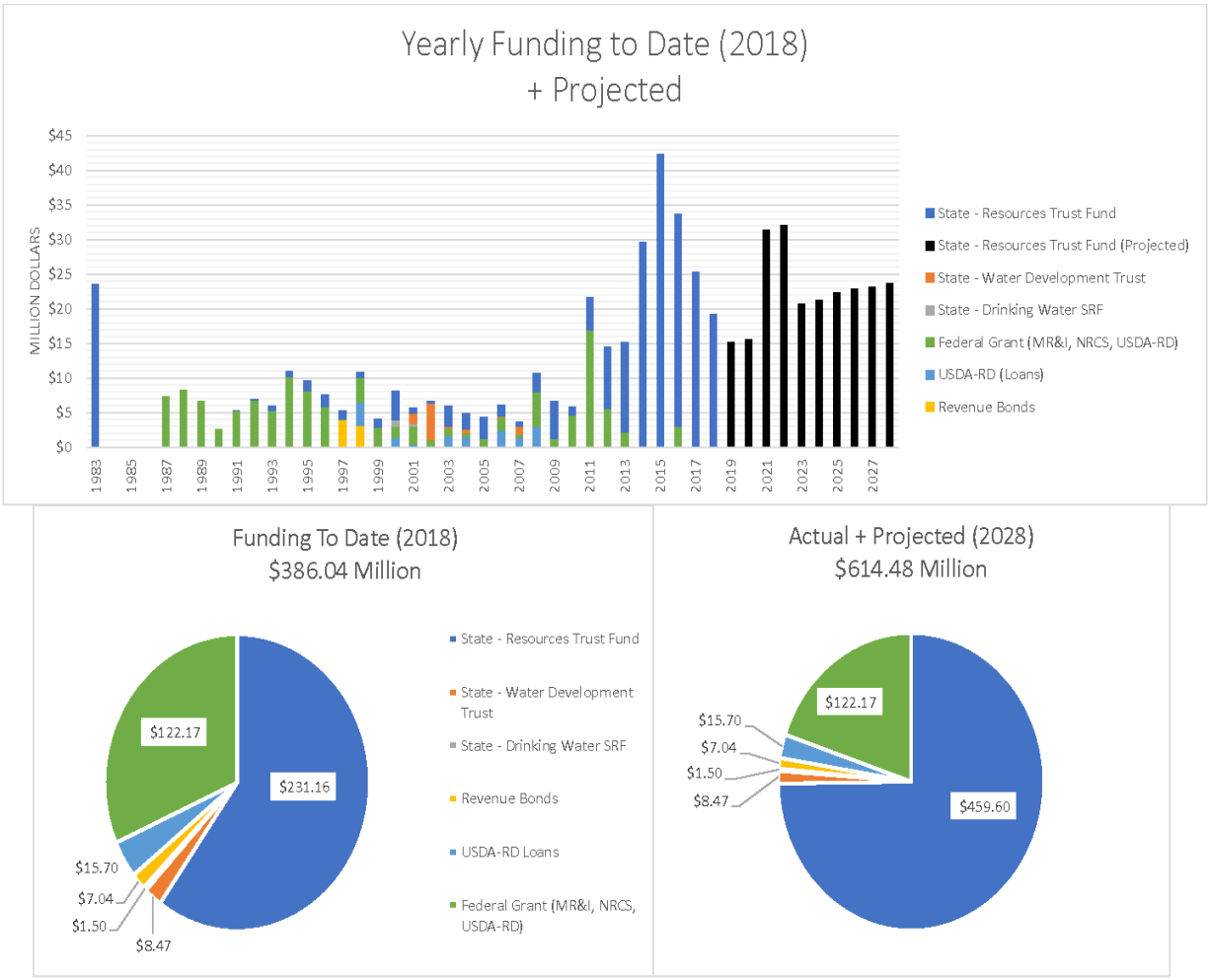
Legal challenges from the Province of Manitoba and the State of Missouri put some of the project on hold. However, NAWS received approval to construct some portions of the project, and the City of Minot provided the local share. The SWC has provided most of the federal share for these interim construction projects.

Based on discussions with SWC staff involved with NAWS, they anticipate the project financing model to maintain the 35% local share. However, the remaining 65% of the project funds will be split between state and federal cost sharing or grants. The specific distribution is not known at this time but won't have an impact on customer rates.

3.2 Southwest Water Pipeline Project

The Southwest Water Pipeline Project (SWPP) was authorized in 1981. A detailed capital financing plan used for the SWPP was described previously in Section 2. The specific distribution of source funds is presented in **Figure 14**. State and Federal funding provided all the project funds at the time it was used. The local share is provided according to a Capital Repayment model established as an ability to pay model developed in a 1982 report by Chiles, Heider & Co. report (Heider Study).

Figure 144 Capital Repayments by Customer Class 1991 - 2018



The current capital repayment model was used to repay all loan and bond requirements associated with the project. Current annual repayments are directed to the Resources Trust Fund (RTF). The capital repayments are expected to continue in perpetuity, generally providing the RTF with additional funds to be used on other projects as the SWC defines their priorities. Over time, and under the current capital repayment model, the entire balance of state funds will be returned to the RTF.

3.3 Western Area Water Supply

The Western Area Water Supply (WAWS) was established after the 2011 Legislative Session and was originally conceived as a public-private partnership that would provide potable water service to five rural water systems in the area. It would also sell surplus water to the oil industry, which was rapidly expanding at the time.

Initial project funding was provided entirely as loans. Revenue from oil industry sales was expected to repay the loans. Lower than projected revenues from water sales in the area has diminished their ability to repay the loans from this revenue source. Recent project funding has been provided by the state

between 33% and 75% cost share. Funding over the next 10 years is currently proposed at 75% cost share from the state.

A current breakdown of the funding sources for the NAWS, SWPP and WAWS is shown in the Appendix B.

3.4 Red River Valley Water Supply Project

The Red River Valley Water Supply Project (RRVWSP) proposed to protect North Dakota from severe drought by transporting water from the Missouri River in the central part of the state to the Sheyenne River in the eastern part of the state. The project was conceived as a federal, state, and locally funded project. However, at the time of this report, the project has yet to receive federal authorization. Current funding for the preliminary development work is proposed as 75% cost share from the state and 25% from local entities.

3.5 Rural and Municipal Water Systems

Program guidelines within the SWC currently allow up to 60% cost share for municipal systems and up to 75% cost share for rural water systems. It is the responsibility of the water utility to provide the local funds. Various funding sources are available, including the Bank of North Dakota, USDA Rural Development, State Revolving Loan funds, revenue and general obligation bonds.

3.6 Advantages and Disadvantages of the Capital Finance Plans

One primary difference between capital financing for the SWPP and all other systems in the state is the fundamental disconnect of the water revenues from project costs. This was a significant benefit to the customers during the initial development as the current customers had a defined cost that was indexed to their ability to pay. Adjustments to the initial rate were made due to the diminished economic condition of the service area. Growth of the customer base, an increase in economic conditions, and the addition of individual rural customers to the project scope have all contributed to the project success. Current municipal customers pay a lower percent of their per capita income for capital repayment than originally projected in 1982 when the rate was developed. However, this capital repayment model has some long-term implications that will ultimately result in higher water rates to the project customers when compared to other similar systems. With this model, the state is the beneficiary of growth within the project area.

The capital financing for all other systems has recognized that water utilities in rural areas are not self-sufficient and require significant subsidy to be affordable to the end user. However, when capital financing is set up as a termed loan, two factors make it very difficult during the early stages.

1. Debt terms usually do not extend as far as the useful service life of the asset.
2. The initial customer base making the debt payments is low compared to the future customer base.

These two factors represent a development hurdle as the costs for initial customers are relative higher than they will be as the utility matures. Because debt payments remain constant throughout the life of

the loan, as the customer base expands, water rates typically do not increase as much as incomes and the rate payers can usually expect a benefit over the long-term. This is experienced as an increase in purchasing power with water rates making up a smaller and smaller percentage of the utility's income over time. In this manner, the rate payers are the beneficiary of growth within the project area.

Finally, there was a significant difference for the early development of the WAWS. Due to the economic condition of the oil industry when the project was conceived, stakeholders moved quickly to capture the attention and revenue of this temporary condition. Without continued revenue from this source or federal cost assistance, the project will remain dependent upon state cost share as local contribution from customers will not be self-sustaining.

4.0 Governance Models for Regional Water Systems

There are three large regional water systems currently in operation in North Dakota; Southwest Pipeline Project, Western Area Water Supply, and Northwest Area Water Supply. A fourth system has been set forth in the North Dakota Century Code (NDCC) to serve the Red River Valley and surrounding areas, but the system is still in the design phase. How it will operate and what entities will participate have yet to be determined. Each of the existing systems were formed at different times to service the different needs of their specific areas. As a result, each system's governance model is unique.

4.1 Southwest Pipeline Project

The Southwest Pipeline Project (SWPP) was created under the NDCC Chapter 61-24.3. It was established to provide for the supplementation of the water resources from the Missouri River for multiple purposes, including domestic, rural, and municipal uses. The SWPP is intended to serve the area of North Dakota west and south of the Missouri River. The SWPP was originally implemented to serve the following counties; Dunn, Stark, Golden Valley, Billings, Slope, Bowman, Adams, Grant, Oliver, Hettinger, Morton, and Mercer. The Southwest Water Authority (SWA) was created in the NDCC Chapter 61-24.5 to manage the system, while the State retains ownership of the project. The SWA is governed by a board consisting on one member from each of the above counties, two members from the City of Dickinson, and one member from the City of Mandan. The board members are elected in the City/County elections for a term of four years. The SWC currently owns the SWPP and constructs additional pipelines. The SWC sets the Capital Repayment rate and approves the other rates set by the SWS. The SWA plays the role of the local sponsor for the SWPP. The SWA operates and maintains the system and collects moneys.

4.2 Northwest Area Water Supply

The Northwest Area Water Supply (NAWS) project was created under the NDCC Chapter 61-24.6. It was established to provide for the supplementation of the water resources from the Missouri River for northwestern North Dakota. The NAWS serves the following counties; Bottineau, Burke, Divide, McHenry, McLean, Montrail, Pierce, Renville, Ward, and Williams. The SWC sets the rates. NAWS owns, operates and maintains the system. The NAWS is governed by a board consisting of members appointed by the State Engineer from the following entities:

- One person from the City of Minot
- One person from the City of Williston
- One person from the water resource districts in the above counties
- One person from the SWC
- One representative from the Three Affiliated Tribes
- One representative from the rural water distribution systems in the above counties
- One representative from a municipality other than Minot
- One representative from the Garrison Diversion Conservancy District
- One at-large representative

4.3 Western Area Water Supply

The Western Area Water Supply (WAWS) Authority was created under NDCC Chapter 61-40. It was established to provide for the supply and distribution of water to the people of western North Dakota for purposes including domestic, rural, municipal, livestock, industrial, oil and gas development and other uses. The WAWS serves the following counties; McKenzie, Williams, Burke, Divide, and Mountrail. The WAWS is governed by a board consisting of two representatives from the following entities; Williams Rural Water District, McKenzie County Water Resource District, City of Williston, BDW Water System Association, and R&T Water Supply Association. Board members are appointed by the governing boards of each entity for a 1-year term. The WAWS owns, operates, and maintains the system. The WAWS sets its own rates. The SWC approves the planning, location, and water supply contracts of any authority depots, laterals, taps, turnouts, and risers for industrial users. The WAWS follows the SWC requirements for funding and presents an overall plan to the SWC for funding approval.

4.4 Red River Valley Water Supply Project

The Red River Valley Water Supply Project (RRVWSP) was created under NDCC Chapter 61-24.7. it was established to provide water of enough quantity and quality for various uses in the Red River Valley, specifically as a supplemental water supply in times of drought. The NDCC states that the legislature intends to provide State funding for a share of the construction of the RRVWSP. At the time of this report, a governance model of the RRVWSP has not been determined. However, it will be owned by the Garrison Diversion Conservancy District (GDCD). The GDCD will also operate and maintain the system. The Lake Agassiz Water Authority has been created to acquire bulk water from the GDCD/RRVWSP and supply water to eastern and central North Dakota and western Minnesota.

The governance models of the large regional water systems are summarized in **Table 2**.

Table 2 Governance Model Summary

	Counties Served	Board Members	Terms	How Elected	SWC Role
SWPP/SWA	·Dunn ·Stark ·Golden Valley ·Billings ·Slope ·Bowman ·Adams ·Grant ·Hettinger ·Morton ·Mercer Oliver	·1 from each county ·1 from Mandan ·2 from Dickinson (15 total)	4 years	City/County Elections	·Owns SWPP ·Manages Construction of SWPP ·Sets Rates
NAWS	·Bottineau ·Burke ·Divide ·McHenry ·McLean ·Mountrail ·Pierce ·Renville ·Ward ·Williams	·1 from Minot ·1 from Williston ·1 from each Water Resource District (10 total) ·1 from SWC ·1 from Three Affiliated Tribes ·1 from each Rural Water District (10 total) ·1 from a city other than Minot ·1 from Garrison Diversion Cons. ·1 “At-Large” (27 total)	As determined by the State Engineer	Appointed by the State Engineer	·Approves Rates ·Sets Capital Repayment rate ·State Eng. Appoints Board
WAWS	·McKenzie ·Williams ·Burke ·Divide ·Mountrail	2 representatives from each: ·Williams Rural Water District ·McKenzie Rural Water District ·City of Williston ·BDW Water System Assoc. ·R&T Water Supply Assoc. (10 Total)	1 year	Appointed by governing boards of each member org.	SWC approves funding
RRVWSP	TBD	TBD	TBD	TBD	TBD

5.0 Alternatives to the SWPP Capital Repayment Program

Regional water utilities in North Dakota have a unique funding opportunity in the RTF. The State recognized the opportunity to collect revenues from a non-renewable resource through the OET and reinvest those dollars in a renewable resource that benefits the citizens of North Dakota.

The SWPP is also uniquely structured such that the local share is returned to the RTF through the Capital Repayment program described in this report. Other water systems seeking development or improvement projects are provided with a defined cost-share grant and/or termed debt payments.

This type of capital repayment approach provides a critical advantage during the initial development phase. Namely, the capital repayment is based on actual consumption and indexed to customers' ability to pay and the State assumes the risk related to how long it takes for demands to develop to a point of become self-sustaining, or at least self-sustaining with an acceptable level of subsidy. This investment during the early development phase of a regional water supply is critical in most circumstances, particularly in economically depressed areas.

However, the current capital repayment model also has some negative long-term implications to customers that were previously discussed in Section 2. Therefore, the SWC requested development of alternative capital repayment models that may be available to the SWPP customers.

5.1 Alternative Capital Repayment Models if Ownership is Retained by the SWC

5.1.1 Alternative 1 – No Change

The "No Change" Alternative would maintain the existing capital repayment model, resulting in a perpetual annuity with escalating payments for the benefit of the State. This is advantageous to the State as surplus funds from this project will be available for other projects within the State.

Current SWPP customers would continue to pay capital returns to the State even after the assets provided by the State are retired from service. Furthermore, current SWPP customers will prepay for replacement assets through the REM fund. Ultimately, the rates that SWPP customers pay will exceed the cost to provide that service. Correspondingly, SWPP customers will be paying significantly higher rates compared to similar systems, deviating from the original intent of the repayment model.

5.1.2 Alternative 2 – Assume State Cost-Share Percentage

The SWC provides cost-sharing opportunities for rural and municipal water supply projects up to 60% or 75%, depending on project eligibility. It is reasonable to assume that State cost-share would also be available for SWPP customers.

At some point, the SWPP will have generated Capital Repayments equal to pay back the State's investment, less any cost-share allowance. Once the "payback" has been reached, capital repayments to the RTF could be terminated. **Figure 13** illustrates an effective 2.27% return during the payback period, which may be assumed to fairly compensate the RTF for the original investments.

Future replacements and capital improvements could be funded through the RTF and subject to the terms consistent with other systems. Debt service payments could be made with REM revenues rather than pre-funding capital improvements.

5.1.3 Alternative 3 – Utility Basis Method of Accounting for Capital Costs

The American Water Works Association (AWWA) promotes the use of cost-based rates and provides guidance in Manual M1 – Principals of Water Rates, Fees, and Charges. Within this manual, two methods are described to account for capital costs. The Cash-Needs Method and the Utility-Basis Method.

The alternatives described so far most closely align with the Cash-Needs Method in which customers pay capital costs based on debt service payments and rate-funded capital outlays.

The Utility-Basis Method is more common for investor-owned utilities or those utilities whose rates are regulated by a public utilities commission. This method is discussed because it provides an interesting perspective of the State as an Investor-Owner of the water utility. This is also worthwhile to investigate as it relates to what reasonable return the State should anticipate given the constraints applied to other Investor-Owned utilities in the State.

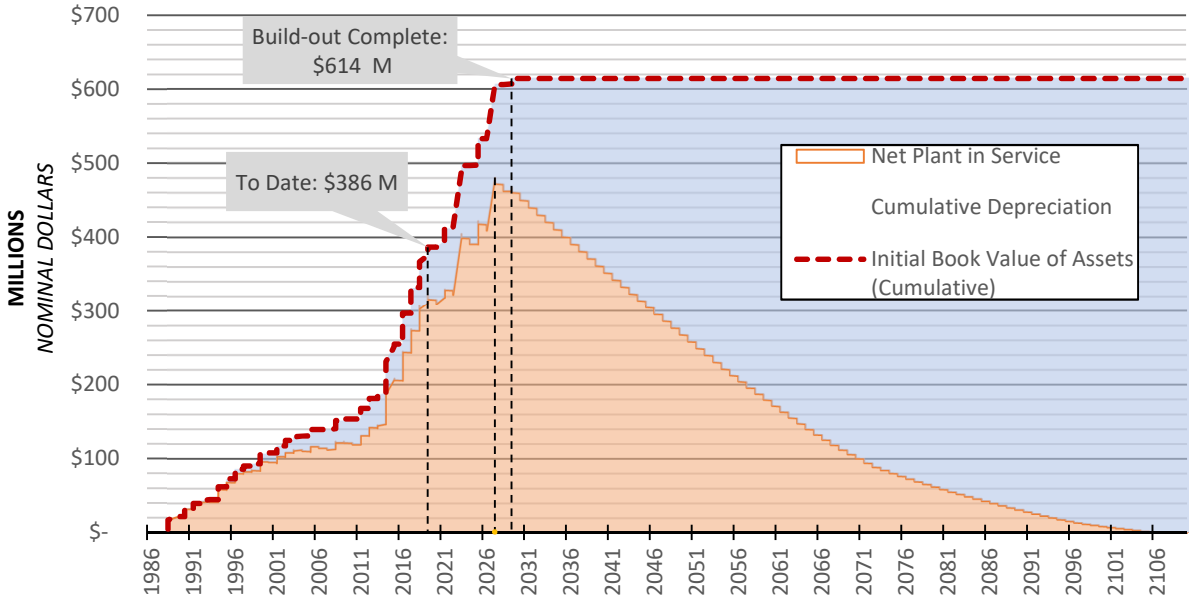
Under the Utility-Basis Method, capital costs are estimated based on annual depreciation of the assets and a Rate of Return applied to the Rate Base or Return on Investment (ROI). The Rate Base is generally the Net Plant In Service, or the value of assets dedicated to public service.

Figure 15 was developed to demonstrate the concept of the Utility Basis Method as it applies to the SWPP. Neither the SWC nor the SWA maintain SWPP assets on a balance sheet, nor are depreciation expenses accounted for in either of their annual expenses. For purposes of this analysis, depreciation rates are assumed to be similar to service lives based on asset classes rather than generally accepted accounting principles. For example, water transmission and distribution lines were depreciated using straight-line methods over 80 years while Telemetry and Controls were straight-line depreciated over 15 years. Using this method, the annual depreciation is estimated at $6.2 M in 2019.

With an estimated rate base of $318 M and a low-risk rate of return corresponding with the CPI rate used for other projections in this study of 2.27%, the ROI in 2019 would be $7.2 M. Alternatively, using the expected returns for the Existing Capital Repayment Model of $5.4 M, a rate of return of 1.7% is calculated. The rate base could be reduced by cost-share allowances consistent with other rural and municipal projects funded through the RTF.

Figure 155 Net Plant in Service

(No Reinvestment Post-2029)



5.2 Alternative Capital Repayment Models if Ownership is Transferred to the SWA

5.2.1 Alternative A – No Change

If Ownership is transferred to the SWA, the State Legislature could require that capital repayments continue according to the existing model. However, without an ownership stake and without future participation in capital financing, the capital repayments would be better described as a tax. It would function similar to the OET and generate funds for the RTF, but at a much higher rate. The capital repayment rate as a percent of total revenues for SWA is approximately 35% - 40% depending on sales within various customer groups.

5.2.2 Alternative B – Termed Debt

At the time of the ownership transfer, the difference between the cumulative State funding and the cumulative capital repayments as shown in **Figure 12** or **13** could be calculated and designated as the outstanding balance, reduced by any State cost share. The outstanding balance could be transferred to a termed USDA RD Loan or converted to termed debt through the RTF.

The current annual capital repayments of approximately $5.4M - $5.8M per year would service debt of approximately $125M - $130M based on standard SRF terms of 2% for 30-years. When added to the cumulative capital repayments to date of $68.1M, the total payments to the RTF could be $193.1 M - $198.1 M, or about 75% of the State's investment to date of $263.87M.

5.2.3 Alternative C – Benchmark the Capital Repayment to Industry Standard

The AWWA publishes results of annual benchmarking surveys in the water industry. Two benchmarks which are appropriate to this discussion include the Return on Assets (%) and System Renewal and Replacement (%). Survey data is summarized in several ways, including national and regional estimates. Region III of the study includes IA, IL, IN, MI, MN, ND, OH, SD, WI, and Ontario.

The Return on Assets (%) (ROA) is defined as the Net Income / Total Assets. The System Renewal and Replacement (%) (R&R) is defined as the Amount of Funds Reserved for R&R / Present Worth of Assets. While there are some differences between Total Assets in one calculation and Present Worth of Assets in the other, the precision of the data would not benefit from differentiating between the two in this analysis.

The median ROA for Water Utilities in Region III is 2.4%. For small communities serving populations less than 50,000, the ROA is 2.0%. Multiplying this percentage times the present value of the State investment of $354.37 M shown in **Figure 13** results in an Annual Return between $7.1 M and $8.5 M.

The median R&R is listed by asset class, but generally ranges between 0.6% for Transmission and Distribution Pipes to 0.9% for Water Pumping Facilities. A weighted average of 0.75% was used based on the mix of assets in the SWPP. Performing a similar calculation to that above results in an Annual R&R of approximately $2.7 M.

6.0 Water Rates

6.1 Review of Existing Rates

For all contract customers, capital repayment is based upon a per- 1,000 gallon charge. For all rural customers, capital repayment is a portion of the monthly minimum payment. A small fraction of contract customers are classified as oil industry, and are charged a different rate. All capital repayment is assessed, collected, and remitted to the SWC on a monthly basis. Current rates are shown below in **Table 3**. A graphical history of contract and rural capital repayment rates is shown in **Figures 16** and **17**, respectively.

Table 3 Capital Repayment by Customer Class

Account Type	2018	2019	
*Raw, Contract	$ 1.18	$ 1.21	/1,000 gallons
Demand	$ 2.36	$ 2.42	/1,000 gallons
Oil	$ 7.33	$ 4.00	/1,000 gallons
*Rural			
Standard	$ 36.00	$ 36.97	/month
Pasture Tap	$ 18.00	$ 18.49	/month
High Consumption 1	$ 45.00	$ 46.21	/month
High Consumption 2	$ 54.00	$ 55.46	/month
High Consumption 3	$ 63.00	$ 64.70	/month
*Customers in first two years pay an additional $5/month in Capital Repayment			

Figure 166 Contract Rate

Per 1,000 Gallons

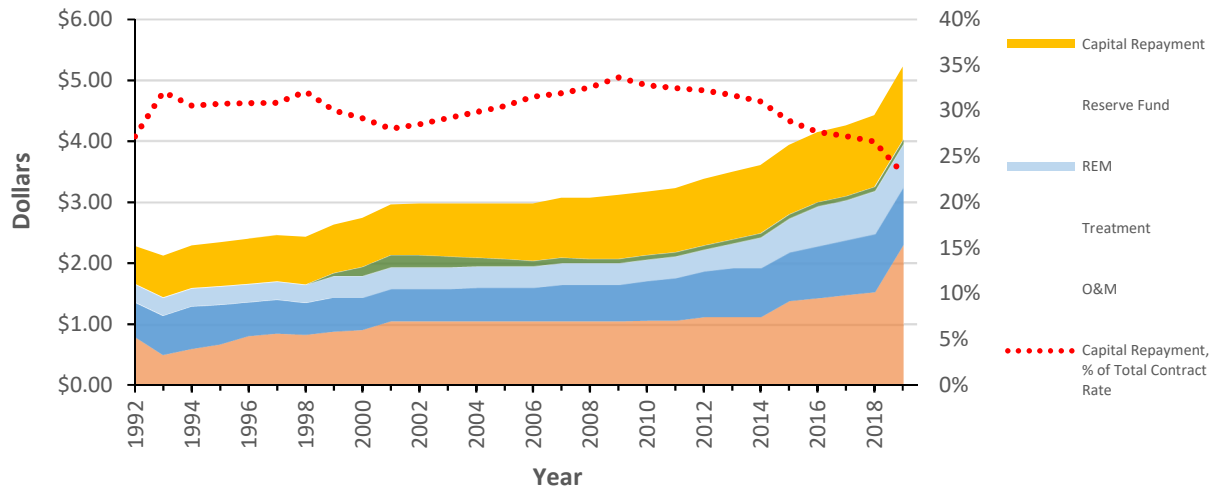
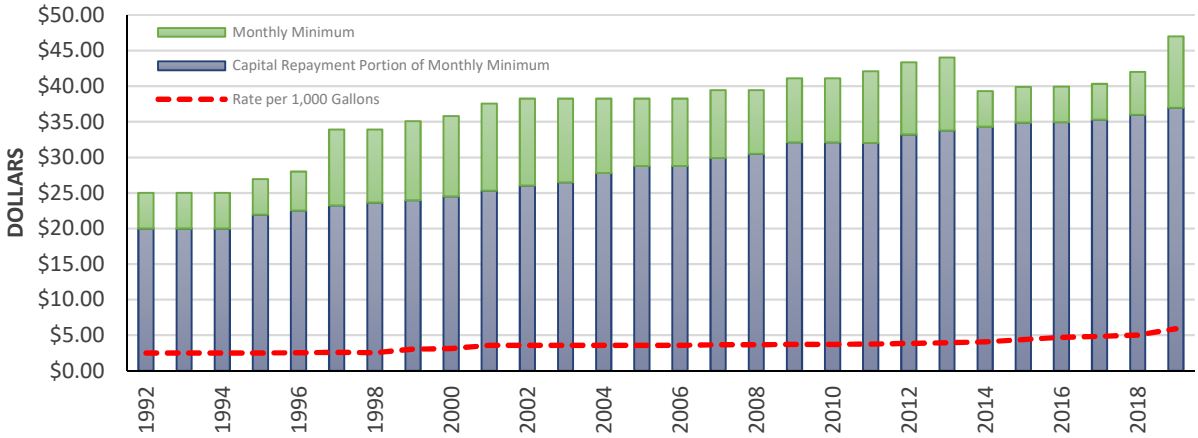


Figure 17 Rural Rate

Monthly, Per Account



Between 1997 and 2013 the monthly minimum included up to 2,000 gallons. This minimum allowance was removed for 2014 and shows a corresponding reduction in the monthly minimum.

6.2 Distribution of Costs by Customer Class

Figure 18 shows the distribution of Capital Repayment between the customer classes. We compare that with annual water consumption by customer class shown in **Figure 19**.

Based on this analysis, individual rural customers pay a significantly higher percentage of capital repayment costs relative to their water usage. While it is likely that the individual rural customers are a more capitally intensive customer group, requiring more miles of pipe to serve each user, it was an interesting finding. The SWC may want to consider a Cost of Service Rate Study if changes are made to the capital repayment model. A Cost of Service Rate Study should determine the relative costs of each customer group and design a rate structure that collects only those costs from the group.

Figure 178 Annual Capital Repayments by Customer Class

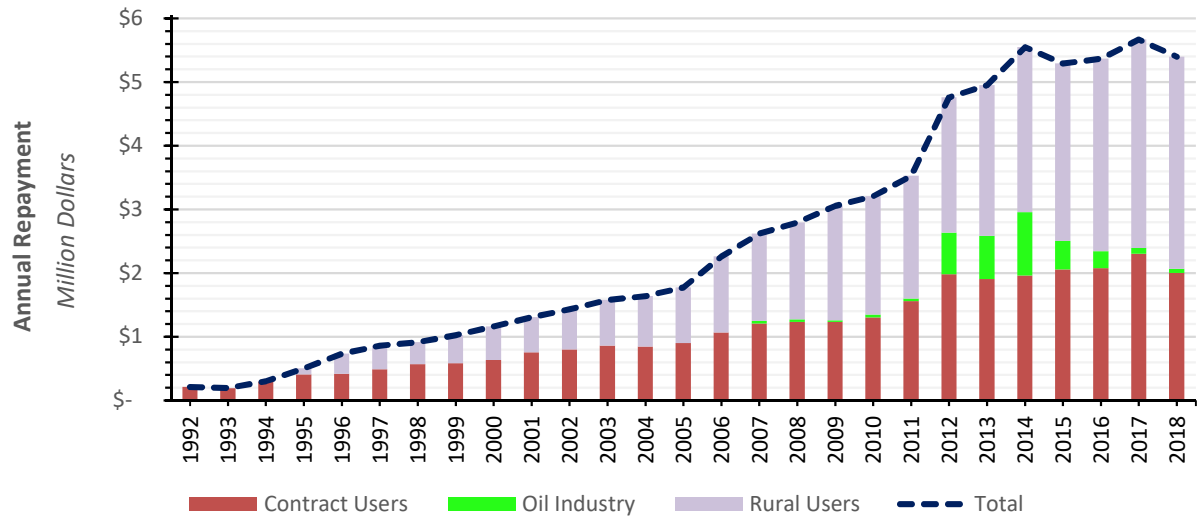
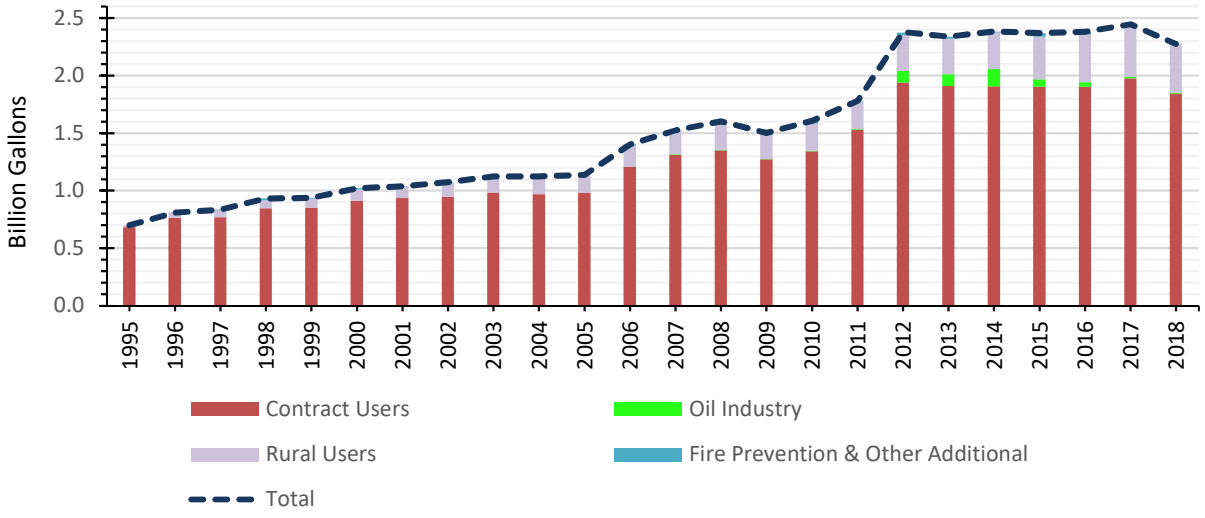


Figure 189 Annual Water Use by Customer Class



7.0 Construction Management

The SWA currently performs operation and maintenance on the SWPP, while the SWC performs engineering and construction management of the SWPP. Ownership transfer of the SWPP would result in additional administrative and engineering duties to be taken on by the SWA or transferred from the SWC.

The SWA would need to hire a Civil Engineer. In addition to aiding in the operation and maintenance of the existing SWPP, this individual would also manage construction of the SWPP. They would be responsible for reviewing and approving construction documents, obtaining necessary permits for construction, maintaining the SWPP construction budget, and administering water supply contracts and agreements.

In addition to an engineer, the SWA would require an engineering technician. This individual would be responsible for maintaining record drawings, coordination with contractors and consulting engineers, and field inspection during construction.

The SWA would also need additional personnel to carry out right-of-way/property acquisition and general office duties associated with the SWPP. One person with the proper skills, or two part time persons, could fulfil these duties.

It is estimated that the SWA would need 3 additional FTE's if Ownership of the SWPP is transferred. The cost is summarized in the following table.

Table 4 Additional Full Time Employees

Additional Work/Personnel	Estimated Cost
Civil Engineer	$85,000
Civil Engineer Technician	$60,000
Administration/ROW-Property	$55,000
Benefits/Payroll Taxes	$50,000
Overhead	$20,000
Software/hardware	$20,000
Total Costs	**$290,000**

Salaries for Civil Engineer, Civil Engineer Technician and Administration are based on Salary.com national averages. Benefits are estimated for 3 additional full-time employees with families. Software/hardware costs include licensing and equipment costs.

Table 4 represents annual costs that the SWA will have to take on without assistance. These costs will be funded by the water rates alone. Other expenses, such as legal fees, will also be the responsibility of the SWA once ownership is transferred. These expenses can vary greatly from year to year, depending on the circumstances. For example, litigation issues can occur on construction contracts. Such expenses

are impossible to predict with any accuracy. However, the SWA will need to consider these contingencies when developing their annual budget and water rates.

The cost for SWC Agency Operations is already included in the future capital outlays for the SWPP. Based on the description above, these costs are already included in the analysis. Therefore, no appreciable impact to SWPP customers is expected based on SWA performing Construction Management services. Construction Management is presumed to be a cost of employing capital assets and is therefore typically capitalized. However, if SWA prefers to include costs for Construction Management for new construction with current year revenues, they will need to increase their annual revenues by the amount listed in **Table 4**. This would result in a one-time rate increase of approximately 2.0% of annual revenues.

8.0 Evaluation of Results

8.1 Affordability based on Per Capita Income

The Heider Study recommended a rate such that the Capital Repayment for a residential customer was approximately 0.23% of per capita income (PCI). **Figure 20** shows how the Project Area PCI has changed over time and illustrates the Capital Repayment as a percentage of PCI based on municipal per capital water consumption previously presented. Generally, residential water costs have declined since inception which means that customers of SWPP spend less of their income today than when the project began.

An affordability analysis relative to domestic water consumption was not performed as a part of this study. That analysis has more to do with rate design than capital repayment alternatives.

Figure 20 Project Area Affordability

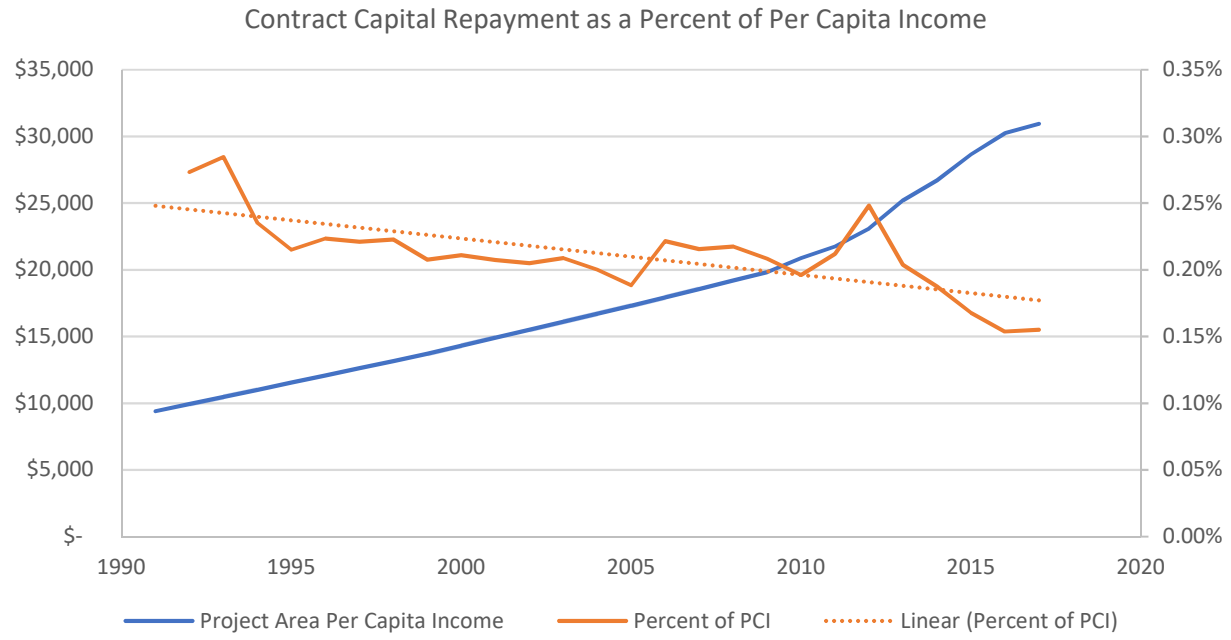
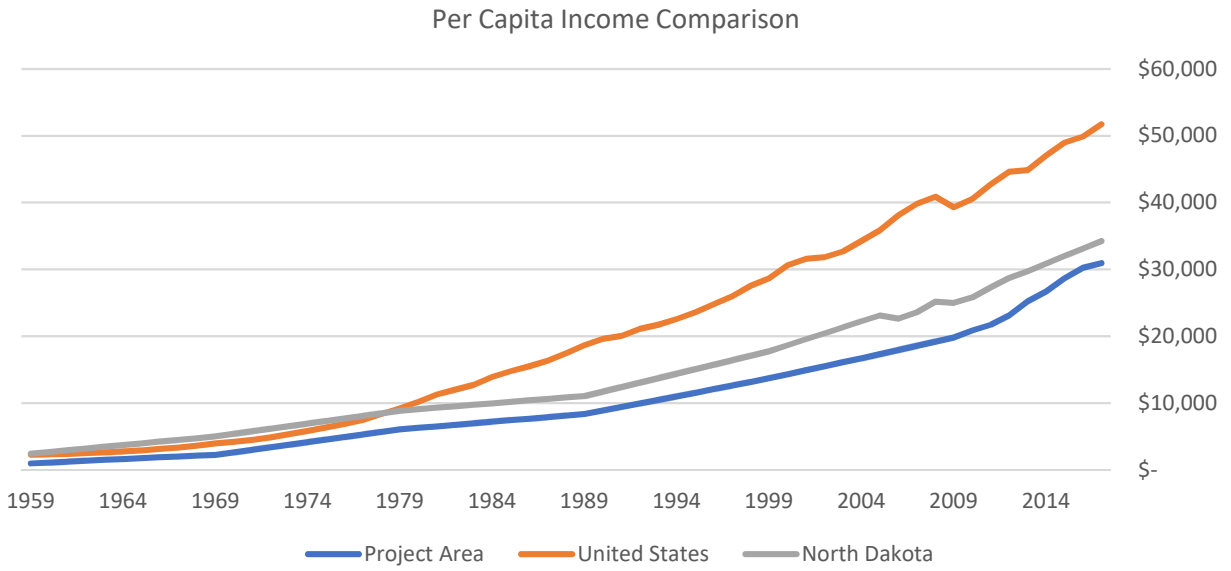


Figure 21 shows the Project Area PCI compared with State and national PCI. The project area generally trends with the rest of the State, which lags behind incomes across the nation.

Figure 191 Project Area PCI



8.2 Impacts to the RTF, State and SWPP Customers

The following section summarizes the impacts of the various models on the RTF, the State and the SWPP customers. The impacts of the transfer of ownership to SWA and the retention of ownership by the State are discussed.

8.2.1 Current Capital Repayment Model

Applies to:

Alternative 1: No Change in Ownership/No Change in Capital Repayment
Alternative A: Ownership transferred to SWA/No Change in Capital Repayment

As previously described, the current Capital Repayment model is analogous to that of a perpetual annuity with escalating payments for the benefit of the State. As a result of this structure, it is impossible to perform any kind of present value comparison to other alternatives.

Without future expenses for maintaining the capital, the benefit of continued involvement is heavily weighted toward the RTF. The RTF will redistribute receipts from the SWPP to other water development projects throughout the State, which in turn benefits the State.

Unfortunately, the current Capital Repayment model has some negative long-term implications to current customers of the SWPP. Current customers will eventually be paying more than other similar systems because the State Cost Share, which is available to other systems, has not been guaranteed to the SWPP. Even further in the future, capital repayments will exceed all existing investments from the State while the capital repayment portion of the rate will continue to escalate.

Finally, by prefunding capital replacements through the REM Fund, there will exist significant intergenerational inequity as current customers pay for both existing and future assets.

8.2.2 State Cost Share Alternatives

Applies to:

Alternative 2: No Change in Ownership/Assume State Cost-Share Percentage
Alternative 3: No Change in Ownership/Utility Basis Method
Alternative B: Ownership transferred to SWA/Termed Debt
Alternative C: Ownership transferred to SWA/Benchmark Capital Repayment

Several of the capital repayment alternatives developed in this study allow for State cost share or subsidy to the SWPP. While this single factor affects the rates and the relative impacts to stakeholders more than any other factor, it is relatively independent of any particular method. The effect of the cost-share can be incorporated into any of the models. But, most notably, indication of a grant percentage on capital would signify that the SWPP would be paying back some proportion of capital, rather than increasing payments in perpetuity.

The amount of cost-share will directly benefit SWPP customers and reduce future payments to the RTF. This will inherently reduce the amount of funds available through the RTF for other State priorities.

8.2.3 Termed Debt

Applies to:

Alternative B: Ownership transferred to SWA/Termed Debt

Depending on the State cost share and the terms of the debt, this alternative likely represents the lowest cost to existing SWPP customers. Existing capital repayments will service debt payments that exceed cost-share percentages of similar systems.

8.2.4 Utility Basis and Benchmark Alternatives

Applies to:

Alternative 3: No Change in Ownership/Utility Basis Method
Alternative C: Ownership transferred to SWA/Benchmark Capital Repayment

Both the Utility Basis and the Benchmarking alternatives represent independent methods of estimating capital costs. Conducting a Utility Basis analysis for the State invested capital may provide a method to balance the competing objectives for the RTF to earn a “fair return” on capital supplied, without being punitive to the SWPP customers. If this alternative is selected by the SWC, a separate analysis should be made to determine the Rate Base allowed considering granted facilities along with a low-risk interest rate to be utilized such as the short-term treasury bill or the current SRF interest rate.

8.2.5 Summary of Impacts

Table 5 has been prepared as a summary of the three main categories of models. It shows a probable example assuming a transfer of ownership date in 2023 and a State cost-share percentage of 75% of the total project spending. The value shown represents the annual amount that will be paid back to the RTF and would be reflective of the relative impact to the customer rates.

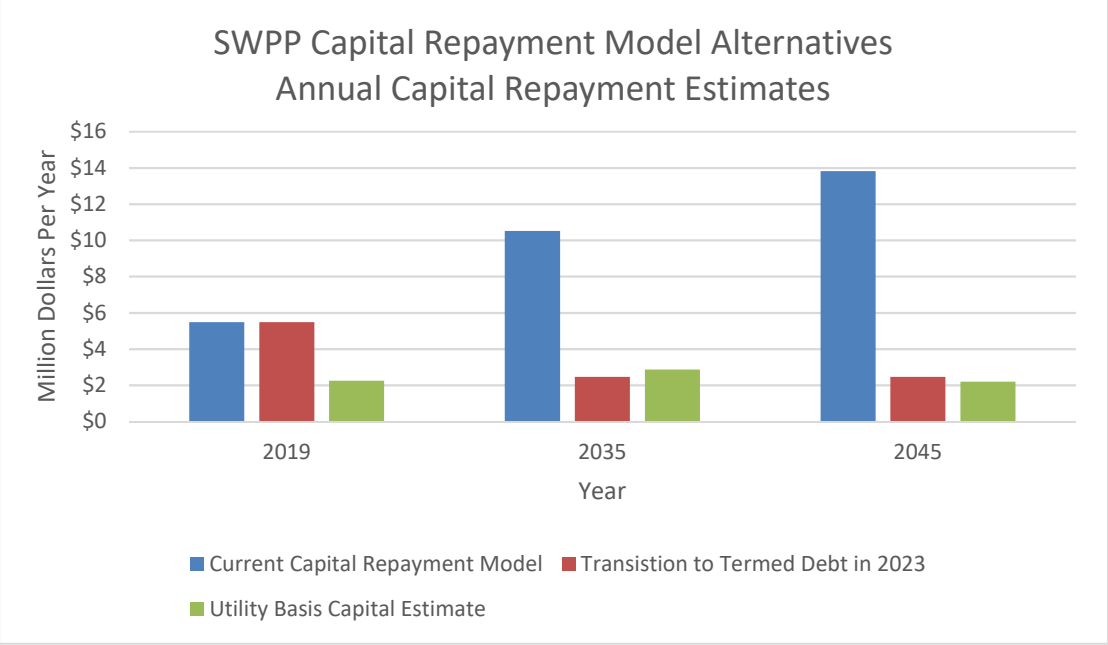
Table 5 Annual Capital Repayment Estimates

Annual Capital Repayment Estimates (Million $)			
	2019	**2035**	**2045**
Current Capital Repayment Model[1]	$5.47	$10.52	$13.82
Transition to Termed Debt in 2023[2]	$5.47	$2.45	$2.45
Utility Basis Return on Rate Base[3]	$2.25	$2.87	$2.19

1. The Current Capital Repayment Model is based on the following assumptions:
   a. Municipal population growth rate of 0.5%
   b. Per capita water usage = 120 gpcd
   c. 330 rural service additions per year for system build out and 50 per year thereafter
   d. Consumer Price Index escalates 2.27% per year
2. The Transition to Termed Debt Model is based on the following assumptions:
   a. Total cumulative spending in 2023 = $501.1 M
   b. Total cumulative State spending in 2023 = $379.0 M
   c. Total cumulative Capital Repayments in 2023 = $98.7 M
   d. State cost share = 75% of total spending
   e. Existing differential and all Future spending will be debt financed at 2% for 30 years
   f. Value shown includes principal and interest payments
3. The Utility Basis Return on Rate Base Model is based on the following assumptions:
   a. Rate Base = Original Rate – Depreciation
   b. Rate of Return = 2.27%, matching 25-year average of Consumer Price Index escalation
   c. State cost-share = 75% of total spending
   d. Depreciation follows straight-line methods over estimated service life of each asset
   e. Service Life estimates as follows:
      i. Water Transmission/Distribution = 80 years
      ii. Water Storage Facilities = 60 years
      iii. Water Treatment Equipment = 15 years
      iv. Cathodic Protection = 20 years
      v. Generators, pumps, equipment = 10 years

The above table is reflected is **Figure 22**.

Figure 202 Annual Capital Repayment Estimates



9.0 Conclusions

Significant differences exist between the capital financing used by the regional water systems in North Dakota. The governance models also vary remarkedly. These differences developed uniquely by necessity to address the issues of the project stakeholders at the time of formation.

A fundamental difference between the SWPP and the other regional systems is that for SWPP customers, capital payments are based on the ability to pay rather than a subsidized cost-based rate. The existing SWPP capital repayment model was initially a net benefit to the SWPP users.

The SWPP could not have been done by the users without the financial help of the State. Typically, regional, rural and municipal water utilities incur a "development hurdle" where the initial costs to the customers are relatively high. The initial users of the SWPP were not financially able to overcome that "development hurdle." By the SWC owning and financing this project in the beginning, the SWPP was able to proceed without financially crippling the users.

However, while the long-term benefit of growth within the project area directly benefits the rate payers, the SWPP is becoming a net benefit to the State. As the customer base expands within the SWPP project area, capital repayment will correspondingly increase. Under the current Capital Repayment model, the SWA will eventually pay for the entire SWPP.

SWPP Ownership can now be transferred in a way that is equitable and does not negatively impact water rates. Capital financing models that would achieve this have been identified.

The cost of the transfer of ownership is not a part of this study. The actual cost of transferring the ownership of property, easements, and facilities has not been evaluated. The estimation of the cost of time and personnel required to carry out the transfer of ownership will be addressed in Phase 2, if desired by the SWC.

APPENDIX A – SWA CAPITAL REPAYMENT HISTORY

NORTH DAKOTA STATE WATER COMMISSION
SOUTHWEST PIPELINE OWNERSHIP TRANSFER
CAPITAL REPAYMENTS AS OF DECEMBER 31, 2018

CAPITAL REPAYMENT THROUGH 2018

Year	Contract	Rural	Total
1991	$ 11,166.00	$ -	$ 11,166.00
1992	$ 212,899.00	$ -	$ 212,899.00
1993	$ 190,433.00	$ 5,540.00	$ 195,973.00
1994	$ 292,997.00	$ 7,475.00	$ 300,472.00
1995	$ 408,563.00	$ 95,616.00	$ 504,179.00
1996	$ 418,179.77	$ 316,814.38	$ 734,994.15
1997	$ 487,828.22	$ 370,085.00	$ 857,913.00
1998	$ 568,497.91	$ 347,293.46	$ 915,791.37
1999	$ 580,865.33	$ 445,131.91	$ 1,025,997.24
2000	$ 634,275.73	$ 524,952.50	$ 1,146,779.77
2001	$ 751,392.41	$ 556,470.52	$ 1,308,267.93
2002	$ 800,159.52	$ 630,004.66	$ 1,432,224.68
2003	$ 861,015.31	$ 718,768.94	$ 1,581,284.21
2004	$ 846,041.48	$ 774,667.77	$ 1,621,239.25
2005	$ 897,289.69	$ 809,668.64	$ 1,706,958.33
2006	$ 1,067,345.59	$ 881,134.67	$ 1,948,480.26
2007	$ 1,244,385.61	$ 1,063,680.25	$ 2,308,065.86
2008	$ 1,269,698.28	$ 1,184,034.70	$ 2,455,506.88
2009	$ 1,255,131.37	$ 1,363,856.74	$ 2,618,988.11
2010	$ 1,344,386.07	$ 1,432,160.52	$ 2,776,546.59
2011	$ 1,595,570.21	$ 1,480,846.23	$ 3,076,416.44
2012	$ 2,634,953.62	$ 1,652,322.24	$ 4,287,275.86
2013	$ 2,582,830.77	$ 1,938,810.07	$ 4,521,640.84
2014	$ 2,955,122.24	$ 2,139,203.24	$ 5,094,325.48
2015	$ 2,501,338.51	$ 2,275,038.66	$ 4,776,377.79
2016	$ 2,344,000.93	$ 2,592,756.86	$ 4,591,752.67
2017	$ 2,394,258.31	$ 2,863,924.59	$ 5,258,182.90
2018	$ 2,067,663.85	$ 2,947,752.89	$ 5,015,416.74
Perkins County Rural Water Total To Date			$ 5,459,000.00
TOTAL	**$ 33,218,288.73**	**$ 29,418,010.44**	**$ 67,744,115.35**

APPENDIX B – CURRENT BREAKDOWN OF FUNDING AND SERVICE AREA

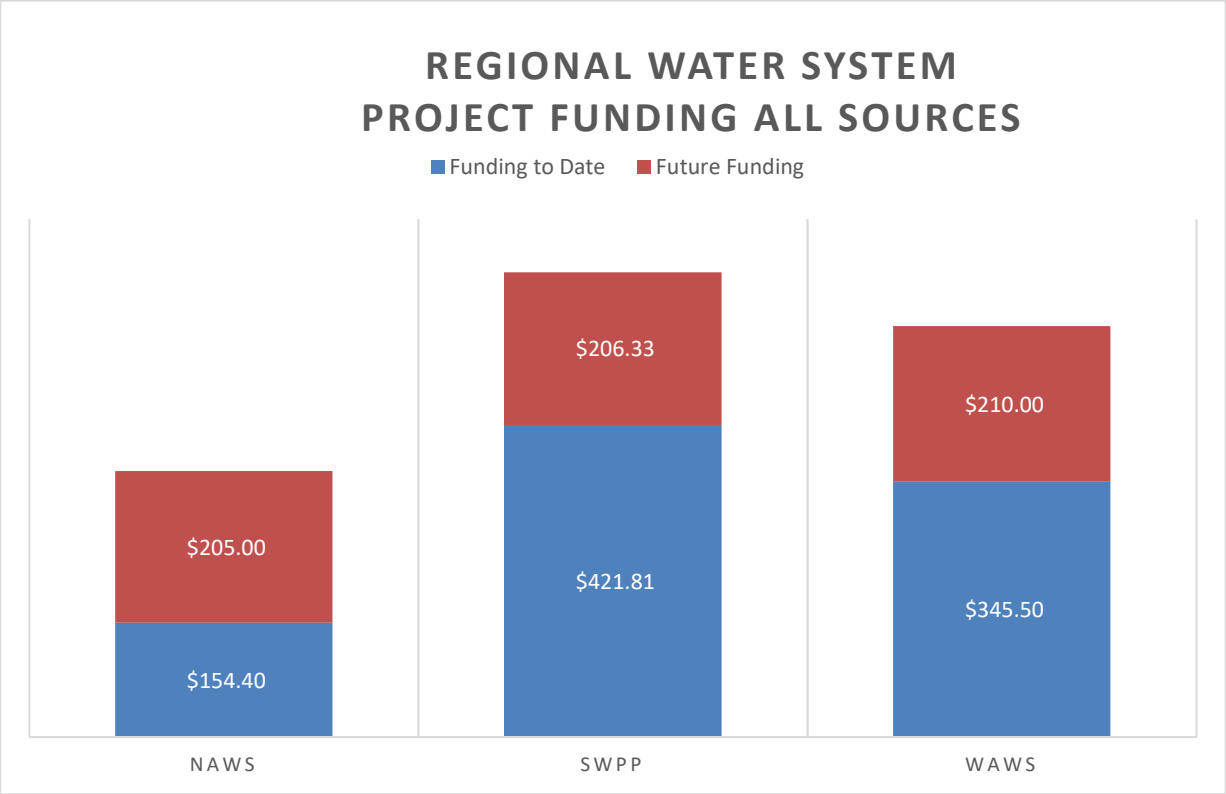
Current Breakdown of Funding (Millions of Dollars)			
	NAWS	**SWPP**	**WAWS**
State Funding Allocated through 6/30/2019	$53.70	$275.40	$119.50
State Future Funding	$180.90	$206.33	$157.50
Federal Funding	$52.15	$122.17	-
Federal Future Funding	-	-	-
Loans/Bonds	-	$24.24	$226.00
Future Loans/Bonds	-	-	$52.50
Local Share through 6/30/2019	$48.55	$70.31	-
Future Local Share	$24.10	-	-
Total Project Cost	**$359.40**	**$628.14**	**$555.50**

NOTES:

NAWS
1. City of Minot and City of Rugby contribute towards the local share of the NAWS project.
2. Local Share is deposited into the RTF.
3. A portion of the State Future Funding is expected to be reimbursed by the Federal Government.

SWPP
1. State Funding allocated to the SWPP includes the $18.3 Million towards Bond payoff made by SWC.
2. Capital Repayment includes deposits to RTF totaling $51.06 Million by SWA and Perkins County and $19.25 Million towards bond repayment.
3. Future Local Share is Capital Repayment.

WAWS
1. Local share is through loans from SWC ($84.5 Million), BND ($90 Million) and General Fund ($25 Million. $26.5 Million through Drinking Water SRF. $10 Million of the $26.5 M DWSRF loan was taken by R&T and Northwest Rural Water (member entities) to provide a local match for the grant from SWC.
2. The Loans/Bonds amount does not include the member entity loans that WAWS took over when WAWS was formed in 2011. The May 2019 balance on the member entity loans is $27.4 Million. This exclude the $10 Million DWSRF taken by R&T and Northwest Rural Water.
3. Future Local Share will likely be through DWSRF.



Current Breakdown of Service Area					
Project	**Service Area Population**	**Service Area Square Miles**	**Population/ Square Mile**	**Population/Square Mile less Primary Population Center**	**Distance from Primary Treatment/Population Center to Water Source**
SWPP	90,352	15,341	5.9		
SWPP Less Mandan	67,833	15,319	4.4	2.9	90
NAWS	82,345	6,432	12.8	5.4	45
WAWS	63,583	9,028	7.0	4.0	0

APPENDIX C – COMMENTS RECEIVED DURING 30-DAY COMMENT PERIOD

Summary of Comments Received

1. Utility Basis Alternative is unclear, needs more explanation. Need a list of underlying assumptions and explanation of calculations for each alternative.
   - NOTED – See final report.
2. "Ability to Pay" basis of capital repayment only applicable to contract customers. Rural users pay a flat rate comparable to the repayment rates of other rural water systems. Needs more discussion
   - NOTED – See final report.
3. What is the impact of a transfer of ownership of the SWPP on commercial and industrial users? How does this relate to the Return on Investment?
   - It is assumed that the transfer of ownership will result in a change in the capital repayment model. The State's return on investment will be the cost share percentage all parties decide upon. As the report shows, when the model is changed, the capital repayments go down. As the capital repayments go down, the rates should also go down.
4. Growth projections seem aggressive and the per capita water usage seems high. Is industrial consumption considered part of the per capital usage? How do the growth projections compare with future hook up costs and system capacity requirements?
   - The growth projections are based on data from the US Census and SWA. The report uses a growth projection of rural water hookups based on the SWA historic data not on the SWA projected number. See the final report.
   - The per capita water usage is for municipal users only. See the final report.
   - This study did not evaluate hook up costs as they will likely be borne by the individual user, not included in the rates.
   - Evaluating system capacity was not a part of this study.
5. What would the rates look like if the locals were required to pay interest on their 25% share to date if they were required to fund depreciation.
   - See Section 8. The Utility Basis Analysis model considers depreciation. This model would result in lower capital repayment costs than the current model and would subsequently result in lower rates.
6. Provide a tool for policy makers to use to fund future projects.
   - Not a part of the scope of work.
7. Provide an "apples to apples" comparison between the SWPP, WAWS, NAWS and RRVWS.
   - Not a part of the scope of work.
8. The projects were created at different times in different parts of the state with different stakeholders for different purposes. An "apples to apples" comparison will be difficult.
   - Not a part of the scope of work.
9. Provide a recommendation on governance and funding models for future use.
   - Not a part of the scope of work.
10. Provide a comparison to rural water systems.
    - See Section 3 of the final report.

Questions received from Mark Owan 12/10/19

1) *Structure of the Analysis/Phased Deliverable:*
   a) *What was the primary reasoning for deferring large portions of the originally requested scope?*
      - *This was done at the request of the Commission*
   b) *Did the Study Team believe the Commission had enough information in hand with the first phase to make a decision on ownership transfer?*
      - *No*
      i) *If no, what would be the anticipated duration/cost for the second phase?*
      - *The scope would need to be updated to accurately answer this question.*
2) *Selected Growth Projections:*
   a) *The growth projections used seem aggressive and long-term per capita water usage seems high:*
      i) *Did Study Team adjust out industrial consumption from historical per capita demands?*
      - *We used municipal sales and municipal populations. The per capita consumption has been very stable.*
      ii) *Considering national trends in per capita water use reductions, did the team consider lowering this over time?*
      - *We note that the trend of per capita water consumption observed for the SWPP is opposite of that described by most national records. However, we also noted that the per capita consumption in this area of North Dakota has been very stable. It was felt more prudent to rely on historical data for the area rather than national trends.*
      iii) *Do growth projections mirror future hook-up costs and system capacity requirements/costs?*
      - *Growth projections look only at the projected future consumers, not the cost of them hooking up to the system.*
3) *Alternative Analysis:*
   a) *Can the Study Team provide a more comprehensive list of underlying assumptions and calculations for each alternative (let the commission peak behind the curtain)?*
      - *Noted. See the final report.*
   b) *Can the team better explain what the utility method is and how it might be utilized long-term?*
      i) *Did the analysis consider funding depreciation in addition to RoR (the alternative doesn't appear to have included annual depreciation funding)?*
      - *Noted. See the final report.*
   c) *Did the team consider analyzing the total NPV cost to the state for each of the alternatives?*
      - *No. It was not part of the scope of work.*
   d) *Does the alternatives analysis give the benefit of past grant dollars to the State or local share (are they buying down the 75% share or the 25% share)?*
      - *The alternatives analysis gives the benefit of past grant dollars to the State.*
   e) *It appears the alternative analysis does not consider the cost of carried capital over time/to date:*
      i) *What would the total P&I payments have been in comparison to existing capital repayments if the locals were required to pay interest on their 25% share to date?*
      - *Figure 13 illustrates an effective 2.27% rate.*
      ii) *Likewise, if they were required to fund depreciation and an RoR on the 25% share to date?*
      - *This was not analyzed.*
4) *Comparison with other funding models:*
   a) *Did the Study Team attempt to create "what if" scenarios for the SWPP under other funding models to analyze local and State total cost differences?*
      - *We looked at the capital repayment under each model for the SWPP. See Section 8.*

Questions received from the City of Dickinson 1/6/20

1) *How would a transfer of ownership of the Project impact the "return on investment" (hereinafter "ROI") terms under the current agreement between the State and the SWA? Would the SWA be responsible for a continues "ROI" payment to the State after the transfer? If not, how would the ROI be converted into a repayment plan for past expenses? If so, what type of cost-share arrangements would be available to the SWA for future expenses?*
    - *We recommend that the State discontinue the current Capital Repayment Plan and replace it with one of the alternatives discussed in the report. We provided alternatives to the current Capital Repayment Plan if ownership were transferred to the SWA, including a transition to Termed Debt or adopting a benchmark published by the AWWA for Return on Assets (ROA) and Renewal and Replacement (R&R). We provided estimates of the total dollars each model would require. These estimates would be greatly influenced by the cost share by the State for previous expenditures and by the loan terms. The total dollars for each alternative can be compared with the total dollars generated by the current Capital Repayment Plan to understand which alternatives increase or decrease the costs to the SWA. If ownership is transferred, we assume the Project would receive similar cost-share arrangements as other systems, which may vary year by year depending on the funding availability and State priorities.*
2) *What type of impact, both financial and in terms of infrastructure, would such a transfer have on both commercial and industrial water users? In determining impact to individual water users within the SWA jurisdiction, has Apex considered the pass-through costs that entities such as the City of Dickinson must assess to its water customers when estimating future water rates?*
    - *We understand that the State would increase or decrease the capital costs as a constant percentage to all customer groups within the SWA.*
3) *The current ROI terms allow for a somewhat unpredictable payment schedule and increases in water user rates; how could these terms be modified to reduce large unanticipated increases to water customers?*
    - *We understand the ROI, or Capital Repayment component of the rate was established in 1982 and has increased annually according to the Consumer Price Index (CPI). While the CPI may change from year to year, this method is fairly consistent in comparison to other methods. We would recommend the State consider a 3-year or 5-year rolling average. This would reduce the volatility of the increases.*

Questions received from Jim Lennington 1/17/20

1) The study refers to the 1982 Chiles and Heider report and talks about "ability to pay" being the basis of the capital repayment rates. While this is correct, it is only correct for the contract customers of the project. As noted in the study on page 3, in 1991 the SWC expanded the authority of the SWPP, with legislative approval, to include service to individual rural water users in the project area. The capital repayment for the rural users was set at $20/month, which was according to minutes from the May 3, 1991 SWC meeting "comparable to rates throughout the state" and then indexed to inflation using the CPI just as the capital repayment for the contract users was. You can download these minutes right off the agency's website. In SWA's 2018 annual report you can see that as of 2016 the actual capital repayment by rural customers exceeds that of the contract customers. This is a significant point that should be highlighted in the study – the rural rates were not based on ability

to pay but were simply set to be comparable to the repayment rate on other rural water systems. The SWC (Jeffrey Mattern) keeps track of rural water system rates throughout the state and in deference to those claiming the current system is unfair perhaps a little more discussion on the rural rate in comparison of other systems is in order. The claims of unfairness seem to be more about the funding that SWPP receives rather than the rates so perhaps this won't help dispel those claims but it could still be included or discussed.

- Noted. See the final report.

2) At the SWC subcommittee meeting on December 20, 2019 there was discussion from Lt. Governor Sandford as well as Commission members relative to the scope of the study. As I recall the discussion there was a general consensus to consider the transfer of ownership as one option and to change the title of the study. Most of the questions and discussion related to the comparison of options for repayment or comparison between the different models, those being SWPP, WAWS, NAWS, and the Red River Valley Water Supply. I recall one Commissioner [Owan?] saying something to the effect of comparing apples to oranges or giraffes to zebras. My comment is in that regard. While I understand the desire to have a "level playing field" [Richard Johnson, I believe] by the members of the committee that will present some difficulty for the study team in that the projects, being borne at different times in different parts of the state with different stakeholders – had different objectives. The original authorizing legislation for SWPP did not allow water supply to industrial users unless those users paid their proportionate share of costs of the project up front. I obtained a copy of SB2251 from the librarian at the Legislative Council and it is attached. They were not allowed to get a water supply and then pay capital repayment like other users. This got changed later when Red Trail Energy was allowed to connect and pay capital repayment [2005, 61-24.3-07 modified]. At that point in time the SWPP had an excess of capacity and SWA was short operating revenue. Similarly, SD users (Perkins County RWS) had to pay their share of the costs as can be seen in 61-24.3-08.
   - Noted. This study was concentrating on the current capital repayment model and moving forward. As such, the history of payment policies was not investigated. We agree that comparing the different systems is problematic.
3) As I understand WAWS, water supplies for oil exploration (fracking) were a major part of the project planning from the outset. I think the concept was to sell water for fracking and use that to pay off the majority of the cost of construction, with the state guaranteeing any loans. This "excess capacity" is something SWPP was not allowed to include. Granted, at the time in the late 80's and early 90's there wasn't such a thing as fracking and the industrial uses being contemplated in the authorizing legislation were of the coal fired electric generating variety. Since I am not directly involved in NAWS I cannot be sure of this and it should be verified.
   - Noted.
4) As I understand RRVWS, it is even more speculative, in that capacity is being included for possible ag processing facilities in the eastern part of the state. While I personally support this concept, it is in stark contrast to the approach that was taken for SWPP and for NAWS. If one was to apply the SWPP Capital Repayment concept to RRVWS, this payment of proportionate share and not a water rate would be a fundamental aspect that has to be included. If not included how are you then comparing "giraffes to giraffes"?
   - Noted.

5) I don't believe the NAWS legislation addresses industrial uses other than to say the project purpose supports "light industrial" and other uses.
    - Noted.
6) My comment is really that I think it will be difficult to conduct a comparison of these projects on an "apples to apples, giraffes to giraffes" basis given these differences. Hypothetically, if a capital repayment model was adopted for RRVWS industrial users (ag processing), that is similar to that of SWPP, and those users are allowed to make capital repayments on the same basis as the cities and rural water systems, then what has happened is inherently unfair to SW North Dakota and that would switch the tables on the argument about fairness. Not to mention that taxpayers in ND would in effect, be subsidizing those industrial users. Perhaps the capital repayment model for RRVWS and WAWS would only be available to the municipal and rural users and any industrial users would have a different repayment model. The RRVWS has no direct rural users as planned but might have rural water systems as customers. How would you apply the SWPP model for rural capital repayment to those users? Same with WAWS and NAWS which provide wholesale supplies to several rural water systems which in turn have a rate structure that they set themselves based on their own O&M and capital costs.
    - Noted.
7) SWPP also has a cost limit for the amount that can be spent to bring rural water to any one user. This is natural and appropriate since the capital cost was not based on a loan. The SWC set the limit at $25,000 in July 1993 and then adjusts that also according to the change in CPI based on January 2000. The current limit is now about $45,000. This is all well and good but over time the amount of pipe that can be installed has become less and less. At one point in time it meant we could go 3.5 miles between users, but it has steadily dropped and is now close to less than 1.5 miles. It would not be possible for you to include this in any comparison to a rural water system that has been built but it should be discussed. I doubt the other systems would want a system like this. This also brings to mind the point about the project area population density that you've already covered. That was one of the reasons why the state had to get involved and it will be hard to get a level playing field between a more densely populated east rural water system and one out west, because of that simple fact it will always be more expensive to build in the west and it will take more support from the state.
    - Noted.
8) You also need to be aware that SWPP charges a different rate for any water that is being used for fracking. They have an oil industry rate that was $22/1,000 gallons in 2018 but was reduced in 2019 to $12 and will be in 2020 also. Of this amount $3 is for capital repayment if the water comes from SWA's water depot and $4 if the water comes from elsewhere. SWA gets a report from cities and other entities that are engaged in selling SWPP water for fracking and assesses these fees on them. This would be extremely difficult to compare with other systems and may not be important. It could be important if you tried to use the WAWS model on the SWPP. There has been very little revenue generated this way for several years but back in the fracking and hauling water with trucks heyday the SWA took advantage of this to generate revenue to build infrastructure including their current HQ office building. Now frackers use lay-flat piping systems and find closer sources and this revenue stream has dried up. The $10 drop in price didn't really help much.
    - Noted.