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Sewer Connection Fee Study

City of Reno

May 2022

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1.0 INTRODUCTION

The City of Reno (City) has retained Farr West Engineering (Farr West) to provide an analysis of new connection fees for its sewer utility. Connection fees are one-time charges that pay for the existing and expanded capacity of the system. As of 2021, the City serves approximately 117,400 sewer customers in Northern Nevada. Figure 1 provides the City's service boundaries. The City last reviewed the connection fees in July of 2020, although no change to the connection fee schedule or ordinance (i.e., 6197) was adopted. Since that time, the available sewer system capacity (i.e., collection and treatment), the capital improvement plan (CIP), and the available funding opportunities have changed. Due to these changes, the City requested that Farr West provide a formal analysis of connection fees as well as provide a rate sufficiency analysis to determine if modifications to connection fees or user rates are warranted.

1.1 SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

The findings and recommendations presented in this study were developed over a six-month period which included routine coordination with City staff. For this study, both service territory-specific and system-wide connection fees were calculated. This study recommends an increase in connection fees in order to accommodate changes to project costs and future treatment capacity requirements to meet future growth. The system-wide and territory-specific connection fee structures for all alternatives modeled are summarized in Section 5.1.

In addition to connection fees, a user rate sufficiency analysis was performed to ensure that the City's annual expenses and upcoming repair and replacement projects are capable of being funded by the current rates. Based on the analysis, the existing rate structure is estimated to be adequate to meet the future financial needs of the City. This analysis is detailed in Appendix B.

1.1.1 Summary of Connection Fee Analysis

This study evaluated a connection fee structure through fiscal year 2032 (FY 32) to recover the full cost of adding treatment and collection system capacity in each area which the City provides sewer service to its customers. The results of this analysis include two connection fee structures. The first contains connection fees specific to three service territories: the central Truckee Meadows Water Reclamation Facility (TMWRF) service territory; the Reno-Sparks Water Reclamation Facility (RSWRF) service territory; and the outlying Lawton-Verdi (L-V) service territory (which is ultimately treated at TMWRF). The second fee structure includes a uniform, system-wide fee. Table 1 provides a condensed summary of the recommended fee structures discussed in Section 5.0.

Table 1: Recommended Connection Fee Schedule.

Customer Class	TMWRF Service Area Fee	L-V Service Area Fee	RSWRF Service Area Fee	Uniform Fee
Single Family Dwelling	**$10,560**	**$12,841**	**$10,476**	**$10,917**
Multi-Family Dwelling	**$9,019**	**$10,966**	**$8,946**	**$9,323**
Commercial Fixture Unit Fee	**$487**	**$593**	**$483**	**$504**

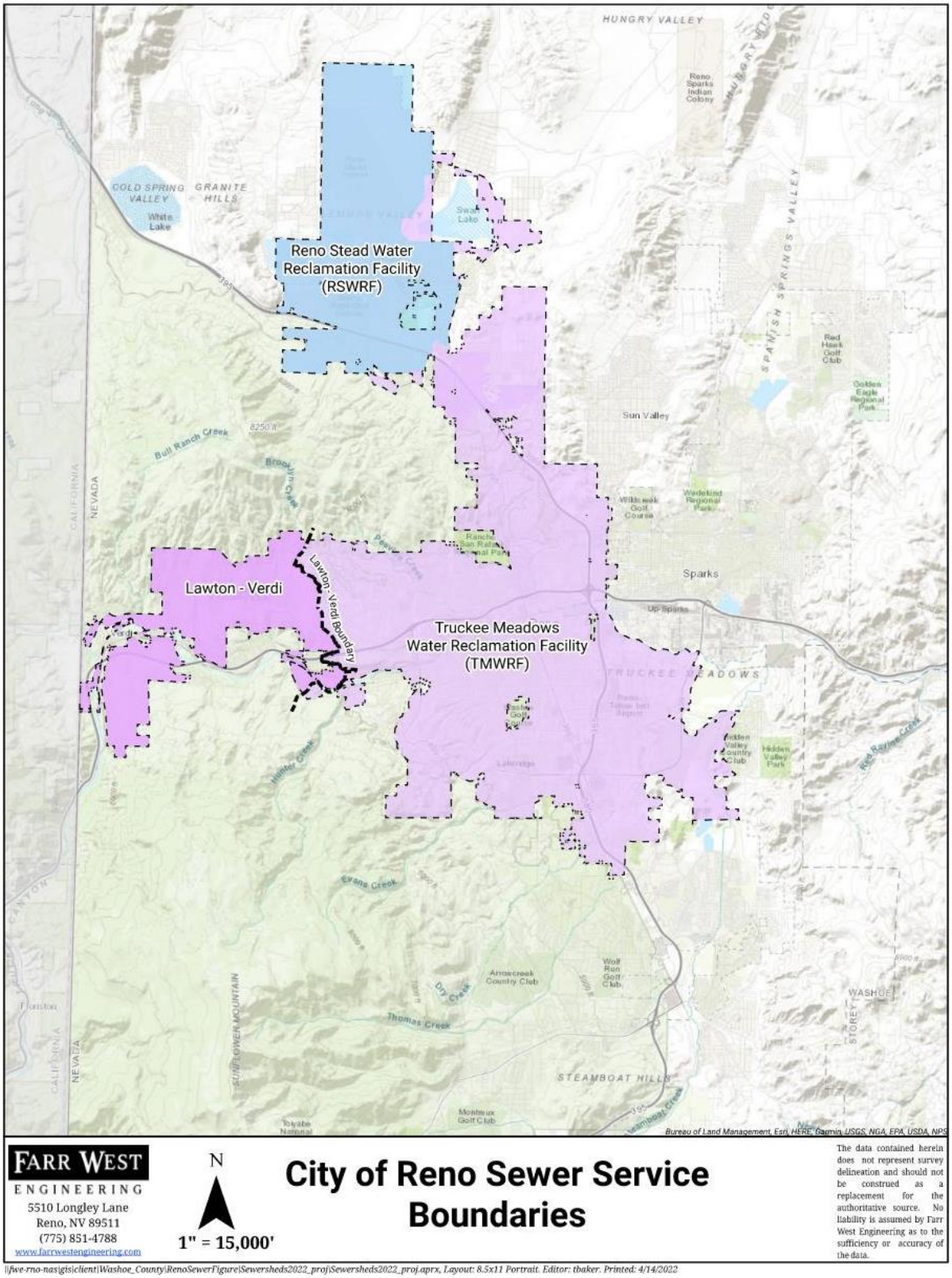

Figure 1: City of Reno Sewer Service Boundaries

2.0 STUDY METHODOLOGY

The successful and sustainable operation of any utility is contingent on sound financial policy and proper utility planning. This study was conducted based on methodologies and principles established by the American Water Works Association (AWWA) in the *Manual of Water Supply Practices M1 – Principles of Water Rate, Fees and Charges* and *Financing and Charges for Wastewater Systems – Manual of Practice No. 27* published by the Water Environment Federation.

The following objectives were used as guiding principles in the preparation of the connection fee analysis. According to the AWWA (2014), the objectives for estimating new connection fees are comprised of:

- Determining the current value of the existing facilities.
- Adjusting for any outstanding principal, grants, or contributions already made by developers for future capacity.
- Determining the existing and future capacity for which new connections can buy into.
- Estimating the demand future connections will have on the sewer system.
- Calculating the cost of system capacity in an Equivalent Residential Unit (ERU) basis.
- Applying that cost to an assessment schedule based on customer type.

According to the AWWA, there are three approaches to estimating new connection fees. The first approach is the "Buy-In" cost methodology. This approach is used when there is existing capacity available for new customers to purchase. The second approach is the "Incremental" cost methodology, which is used when new capacity is needed before new customers can connect to the system. The final approach is the "Hybrid" approach, which is a combination of the previous approaches. Given the fact the City has remaining capacity at TMWRF and a need to add capacity at RSWRF before new customers can connect, this study used the "Hybrid" approach.

The City requested both a system-wide and a service territory-specific connection fee structure. To develop the system-wide connection fees, the existing and future costs were applied to all service territories. To develop the service territory-specific connection fees, the system asset valuations, treatment capacities, and funding mechanisms were broken out, based on the respective service territory.

3.0 DATA AND ASSUMPTIONS

The City provided Comprehensive Annual Financial Reports (CAFRs), historical financial reports, budgets, and other financial information regarding the sewer utility for FY 17 through FY 22. This information was used to develop long-term financial projections for the sewer utility. The City also provided existing asset valuation information and a proposed CIP through FY 32. This information was used to determine both the existing cost-basis and the future cost-basis that future customers will buy into. Additionally, the City provided current treatment facility capacities, proposed future capacities for TMWRF and RSWRF, and data supporting the average sewer flow per ERU. This information, along with the total cost-basis, was used to develop connection fees per ERU.

The assumptions used to evaluate the financial stability of the utility were developed in coordination with, or provided by, City staff. Assumptions such as future inflation factors, customer account growth rates, and beginning cash balances are summarized in this section. Based on these assumptions and financial information, a 10-year revenue projection is presented in this report, through FY 32, from the alternative connection fee structures.

3.1 ASSUMPTIONS

The following sections outline the general assumptions and sources used in the connection fee model.

3.1.1 Inflation Rates

To prepare the 10-year financial plan, inflation factors are applied to future revenue and expense projections over the study period. The inflation factors shown in Table 2, were developed in coordination with City staff and considered commonly used price indices. A general cost inflation rate was based on the consumer price index (CPI) and is assumed to escalate by 2.66-percent. Rate revenues are assumed to escalate at CPI plus growth from the 2021 customer basis. Labor cost and benefits cost inflation was assumed to escalate by 5-percent. See Appendix A for a detailed summary of inflation factors used in this analysis.

Table 2: Inflation Factor Assumptions

Key Factors	Inflation Rate per Year
General Cost Inflation (CPI)	2.66%
Construction Cost Inflation (ENR-CCI)	3.00%
Labor Cost Inflation	5.00%
Benefits Cost Inflation	5.00%
Admin Charge Projection	2.00%
No Escalation	0.00%
General Inflation Plus Growth	4.71%
City Directed 5% Projection	5.00%
Customer Growth (Multi-fam/Comm)	2.00%
Customer Growth (Single Family)	1.00%

3.1.2 ERU Sewer Flows

ERU sewer flows used in this analysis are based on a December 2021 memorandum outlining indoor water usage in the region (see Appendix C for details). It is assumed that all indoor water usage will eventually end up in the sewer system. According to the memo, the Truckee Meadows Water Authority (TMWA) conducted a study that estimated indoor water usage for a single-family dwelling to be approximately 4,190 gallons, per month. This equates to an average usage of approximately 137 gallons per day (GPD). After discussion with the City, for this study Farr West applied a 20-percent safety factor to that number, resulting in an average GPD of 165 of sewer flows to the treatment facilities.

The TMWA study goes on to state that the average multi-family residential indoor usage is approximately 85.4-percent of the average single-family indoor usage. This percentage equates to an average of 141 GPD per multi-family dwelling which was the value used in the study. Farr West and the City also agreed on a value of 0.75 ERUs or 124 GPD per unit to account for a "micro-unit" which has a building footprint of 500 square feet or less and contains one of each of the following fixtures - bathroom sink, kitchen sink, toilet, and shower.

The City uses fixture units to determine the amount of sewer flows each commercial connection contributes to the system. A 2005 study conducted by Red Oak Consulting, suggests that the average number of fixture units, per single-family residential connection, is approximately 21.67. For this study, it is assumed that the average number of fixture units per commercial connection is approximately 50 fixtures.

3.1.3 ERU Units per Customer Class

For this study, an ERU is equal to 1 single-family connection. Precise accounting for multi-family services is complicated by the fact that the number of multi-family customer accounts and total multi-family units do not maintain a one-to-one relationship. Farr West analyzed City billing data and found that the average multi-family customer account contained approximately 3.88 multi-family units, resulting in the average multi-family customer is equal to 3.31 ERUs.

Finally, the average number of fixture units per ERU is 21.67, while the average number of fixture units within a commercial connection is assumed to be 50. Based on these findings, the average commercial connection is equal to 2.3 ERUs.

3.2 CUSTOMER BASE AND GROWTH

To project future connection fee revenues an estimate of future customer growth was necessary. Future growth projections were based on the 2021 customer connection and ERU counts displayed in Table 3 and Table 4, respectively.

Table 3: Sewer Connection Counts by Service Territory (2021)

Service Territory	Single-Family Services	Multi-Family Services	Commercial Services	Total Services
TMWRF	48,703	13,431	4,146	66,280
Lawton-Verdi	410	2	66	478
RSWRF	9,862	468	268	10,598
Total	**58,975**	**13,901**	**4,480**	**77,356**

Table 4: Sewer ERU Counts by Service Territory (2021)

Service Territory	Single-Family ERU[1]	Multi-Family ERU	Commercial ERU	Total Service ERU
TMWRF	48,703	52,112	9,536	110,351
Lawton-Verdi	410	8	152	570
RSWRF	9,862	1,816	616	12,294
Total	**58,975**	**53,936**	**10,304**	**123,215**

1 – One single-family connection equals 1 ERU

The customer class specific growth rates listed in Table 2 were applied to the 2021 estimates to provide the future customer projections shown in Table 5. For this study, a growth rate of 2-percent annually was used to estimate future multi-family and commercial ERUs, while a 1-percent growth rate was used for single-family ERUs.

Table 5: Projected Customer Growth throughout the study period (10-years)

Fiscal Year	Single Family ERUs[1]	Multi Family ERUs [2]	Commercial ERUs[2]	Total ERUs
2022	58,975	53,936	10,304	123,215
2023	59,565	55,015	10,510	125,089
2024	60,160	56,115	10,720	126,996
2025	60,762	57,237	10,935	128,934
2026	61,370	58,382	11,153	130,905
2027	61,983	59,550	11,376	132,909
2028	62,603	60,741	11,604	134,948
2029	63,229	61,955	11,836	137,021
2030	63,861	63,194	12,073	139,129
2031	64,500	64,458	12,314	141,273
2032	65,145	65,748	12,561	143,453

1 – A 1-percent growth rate was applied.
2 – A 2-percent growth rate was applied.

4.0 CONNECTION FEE ANALYSIS

The connection fee analysis performed for the City can be separated into two processes. The first process determined an existing and future cost-basis for each service area and allocated those costs on an ERU basis until all existing and future conveyance and treatment capacity was utilized. The second process or phase was to analyze system cash flows on an annual basis for a period of 20 years to understand if changes to the CIP or special funding sources were needed to comply with the City's financial policies. This section documents the data used for the analysis. Proposed connection fees can be found in Section 5.1.

4.1 TREATMENT CAPACITY

The City provided the current and proposed future treatment capacities for TMWRF and RSWRF facilities. Currently, TMWRF's capacity is shared per an agreement between the City of Reno and the City of Sparks, giving each entity a 68.63-percent and 31.37-percent share of total facility capacity, respectively. As of 2022, TMWRF has a total treatment capacity of 34 million gallons per day (MGD), with a planned expanded capacity of 35.8 MGD. Because the City is currently utilizing 19.2 MGD of capacity at TMWRF, the City will have 5.3 MGD of treatment capacity to allocate to new customers per the current CIP.

RSWRF has no existing capacity available to serve new customers. The City is currently in the process of adding 2 MGD of treatment capacity to the RSWRF facility and has plans to add another 2 MGD within the next decade. In total, the future cost-basis of the RSWRF service area will include 4 MGD of treatment capacity to allocate toward new growth.

4.2 EXISTING COST-BASIS

The City provided a valuation list of all its existing assets related to the collection system by service territory. The valuation list included the acquired value and date of acquisition for each asset as well as the accumulated depreciation, to date. The information also included the service territory and element of service for each asset. Farr West used this information to calculate the existing cost-basis related to the sewer system. Asset values and accumulated depreciation were aggregated by each asset type for the entire system. In addition, service territory-specific asset values were also totaled by asset type for each service territory outlined previously in this report. To determine an estimate of the replacement cost value of each asset, the acquired value was inflated to current (i.e., 2022) dollars by applying an inflationary factor equal to the Engineering News Record - Construction Cost Index (ENR-CCI) inflation factor.

In order to value the existing system infrastructure for which capacity exists, a "Replace Cost New Less Depreciation" (RCNLD) method was used. This method escalates all assets to current dollars prior to making a reduction for previously accumulated depreciation totals. This AWWA-accepted method provides an estimate of the current cost of replacing existing facilities and fairly compensates existing customers for any carrying cost associated with idle excess capacity.

Several assets were deducted from the buy-in cost-basis. Rehab-related assets totaling approximately $132M were taken out of the connection fee calculation to ensure that growth pays for growth and existing customers pay for rehab and replacement. For the same reason, the principal on existing debt of $19M from a repair and replacement project was deducted from the existing cost-basis calculation. Per the direction of the City, all assets related to stormwater were also excluded from the existing cost-basis calculations. The City also provided information on the value of capital contributions already dedicated to

the City by developers. This total of approximately $31.3M was also deducted from the buy-in cost-basis. Table 6 summarizes the existing cost-basis used for this study.

Table 6: Existing Cost-Basis: System Capacity Value

Asset Category	Value
Existing TMWRF Plant Capacity Cost	$ 88,595,437
Existing TMWRF Collection System Cost	$ 200,829,434
Existing Lawton-Verdi System Cost	$ 12,209,237
Existing RSWRF Cost-Basis	$ 13,584,733
less: TMWRF Debt Principal Outstanding	$ (19,159,397)
Total Existing Cost-Basis	**$ 296,059,443**

4.3 FUTURE COST-BASIS

The City provided a 20-year CIP for this study which contained numerous projects which add capacity within the City's service area(s). The CIP information included the project type, service territory, proposed project schedule, and projected cost estimation. For the connection fee analysis, only costs associated with expansion projects were factored into the future cost-basis. Over the next 20 years, the City plans on spending $810M on capital projects with approximately $339M devoted to increasing the capacity of the system(s). Table 7 summarizes the future cost-basis used for this study.

Table 7 Future Cost-Basis: Total Expansion Projects in 20-YR CIP

Project Category	Value
TMWRF Facility Expansion	$ 27,838,010
TMWRF Collection	$ 41,896,975
Lawton-Verdi Collection	$ 29,074,448
RSWRF	$ 260,551,513
Total Future Cost-Basis	$ 359,360,946
Less: Sparks Contribution	$ (20,037,588)
Total Future Cost-Basis Less Sparks Contribution	**$ 339,323,359**

4.4 ALTERNATIVE SCENARIOS CONSIDERED

Per the direction of the City, four alternative scenarios were evaluated within this study. The first alternative is considered the baseline alternative. The baseline assumes the following:

- All CIPs for the TMWRF service territory past FY 32 were excluded from the analysis.
- All CIPs related to rehabilitation and collection, past FY 24, were capped at a total of $14M.

- Two projects within RSWRF will be funded via loans. The first is a $50M loan for the Red Rock Reservoir project and the second is a $55M loan to expand the RSWRF treatment capacity from 2 to 4 MGD.

The remaining alternatives consisted of the following:

- Alternative 1-2 assumes the same CIPs and funding structure as Alternative 1-1 but includes a potential $7M grant for the American Flat Aquifer Storage and Recovery (ASR) Construction Project.
- Alternative 1-3 uses the same assumptions as Alternative 1-1 but includes an additional revenue stream in FY 2028 – FY 2052 from projected sales of City-owned water rights within the RSWRF service territory, totaling $27.2 M in sales (approximately $1.1M annually).
- Alternative 1-4 assumes both the $7M grant *and* projected water rights sales within the RSWRF service territory.

4.4.1 Grant Opportunities

Alternatives 1-2 and 1-4 assumed the City will receive a federal grant to help offset the City's portion of costs associated with the American Flat ASR Construction Project, which is a joint project with TMWA. The City's portion of cost reflects 70-percent of the total project cost and is anticipated to be approximately $67.2M over the course of three years (FY 23 thru 25). Half of the City's portion of project cost was dedicated to expanding the system for new connections, while the other half was dedicated to repairing the existing system for current rate payers. A total grant amount of $14M was proposed in this analysis. Of this total grant, $7M was applied toward a reduction in the connection fee future cost-basis within the RSWRF area for Alternatives 1-2 and 1-4, while the remaining $7M was applied to the user rate analysis to ease existing customer capital costs.

4.4.2 Future Water Sales

Alternatives 1-3 and 1-4 assumed that the future American Flat ASR project will create a new water resource that will generate future water rights sales starting in FY 28 and continue until FY 52. The sale of this water will provide additional revenue to the utility to offset the future cost-basis within the RSWRF service territory. It is assumed that 60-percent of the proceeds will go to the City and 40-percent will go to TMWA. Under the alternatives specified above, half of the City's share of proceeds was applied to the connection fee fund to offset the future cost-basis. Table 8 provides the projected water sales, supplied by the City, over the planning horizons. The City's share of 2,079 AFA was estimated to be sold for new development and approximately $27.2M was contributed to the capital expansion program.

Table 8: City' Portion of American Flat Water Rights Sales FY 22 thru FY 52

Fiscal Year	Water Rights (acft/yr)	Total Revenue ($)	Revenue to Connection Fee Fund ($)
2022	0		-
2023	0	-	-
2024	0	-	-
2025	0	-	-
2026	0	-	-
2027	0	-	-
2028	50	1,307,250	653,625
2029	53	1,372,613	686,306
2030	55	1,441,243	720,622
2031	58	1,513,305	756,653
2032	61	1,588,971	794,485
2033	64	1,668,419	834,210
2034	67	1,751,840	875,920
2035	70	1,839,432	919,716
2036	74	1,931,404	965,702
2037	78	2,027,974	1,013,987
2038	81	2,129,373	1,064,686
2039	86	2,235,841	1,117,921
2040	90	2,347,633	1,173,817
2041	94	2,465,015	1,232,507
2042	99	2,588,266	1,294,133
2043	100	2,614,500	1,307,250
2044	100	2,614,500	1,307,250
2045	100	2,614,500	1,307,250
2046	100	2,614,500	1,307,250
2047	100	2,614,500	1,307,250
2048	100	2,614,500	1,307,250
2049	100	2,614,500	1,307,250
2050	100	2,614,500	1,307,250
2051	100	2,614,500	1,307,250
2052	100	2,614,500	1,307,250
Total	**2,079**	**54,353,577**	**27,176,789**

Note: unit cost of water rights and projected quantity of water sold per year were specified by the City of Reno.

4.5 OPERATING FUND ANALYSIS

The City currently combines the connection fee and user rate revenues and expenses into a single account under the Operating Fund. July 2022 account balances for FY 22 were used in the study as the basis for projecting future ending account balances and determining if fiscal requirements could be met over the planning horizon.

Beginning Cash Balance

Based on Reno's financial records, the Operating Fund's beginning FY 22 cash balance was $139M. Maintaining a cash balance that allows for variability in revenues and expenses on an annual basis can be accomplished through funding or using reserves to offset annual shortfalls.

Operating Reserve

The City's financial policies require that the Operating Fund account shall maintain a minimum balance equal to 60 days of Daily Operating Expenses[1] with a fund goal of 120 days of operating expenses. This value ranged from $8.2M in FY 23 to $11.9M in FY 32.

Debt Coverage Ratio

Per City policy, the Net Operating Income[2] of the utility shall meet or exceed a relationship of 1.10 times the total annual debt service paid by the utility at all times throughout the study period

4.5.1 Projected Expenditures

A 10-year expenditures forecast was completed for this study. The forecast included expenses related to operation and maintenance (O&M), CIP projects associated with repair and replacement, CIP projects associated with capital expansion, as well as existing and future debt payments. These projections were used to aid in determining if future revenue and reserve requirements could be met, under the various connection fee alternatives. The table below lists the expenditure estimates throughout the 10-year study period.

[1] Daily Operating Expenses are defined as: (Annual O&M Expenses + Annual Non-Operating Expenses) / 365
[2] Net Operating Income is defined as:
Connection Fee Revenue + Total Annual Revenues – (Annual O&M Expenses + Annual Non-Operating Expenses)

Table 9: Project Expenditures Related to New Connections ($000)

Fiscal Year	O&M	CIP Funded by Rates	Debt Service	CIP Associated w/ Expansion	Total Expenses
22	50,819	37,784	5,718	10,737	**105,058**
23	49,873	61,433	5,785	84,271	**201,362**
24	52,277	46,180	7,162	20,985	**126,604**
25	52,848	37,028	4,133	23,825	**117,834**
26	54,824	31,051	2,904	8,939	**97,718**
27	57,265	28,195	2,617	25,470	**113,547**
28	60,054	18,257	2,617	3,127	**84,055**
29	62,982	66,830	2,617	78,612	**211,041**
30	66,057	21,533	3,806	21,543	**112,939**
31	69,286	20,787	4,996	4,028	**99,097**
32	72,676	22,378	4,996	11,803	**111,853**

4.5.2 Projected Revenues

This study also forecasted revenues according to the 10-year study period. Revenue from rates was based on future service projections and existing rate structure with an applied inflation factor equal to CPI and growth rate. For example, Table 10 provides connection fee revenues projected using the uniform fee according to Alternative 1-3.

Table 10: Project Revenues Related to New Connections ($000)

Fiscal Year	Rate Revenue	Connection Fee Revenue*	Am Flat Revenue*	Miscellaneous Revenues	Total Revenues
22	72,912	18,752	-	5,107	**96,771**
23	76,313	19,314	-	60,242	**150,869**
24	79,873	19,634	-	5,382	**104,889**
25	83,601	19,960	-	5,525	**109,086**
26	87,504	20,291	-	5,672	**113,467**
27	91,590	20,629	-	5,823	**118,042**
28	95,869	20,973	1,307	5,978	**124,127**
29	100,348	21,322	1,373	56,137	**179,180**
30	105,039	21,678	1,441	6,300	**134,458**
31	109,950	22,041	1,513	6,468	**139,972**
32	115,092	22,410	1,589	6,640	**145,731**

* Estimates are specific to Alternative 1-3.

5.0 RESULTS AND RECOMMENDATIONS

5.1 CONNECTION FEES

Table 11 summarizes the results of the various connection fee structures that apply to single-family residential connections for each alternative scenario. The service territory-specific connection fee structure applies different connection fees that are unique to each service territory, while the system-wide connection fee structure applies a uniform fee across all service territories.

Table 11: Connection Fee Structures by Alternative

Service Territory-Specific				System-Wide
Alternative	TMWRF	Lawton/Verdi	RSWRF	All Service Territories
1-1	$10,560	$12,841	$11,597	$11,399
1-2	$10,560	$12,841	$11,308	$11,275
1-3	$10,560	$12,841	$10,476	$10,917
1-4	$10,560	$12,841	$10,187	$10,792

Under the service territory-specific connection fee structure, TMWRF and L/V connection fees are not impacted by the changes proposed in each alternative. This results because the grant opportunities and water rights sales, proposed in Alternatives 1-2 through 1-4, only apply to the RSWRF service territory. In all cases, L/V connections pay the highest fee under the territory-specific fee structure because customers in L/V also utilize the central TMWRF collection and treatment system in addition to their territory-specific system.

Under the system-wide connection fee, all service territories share in existing and future costs, and would therefore be charged the same connection fee in all territories. They also would share the benefit of water sales and grant opportunities realized within the RSWRF service territory under that fee structure.

5.2 OPERATING FUND RESERVES

The Operating Fund incorporates revenues and expenses associated with both connection fees and user rates. The cash flow analysis examined the overall Operating Fund cash ending balance and analyzed how the fund is impacted by net cash flow from each connection fee scenario. It is important to consider that expansion project costs are typically paid for upfront while the associated revenues are collected over a longer period of time. This condition causes deficiencies in annual net cash flows towards the beginning and net cash surpluses later on during the study period. It was found that in every alternative, the Operating Fund reserves could withstand all annual shortfalls while funding all required reserves as required by associated financial policies. The Operating Fund ending cash balance for each alternative is displayed in Figure 2.

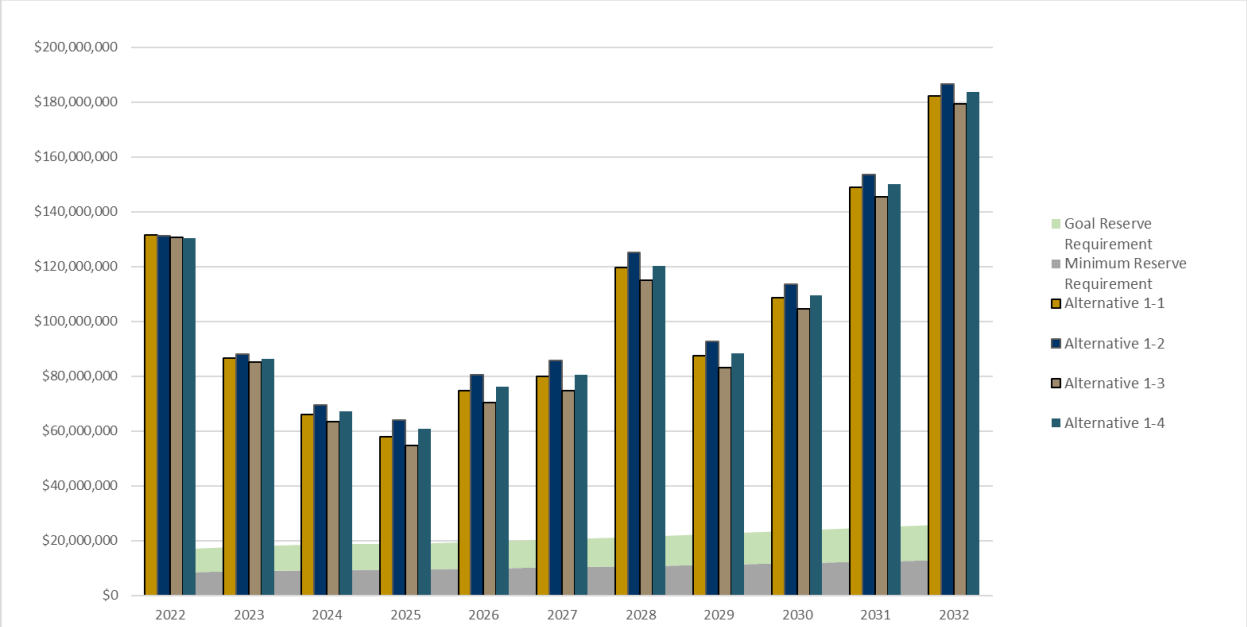

Figure 2: Ending Cash Balance by Alternative

Alternative 1-1 is the baseline alternative that does not include grant funding or water rights sales. The Operating Fund cash flow fluctuates throughout the study period, with an anticipated ending cash balance of $75M in FY 26 and $182M in FY 32.

Alternative 1-2 proposes the second-highest calculated connection fee and is projected to bring in the highest revenues starting in FY 23. The grant funding proposed in this alternative reduces the future cost-basis by $7M related to the RSWRF territory. The operating fund cash flow under this alternative follows a similar trend to Alternative 1-1, with an anticipated ending cash balance of $80M in FY 26 and $186M in FY 32.

Alternative 1-3 proposes the second-lowest calculated connection fee and is projected to bring in the least annual revenue compared to the other alternatives. The American Flat water rights sales revenue reduced the future cost-basis relate to RSWRF, by bringing in an additional $27.2M in revenue from FY 28 to FY52 (approximately $1.1M annually). The cash flow follows a similar trend to Alternative 1-1, with an ending cash balance of $70M for FY 26 and $179M in FY 32.

Alternative 1-4 proposes the lowest connection fee due to both grant funding and water rights sales withdrawn from the cost-basis within the RSWRF territory. Under this alternative, water rights sales contribute to system revenues starting in FY 28. The cash flow follows a similar trend to Alternative 1-1, with an ending cash balance of $76M in FY 26 and $184M in FY 32.

5.3 RECOMMENDATIONS

Due to the uncertainty regarding grant funding and the likelihood of future sales of American Flat water rights, it is recommended that the City pursue Alternative 1-3. The FY 23 recommended service territory-specific and system-wide connection fee schedules are listed in Table 12.

Table 12: Recommended Connection Fee Schedule.

Proposed TMWRF Connection Fee		
Single Family Dwelling	$	10,560
Multi-Family Dwelling	$	9,019
Micro-unit Dwelling	$	7,920
Mobile Home Estates or Subdivisions (per space)	$	10,560
Mobile Home Parks (per space)	$	10,560
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$	3,761
Rooming House (per room rental)	$	3,380
Commercial Fixture Unit Fee	$	487
Proposed RSWRF Connection Fee		
Single Family Dwelling	$	10,476
Multi-Family Dwelling	$	8,946
Micro-unit Dwelling	$	7,857
Mobile Home Estates or Subdivisions (per space)	$	10,476
Mobile Home Parks (per space)	$	10,476
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$	3,731
Rooming House (per room rental)	$	3,353
Commercial Fixture Unit Fee	$	483
Proposed Lawton/Verdi Connection Fee		
Single Family Dwelling	$	12,841
Multi-Family Dwelling	$	10,966
Micro-unit Dwelling	$	9,631
Mobile Home Estates or Subdivisions (per space)	$	12,841
Mobile Home Parks (per space)	$	12,841
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$	4,574
Rooming House (per room rental)	$	4,110
Commercial Fixture Unit Fee	$	593
Proposed System-Wide Connection Fee		
Single Family Dwelling	$	10,917
Multi-Family Dwelling	$	9,323
Micro-unit Dwelling	$	8,188
Mobile Home Estates or Subdivisions (per space)	$	10,917
Mobile Home Parks (per space)	$	10,917
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$	3,888
Rooming House (per room rental)	$	3,494
Commercial Fixture Unit Fee	$	504

It is also recommended that the connection fees are tied to a nationally recognized index to account for cost escalations and variable market conditions. Historically, the City and most utilities have assumed an annual 3-percent adjustment for inflation or have made adjustments based on CPI. However, many analysts anticipate inflation to remain above average over the next several years, especially as it relates to construction materials and labor. Therefore, it is recommended that the City monitor inflation specific the construction sector by using the ENR-CCI.

This adjustment should be made every July 1st and should escalate the previous year's connection fee by a factor relating the January 1 value of the current calendar year to the January 1 value of the previous year. Table 13 summarizes the proposed 10-year connection fee schedule under the average ENR-CCI inflationary factor listed in Section 3.1.1

Table 13: Recommended Single-Family Residential Connection Fee Schedule Over 10-years

Fiscal Year	TMWRF	Lawton/Verdi	RSWRF	System-Wide
23	$ 10,560	$ 12,841	$ 10,476	$ 10,917
24	$ 10,877	$ 13,226	$ 10,790	$ 11,244
25	$ 11,203	$ 13,623	$ 11,114	$ 11,581
26	$ 11,539	$ 14,032	$ 11,447	$ 11,929
27	$ 11,885	$ 14,453	$ 11,791	$ 12,287
28	$ 12,243	$ 14,886	$ 12,144	$ 12,655
29	$ 12,610	$ 15,333	$ 12,509	$ 13,035
30	$ 12,988	$ 15,793	$ 12,884	$ 13,426
31	$ 13,378	$ 16,266	$ 13,270	$ 13,829
32	$ 13,779	$ 16,754	$ 13,669	$ 14,244

APPENDIX A – RECOMMENDED CONNECTION FEE ALTERNATIVE MODEL RESULTS

City of Reno
Sewer Utility Rate Model
Assumptions
Alternative 1-3

FARR WEST ENGINEERING

General Assumptions

Study Details

			Assumed Residential Flow										
			Alternative 1-1	Alternative 1-2	Alternative 1-3	Alternative 1-4	Alternative 2-1	Alternative 2-2	Alternative 2-3	Alternative 2-4	Alternative 3-1	Alternative 3-2	Alternative 3-3
Enter Current Fiscal Year	**2022**												
Duration of Study Period (Years)	**10**												
Assumed Residential Flow (gpd)	**165**		165	165	165	165	165	165	165	165	165	165	165
Assumed Multi-Family Residential Flow	**141**	< 85.4% of SF Res											
Fixture Units per SF Residential	**21.67**	< 2005 rate study Red Oak											
Commercial Fixture Units Per Commercial Cust	**50**	<FWE assumption											
Multi-Family Average Units	**3.88**	<avg DU based on service account data											

Plant Capacity Details

TMWRF Current Capacity	**34**	MGD
TMWRF Total Capacity after Expansion	**35.8**	MGD
RSWRF Current Capacity	**2**	MGD
RSWRF Total Capacity after Expansion	**6**	MGD

Separate Service Area - 1	2	Uniform
Uniform - 2		

Financial Policies

			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Operating Reserve													
			2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
Minimum Operating Account Balance	60	days; 2 months	$ 8,353,814	$ 8,198,312	$ 8,593,489	$ 8,687,366	$ 9,012,159	$ 9,413,389	$ 9,871,860	$ 10,353,254	$ 10,858,717	$ 11,389,454	$ 11,946,728
Goal Operating Account Balance	120	days; 4 months	$ 16,707,629	$ 16,396,623	$ 17,186,978	$ 17,374,733	$ 18,024,319	$ 18,826,779	$ 19,743,720	$ 20,706,507	$ 21,717,435	$ 22,778,908	$ 23,893,456

Economic Factors that Govern Cost Projections

		Notes	FYE:	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1	General Cost Inflation	Per average CPI 2015-2020		2.66%	2.66%	2.66%	2.66%	2.66%	2.66%	2.66%	2.66%	2.66%	2.66%	2.66%
2	Construction Cost Inflation			3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
3	Labor Cost Inflation	Per Trish's projections		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
4	Benefits Cost Inflation	Per Trish's projections		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
5	City Directed 5% to 4% Projection			4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
6	2% Admin Charge Projection			2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
7	No Escalation			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8	General Inflation Plus Growth			4.71%	4.71%	4.71%	4.71%	4.71%	4.71%	4.71%	4.71%	4.71%	4.71%	4.71%
9	City Directed 5% per Year			5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
10	Customer Growth (Multi-fam/Comm)	Per John 2% (Q#15)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
	Customer Growth (Single Family)	Trish's Email 2/23		1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
11	Cumulative Growth			2.00%	4.00%	6.00%	8.00%	10.00%	12.00%	14.00%	16.00%	18.00%	20.00%	22.00%

City of Reno
Sewer Utility Rate Model
Operating Fund Revenue & Expenditure Projections
Alternative 1-3

FARR WEST
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								Budget	Select Projection	User Override		Projectio				
Revenues	Projection Method	FYE	2017	2018	2019	2020	2021	2022	Starting Value	Input	Projection Value	2023	2024	2025	2026	2027
Service Charges																
Sewer residential-omr	General Inflation Plus Growth		$ 34,375,995	$ 35,550,539	$ 37,261,216	$ 39,325,117	$ 41,068,023	$ 42,770,089	Budget 2022 Value	-	$ 42,770,089	$ 44,785,929	$ 46,896,779	$ 49,107,118	$ 51,421,635	$ 53,845,239
Sewer commercial-omr	General Inflation Plus Growth		$ 12,820,123	$ 12,899,363	$ 13,468,224	$ 13,452,779	$ 12,659,428	$ 12,605,595	Budget 2022 Value	-	$ 12,605,595	$ 13,199,722	$ 13,821,851	$ 14,473,303	$ 15,155,458	$ 15,869,765
Sewer residential-capital	General Inflation Plus Growth		$ 16,178,235	$ 16,729,701	$ 17,531,238	$ 18,499,262	$ 19,331,333	$ 20,147,403	Budget 2022 Value	-	$ 20,147,403	$ 21,096,990	$ 22,091,334	$ 23,132,542	$ 24,222,825	$ 25,364,496
Sewer commercial-capital	General Inflation Plus Growth		$ 6,034,223	$ 6,071,474	$ 6,338,453	$ 6,340,219	$ 5,947,353	$ 6,065,828	Budget 2022 Value	-	$ 6,065,828	$ 6,351,723	$ 6,651,092	$ 6,964,571	$ 7,292,825	$ 7,636,551
Washoe cty swr pmts-residential	General Inflation Plus Growth		$ (5,529,445)	$ (6,082,760)	$ (7,125,563)	$ (8,226,475)	$ (8,901,793)	$ (8,871,862)	Budget 2022 Value	-	$ (8,871,862)	$ (9,290,011)	$ (9,727,867)	$ (10,186,361)	$ (10,666,465)	$ (11,169,197)
Washoe cty swr pmts-commercial	General Inflation Plus Growth		$ (677,951)	$ (714,384)	$ (717,133)	$ (834,979)	$ (671,710)	$ (892,320)	Budget 2022 Value	-	$ (892,320)	$ (934,377)	$ (978,416)	$ (1,024,531)	$ (1,072,819)	$ (1,123,383)
Washoe cty payments STMWRF Sludge Treatment	No Escalation		$ 85,611	$ 532,641	$ 294,570				Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Washoe cty swr pmt-reuse	No Escalation		$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 184,233	$ 200,000	Budget 2022 Value	-	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000
R-S (TMWRF) Effluent Reuse	No Escalation		$ 3,919	$ 175					Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Stead Truck Fill Re-use	No Escalation		$ 35,812	$ 50,887	$ 58,477		$ 47,763	$ 30,000	Budget 2022 Value	-	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
Admin Charge	Trish's 2% Admin Charge Projecti		$ 714,259	$ 722,369	$ 732,763	$ 746,360	$ 757,022	$ 757,703	Budget 2022 Value	-	$ 757,703	$ 772,857	$ 788,314	$ 804,080	$ 820,162	$ 836,565
Lien Recordation Admin Fee	No Escalation		$ 137,678	$ 196,427	$ 166,300	$ 100,000	$ 58,740	$ 100,000	Budget 2022 Value	-	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
Total Service Charge			$ 64,218,459	$ 65,996,435	$ 68,048,544	$ 69,442,283	$ 70,480,391	$ 72,912,436				$ 76,312,833	$ 79,873,087	$ 83,600,723	$ 87,503,623	$ 91,590,037
Miscellaneous Revenue																
Environmental Control Permit Fee	General Cost Inflation		$ 304,427	$ 309,839	$ 326,609	$ 332,493	$ 355,392	$ 320,000	Budget 2022 Value	-	$ 320,000	$ 328,512	$ 337,250	$ 346,221	$ 355,431	$ 364,885
Sewer Lateral Permit Fees	General Cost Inflation		$ 13,152	$ 10,339	$ 11,442	$ 11,688	$ 11,444	$ 10,000	Budget 2022 Value	-	$ 10,000	$ 10,266	$ 10,539	$ 10,819	$ 11,107	$ 11,403
Enforcement Actions	General Cost Inflation		$ 400	$ 2,509	$ 2,700	$ 4,683	$ 1,900	$ 2,000	Budget 2022 Value	-	$ 2,000	$ 2,053	$ 2,108	$ 2,164	$ 2,221	$ 2,281
Penalties-Prev Wage/Liquidated Damages	General Cost Inflation		$ 5,320	$ 4,039	$ 2,480		$ 1,494		Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Sewer penalties-residential	General Cost Inflation		$ 1,492,054	$ 1,184,278	$ 1,528,871	$ 1,695,122	$ 1,468,543	$ 1,300,000	Budget 2022 Value	-	$ 1,300,000	$ 1,334,580	$ 1,370,080	$ 1,406,524	$ 1,443,937	$ 1,482,346
Sewer penalties-commercial	General Cost Inflation		$ 175,662	$ 102,484	$ 124,158	$ 94,945	$ (94,978)	$ 100,000	Budget 2022 Value	-	$ 100,000	$ 102,660	$ 105,391	$ 108,194	$ 111,072	$ 114,027
Reimbursement & restitution	General Cost Inflation		$ 106,893	$ 30,174	$ 354,238	$ 322,500	$ 631,440		Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Reimbursement-property damage	General Cost Inflation				$ 695				Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
PW Sales of Plans	General Cost Inflation								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Other Income	General Cost Inflation		$ 13,509	$ 14,557	$ 38,053	$ 20,000	$ 117,973		Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Federal grants-operating	General Cost Inflation		$ 134,515	$ 24,981	$ 1,082,656	$ 28,883	$ 5,639		Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Intergovernmental, Other	General Cost Inflation		$ 1,802,801	$ 1,911,660	$ 933,773	$ -			Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Private grants/donations	General Cost Inflation		$ 77,500	$ 170,037					Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Earnings on investments	General Cost Inflation		$ 382,907	$ 896,439	$ 1,962,018	$ 1,340,722	$ 2,129,134	$ 800,000	Budget 2022 Value	-	$ 800,000	$ 821,280	$ 843,126	$ 865,553	$ 888,577	$ 912,213
Unrealized gain/loss on investments	General Cost Inflation		$ (134,589)	$ (215,367)	$ 1,305,177				Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Federal grants-capital	General Cost Inflation		$ 44,311				$ 1,465,678		Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Sewer connection charges	General Cost Inflation		$ 6,582,429	$ 8,955,714	$ 11,923,374	$ 8,900,000	$ 14,480,370	$ 8,720,826	Budget 2022 Value	-	$ 8,720,826	$ 8,952,800	$ 9,190,944	$ 9,435,424	$ 9,686,406	$ 9,944,064
Sewer connection charges-County	General Cost Inflation								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Temporary sewer hookups	General Cost Inflation		$ 89,739	$ 91,293	$ 93,679	$ 95,000	$ 99,312	$ 90,000	Budget 2022 Value	-	$ 90,000	$ 92,394	$ 94,852	$ 97,375	$ 99,965	$ 102,624
Cap Asset disposal gain/loss	General Cost Inflation		$ (206,656)	$ (762,465)	$ 728,830		$ (570,888)		Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Sewer Capital Asset Transfer (non cash)	General Cost Inflation			$ 97,608					Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Premium accret-bonds issues	General Cost Inflation			$ 2,706					Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Transfer From Sewer Capital Fund	General Cost Inflation		$ 2,560,499	$ 2,418,751	$ 2,452,528	$ 2,639,021	$ 2,519,329	$ 2,484,661	Budget 2022 Value	-	$ 2,484,661	$ 2,550,753	$ 2,618,603	$ 2,688,258	$ 2,759,766	$ 2,833,175
	General Cost Inflation								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	General Cost Inflation								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	General Cost Inflation								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	General Cost Inflation								Budget 2022 Value		$ -	$ -	$ -	$ -	$ -	$ -
	General Cost Inflation								Budget 2022 Value		$ -	$ -	$ -	$ -	$ -	$ -
Total Miscellaneous Revenues			$ 13,444,875	$ 15,249,576	$ 22,871,281	$ 15,485,057	$ 22,621,782	$ 13,827,487				$ 14,195,298	$ 14,572,893	$ 14,960,532	$ 15,358,482	$ 15,767,018
Total Revenues			**$ 77,663,335**	**$ 81,246,011**	**$ 90,919,825**	**$ 84,927,340**	**$ 93,102,173**	**$ 86,739,923**				**$ 90,508,132**	**$ 94,445,980**	**$ 98,561,255**	**$ 102,862,105**	**$ 107,357,055**

								Budget	Select Projection Value	User Override	Projection Value					
Expenditures	Projection Method	FYE	2017	2018	2019	2020	2021	2022				2023	2024	2025	2026	2027
O&M Expenses																
Salaries and Wages																
Salaries and Wages	Labor Cost Inflation		$ 5,525,605	$ 5,816,397	$ 6,308,559	$ 6,462,421	$ 7,172,038	$ 7,816,794	Budget 2022 Value	-	$ 7,816,794	$ 8,482,432	$ 8,906,554	$ 9,351,881	$ 9,819,475	$ 10,310,449
Employee Benefits	Benefits Cost Inflation		$ 2,354,826	$ 2,424,007	$ 4,127,547	$ 3,323,295	$ 2,298,714	$ 6,602,768	Budget 2022 Value		$ 6,602,768	$ 4,519,169	$ 4,745,127	$ 4,982,384	$ 5,231,503	$ 5,493,078
Services and Supplies	City Directed 5% per Year		$ 8,219,908	$ 10,801,500	$ 11,850,927	$ 12,443,473	$ 16,886,804	$ 15,744,343	Budget 2022 Value	-	$ 15,744,343	$ 12,528,247	$ 13,154,659	$ 13,812,392	$ 14,503,012	$ 15,228,163
Indirect Costs	City Directed 5% per Year		$ 1,218,321	$ 1,535,979	$ 1,364,443	$ 1,315,835	$ 1,626,184	$ 1,878,110	Budget 2022 Value	-	$ 1,878,110	$ 1,453,528	$ 1,526,204	$ 1,602,515	$ 1,682,640	$ 1,766,772
Retired Employees Insurance	No Escalation		$ 317,721	$ 266,856	$ 197,220	$ 317,721	$ 134,676	$ 300,000	Budget 2022 Value	-	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000
Joint Plant Expense	City Directed 5% per Year		$ 12,010,802	$ 13,551,577	$ 14,120,129	$ 15,000,000	$ 12,384,392	$ 15,726,002	User Defined >>	$ 18,500,000	$ 18,500,000	$ 18,907,434	$ 19,852,806	$ 20,845,446	$ 21,887,718	$ 22,982,104
If all Additional Funding Requests are Funded	General Cost Inflation								User Defined >>	Enter Value	$ -	$ 931,232	$ 1,040,685	$ 1,051,092	$ 1,061,603	$ 1,072,219
Transfers Out (Fund 4001, for Debt Service)	No Escalation		$ 2,672,499	$ 2,530,751	$ 2,564,528	$ 2,751,021	$ 2,751,021	$ 2,751,021	Budget 2022 Value	-	$ 2,751,021	$ 2,751,021	$ 2,751,021	$ 902,435	$ 338,018	$ 112,000
Internal Service Underpayments	No Escalation					$ 5,200,000			Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
	Select Projection Methodology								Budget 2022 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Total Salaries and Wages			$ 32,319,682	$ 36,927,067	$ 40,533,354	$ 46,813,766	$ 43,253,829	$ 50,819,038			$ 53,593,036	$ 49,873,063	$ 52,277,057	$ 52,848,145	$ 54,823,970	$ 57,264,785
Total Expenditures			**$ 32,319,682**	**$ 36,927,067**	**$ 40,533,354**	**$ 46,813,766**	**$ 43,253,829**	**$ 50,819,038**			**$ 53,593,036**	**$ 49,873,063**	**$ 52,277,057**	**$ 52,848,145**	**$ 54,823,970**	**$ 57,264,785**

								Budget	Select Projection Value	User Override		Projectio				
Depreciation Expenses	Projection Method	FYE	2017	2018	2019	2020	2021	2022	Methodology	Input	Projection Value	2023	2024	2025	2026	2027
Existing Depreciation Expense	No Escalation								Budget 2021 Value	-	$ -	$ -	$ -	$ -	$ -	$ -
Total Depreciation Expense			**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**				**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

City of Reno
Sewer Utility Rate Model
Capital Funding Plan
Alternative 1-3

FARR WEST ENGINEERING

CIP Expenditures	FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Project Costs Dedicated to Repair and Replacement		$ 37,784,281	$ 61,433,294	$ 46,179,962	$ 37,027,988	$ 31,051,280	$ 28,195,335	$ 18,256,908	$ 66,830,090	$ 21,533,162	$ 20,786,571	$ 22,378,086
Project Costs Dedicated to Expansion		$ 10,736,923	$ 84,270,907	$ 20,984,838	$ 23,824,665	$ 8,938,635	$ 25,469,630	$ 3,126,725	$ 78,612,000	$ 21,543,367	$ 4,027,556	$ 11,802,536
Total CIP Expenditures to be Funded		**$ 48,521,204**	**$ 145,704,201**	**$ 67,164,800**	**$ 60,852,653**	**$ 39,989,915**	**$ 53,664,965**	**$ 21,383,633**	**$ 145,442,090**	**$ 43,076,529**	**$ 24,814,127**	**$ 34,180,622**

Capital Funding Plan	FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Funding Sources for Alternative 1-3 - Exclude TMWRF past FY 32; Reduce rehab collection project past FY24 to $14M @165gpd; No Grants; Water Sale:												
Grants		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Connection Fee Surcharge(s)		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Connection Fees		$ 10,736,923	$ 29,270,907	$ 20,984,838	$ 23,824,665	$ 8,938,635	$ 25,469,630	$ 3,126,725	$ 28,612,000	$ 21,543,367	$ 4,027,556	$ 11,802,536
Alternative Loans		$ -	$ 55,000,000	$ -	$ -	$ -	$ -	$ -	$ 50,000,000	$ -	$ -	$ -
Bond Sales		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total CIP Expansion Funding Resources		**$ 10,736,923**	**$ 84,270,907**	**$ 20,984,838**	**$ 23,824,665**	**$ 8,938,635**	**$ 25,469,630**	**$ 3,126,725**	**$ 78,612,000**	**$ 21,543,367**	**$ 4,027,556**	**$ 11,802,536**
Total CIP Funded through Rates		**$ 37,784,281**	**$ 61,433,294**	**$ 46,179,962**	**$ 37,027,988**	**$ 31,051,280**	**$ 28,195,335**	**$ 18,256,908**	**$ 66,830,090**	**$ 21,533,162**	**$ 20,786,571**	**$ 22,378,086**

Debt Summary	FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Existing Debt Obligations												
Sewer Operating Total Payment:		$ 5,717,733	$ 5,784,921	$ 5,854,039	$ 1,515,858	$ 286,846	$ -	$ -	$ -	$ -	$ -	$ -
Annual Total Payment		$ 5,717,733	$ 5,784,921	$ 5,854,039	$ 1,515,858	$ 286,846	$ -	$ -	$ -	$ -	$ -	$ -

Alternative 1-3 1

Exclude TMWRF past FY 32; Reduce rehab collection project past FY24 to $14M @165gpd; No Grants; Water Sale

							6			Project Cost 2021 Dollars																							
										5 - Year CIP Projects						10 - Year CIP Projects					20 - Year CIP Projects												
Project Type	Project Name	1	2	3	4	Service Area	Included?	% Repair / Replacement	% Expansion	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	5 - Year CIP Cost	10 - Year CIP Cost	20 - Year CIP Cost
Collection Condition	Collection System Condition	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,000,000	$ 8,000,000	$ 8,000,000
Collection Condition	Sewer Rehab - Remove and Replace, City (Dig/replacement c	1	0	0	0	TMWRF	1	0%	100%	$ 194,000	$ 1,888,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,082,000	$ 2,082,000	$ 2,082,000
Collection Capacity	Moya South Interceptor	1	0	0	0	North Valleys	1	0%	100%	$ -	$ 2,378,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,378,000	$ 2,378,000	$ 2,378,000
Collection Capacity	Stead Blvd Main - Phase 1 & Phase 2	1	0	0	0	North Valleys	1	0%	100%	$ 4,400,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,400,000	$ 4,400,000	$ 4,400,000
Collection Capacity	Keystone Diversion [@ Riverside]	1	0	0	0	TMWRF	1	0%	100%	$ -	$ 2,400,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,400,000	$ 2,400,000	$ 2,400,000
Collection Capacity	Downtown Capacity Improvements	1	0	0	0	TMWRF	1	0%	100%	$ -	$ 1,050,000	$ 3,520,000	$ 3,520,000	$ 1,612,000	$ 1,612,000	$ 1,612,000	$ 1,612,000	$ 1,612,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,314,000	$ 16,150,000	$ 16,150,000
Collection Capacity	Idlewild Syphon & Main Replacements	1	0	0	0	TMWRF	1	0%	100%	$ 144,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 144,000	$ 144,000	$ 144,000
Collection Capacity	Mill Interceptor (1) [W. 4th St.]	1	0	0	0	TMWRF/Lawton 50/50	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,027,556	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,027,556	$ 3,027,556
Collection Capacity	Mill Interceptor (5) [White Fir]	1	0	0	0	Lawton	1	0%	100%	$ -	$ -	$ 2,362,360	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,362,360	$ 2,362,360	$ 2,362,360
Collection Capacity	Mill Interceptor (2) [Riverside]	1	0	0	0	TMWRF/Lawton 27/73	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,941,480	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,941,480
Collection Capacity	Maestro Interceptor	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ 1,900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,900,000	$ 1,900,000	$ 1,900,000
Collection Capacity	Patriot Main	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	South Virginia Trunk	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	2nd Street Interceptor [Downtown]	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ 2,200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,200,000	$ 2,200,000	$ 2,200,000
Collection Capacity	Mill (4)	1	0	0	0	Lawton	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,382,067	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,382,067	$ 11,382,067
Collection Capacity	Mill (3)	1	0	0	0	TMWRF/Lawton 50/50	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 651,053	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 651,053	$ 651,053
Collection Capacity	Stead Airport	1	0	0	0	North Valleys	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 988,235	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 988,235
Collection Capacity	Moya North	1	0	0	0	North Valleys	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,808,333	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,808,333	$ 9,808,333
Collection Capacity	4th St.	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 482,044	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 482,044
Collection Capacity	McQueen Trunk (2)	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 770,427	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 770,427
Collection Capacity	Mill (7)	1	0	0	0	Lawton	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,031,356	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,031,356
Collection Capacity	Mill (9)	1	0	0	0	Lawton	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 932,080	$ -	$ -	$ -	$ -	$ -	$ 932,080
Collection Capacity	McCarran/Plumas	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ 450,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 450,000	$ 450,000	$ 450,000
Collection Capacity	Peckham/Baker	1	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ 1,425,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,425,000	$ 1,425,000	$ 1,425,000
Lift Stations	Lear LS and FM	1	0	0	0	North Valleys	1	0%	100%	$ 4,550,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,550,000	$ 4,550,000	$ 4,550,000
Lift Stations	Parr LS	1	0	0	0	TMWRF	1	0%	100%	$ -	$ 1,640,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,640,000	$ 1,640,000	$ 1,640,000
Treatment	Gas Conditioning System Improvements	0	0	0	0	TMWRF	1	0%	100%	$ 100,000	$ 60,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 360,000	$ 360,000	$ 360,000
Treatment	Dewatering Improvements	0	0	0	0	TMWRF	1	0%	100%	$ -	$ 660,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 660,000	$ 660,000	$ 660,000
Treatment	Filter Building/UV Disinfection Bypass, Evalutation & Enginee	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ 750,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 750,000	$ 750,000
Treatment	Fluidized Bed Reactors Design	0	0	0	0	TMWRF	1	0%	100%	$ -	$ 2,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,000,000	$ 2,000,000	$ 2,000,000
Treatment	Fluidized Bed Reactors Construction	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ 10,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,000,000	$ 10,000,000	$ 10,000,000
Treatment	Heat Loop Improvements (Design Ph1/Ph2)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ 50,000	$ 50,000
Treatment	Heat Loop Improvements (Construction Ph1/Ph2)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ 800,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 800,000	$ 800,000	$ 800,000
Treatment	Heat Loop Improvements (Design Ph2)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000	$ 50,000	$ 50,000
Treatment	Heat Loop Improvements (Construction Ph2)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ 900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 900,000	$ 900,000	$ 900,000
Treatment	UV Disinfection/Filter Building Bypass/Filter Improvements (	0	0	0	0	TMWRF	1	0%	100%	$ -	$ 670,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 670,000	$ 670,000	$ 670,000
Treatment	UV Disinfection/Filter Building Bypass/Filter Improvements (	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ 4,950,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,950,000	$ 4,950,000	$ 4,950,000
Treatment	Filter Building Process Improvements / Expansion (Construct	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,000,000	$ 11,000,000
Treatment	New Dewatering Facility	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ 20,100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,100,000	$ 20,100,000	$ 20,100,000
Treatment	Aeration Improvements (Pre-Design)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,000	$ 60,000	$ 60,000
Treatment	Aeration Improvements (Design)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ 140,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 140,000	$ 140,000	$ 140,000
Treatment	Aeration Improvements Construction	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ 600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 600,000	$ 600,000	$ 600,000
Treatment	Emergency Generators Pre-Design	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 125,000	$ 125,000	$ 125,000
Treatment	Third Centrifuge and Cake Pump	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Replace two existing centrifuges with larger centrifuges to m	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	New Chiller for Gas Conditioning System	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Install new natural gas connection	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Nevada Energy Electrical Study	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	AquaNereda Pilot	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Activated Sludge Expansion (Pre-Design)	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ 500,000
Treatment	Two Additional Methanol Storage Tank	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	System 3 Expansion Phase 1	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Electrical Expansion & Upgrades	0	0	0	0	TMWRF	1	0%	100%	$ -	$ 560,000	$ -	$ 9,600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,160,000	$ 10,160,000	$ 10,160,000
Treatment	New Gravity Thickener	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Replace existing blowers and associated electrical equipmen	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	Filter Bldg Bypass Pipeline	0	0	0	0	TMWRF	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sparks Contribution	CONTRA SPARKS'S SHARE	0	0	0	0	TMWRF	1	0%	100%	$ (31,370)	$ (1,254,800)	$ (332,522)	$ (3,110,336)	$ (2,023,365)	$ (9,442,370)	$ (235,275)	$ -	$ (3,450,700)	$ -	$ (156,850)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (16,194,763)	$ (20,037,588)	$ (20,037,588)
Treatment	RSWRF 4 MGD Expansion	1	0	0	0	North Valleys	1	0%	100%	$ -	$ 55,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,000,000	$ 55,000,000	$ 55,000,000
Treatment	RSWRF 5 MGD Expansion	1	0	0	0	North Valleys	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,000,000	$ 26,000,000
Treatment	RSWRF 6 MGD Expansion	1	0	0	0	North Valleys	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,000,000
Reuse	RSWRF Am Flat ASR Project 30% Design	1	0	0	0	North Valleys	1	0%	100%	$ 1,005,293	$ (301,588)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 703,705	$ 703,705	$ 703,705
Reuse	APWF at Am Flat detailed design 4/22 through 10/23 (assum	1	0	0	0	North Valleys	1	0%	100%	$ 375,000	$ 1,250,000	$ 125,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,750,000	$ 1,750,000	$ 1,750,000
Reuse	Red Rock Reservoir or Reno Sparks Indian Colony first Segme	1	0	0	0	North Valleys	1	0%	100%	$ -	$ 7,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,500,000	$ 7,500,000	$ 7,500,000
Reuse	Direct Bury Swan Lake to American Flat Lake Dewatering Pip	1	0	0	0	North Valleys	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reuse	American Flat ASR Construction, 70% cost share reflected	1	0	0	0	North Valleys	1	0%	100%	$ -	$ 8,721,295	$ 12,375,000	$ 12,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,596,295	$ 33,596,295	$ 33,596,295
Reuse	Red Rock Reservoir	1	0	0	0	North Valleys	1	0%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,000,000	$ 50,000,000
Collection Condition	COLLECTION SYSTEM CONDITION PROJECTS	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ 14,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 56,000,000	$ 126,000,000	$ 126,000,000
Collection Condition	Annual Program -Large Diameter - CIPP (Lining of approx 10,(	1	0	0	0	TMWRF	1	100%	0%	$ 4,000,000	$ 4,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000,000	$ 8,000,000	$ 8,000,000
Collection Condition	Annual Program - Small Diameter CIPP (Lining of approx 21,0	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Condition	Sewer Rehab - Remove and Replace, City (Dig/replacement c	1	0	0	0	TMWRF	1	100%	0%	$ 6,306,000	$ 4,112,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,418,000	$ 10,418,000	$ 10,418,000
Collection Condition	Sewer Rehab - Remove and Replace RTC Rehab Areas (Appro	1	0	0	0	TMWRF	1	100%	0%	$ -	$ 5,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000,000	$ 5,000,000	$ 5,000,000
Collection Condition	Annual Program - I/I MitigationInvestigate and remove Inflow	1	0	0	0	TMWRF	1	100%	0%	$ 2,000,000	$ 2,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,000,000	$ 4,000,000	$ 4,000,000
Collection Condition	Annual Sewer On-Call	1	0	0	0	TMWRF	1	100%	0%	$ 1,000,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,000,000	$ 2,000,000	$ 2,000,000
Collection Condition	Corp Yard Security Fencing (Sewer Share)	1	0	0	0	TMWRF	1	100%	0%	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 24,000	$ 24,000	$ 24,000
Collection Capacity	Capacity Studies and Flow Monitoring	1	0	0	0	CITY WIDE	1	100%	0%	$ 645,000	$ 645,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,290,000	$ 1,290,000	$ 1,290,000
Collection Capacity	Moya South Interceptor	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ -	$ 522,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 522,000	$ 522,000	$ 522,000
Collection Capacity	McQueen Trunk (1)	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	Woodland Interceptor	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	Stead Blvd Main - Phase 1	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ 5,600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,600,000	$ 5,600,000	$ 5,600,000
Collection Capacity	Stead Blvd Main - Phase 2	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	Rocky Mountain Main - Phase 1	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	Rocky Mountain Main - Phase 2	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	Keystone Diversion [@ Riverside] AND Idlewild Syphone & M	1	0	0	0	TMWRF	1	100%	0%	$ -	$ 5,600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,600,000	$ 5,600,000	$ 5,600,000
Collection Capacity	Downtown Capacity Improvements	1	0	0	0	TMWRF	1	100%	0%	$ -	$ 2,450,000	$ 1,980,000	$ 1,980,000	$ 988,000	$ 988,000	$ 988,000	$ 988,000	$ 988,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,386,000	$ 11,350,000	$ 11,350,000
Collection Capacity	Idlewild Syphon & Main Replacements	1	0	0	0	0	1	100%	0%	$ 256,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 256,000	$ 256,000	$ 256,000
Collection Capacity	Mill Interceptor (1) [W. 4th St.]	1	0	0	0	TMWRF/LAWTON, 50/50	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247,444	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 247,444	$ 247,444
Collection Capacity	Mill Interceptor (5) [White Fir]	1	0	0	0	LAWTON	1	100%	0%	$ -	$ -	$ 705,640	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 705,640	$ 705,640	$ 705,640
Collection Capacity	Mill Interceptor (2) [Riverside]	1	0	0	0	TMWRF/LAWTON, 27/73	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 777,520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 777,520
Collection Capacity	Maestro Interceptor	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ 475,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 475,000	$ 475,000	$ 475,000
Collection Capacity	2nd Street Interceptor [Downtown]	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ 800,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 800,000	$ 800,000	$ 800,000
Collection Capacity	Mill (4)	1	0	0	0	LAWTON	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,138,933	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,138,933	$ 4,138,933
Collection Capacity	Mill (3)	1	0	0	0	TMWRF/LAWTON, 50/50	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 107,947	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 107,947	$ 107,947
Collection Capacity	Stead Airport	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 411,765	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 411,765
Collection Capacity	Moya North	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 891,667	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 891,667	$ 891,667
Collection Capacity	4th St.	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 155,956	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 155,956
Collection Capacity	McQueen Trunk (2)	1	0	0	0	TMWRF	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 267,573	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 267,573
Collection Capacity	Mill (6)	1	0	0	0	LAWTON	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Collection Capacity	Mill (7)	1	0	0	0	LAWTON	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,073,644	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,073,644
Collection Capacity	Mill (9)	1	0	0	0	LAWTON	1	100%	0%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 165,920	$ -	$ -	$ -	$ -	$ -	$ 165,920
Collection Capacity	McCarran/Plumas	1	0	0	0	0	1	100%	0%	$ -	$ -	$ 1,050,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,050,000	$ 1,050,000	$ 1,050,000
Collection Capacity	Peckham/Baker	1	0	0	0	0	1	100%	0%	$ -	$ -	$ 75,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000	$ 75,000	$ 75,000
Lift Stations	LIFT STATIONS	1	0	0	0	0	1	100%	0%	$ -	$ -	$ 2,000,000	$ 2,000,000	$ 1,200,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ -	$ -	$ -	$ 6,200,000	$ 11,200,000	$ 18,200,000
Lift Stations	Lear LS and FM	1	0	0	0	NORTH VALLEYS	1	100%	0%	$ 8,450,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,450,000	$ 8,450,000	$ 8,450,000
Lift Stations	Edison LS and FM	1	0	0	0	TMWRF	1	100%	0%	$ 310,598	$ 3,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,810,598	$ 3,810,598	$ 3,810,598
Lift Stations	Parr LS	1	0	0	0	TMWRF	1	100%	0%	$ -	$ 2,360,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,360,000	$ 2,360,000	$ 2,360,000
Lift Stations	Dermody LS	1	0	0	0	TMWRF	1	100%	0%	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ 200,000	$ 200,000

Lift Stations	North Dakota LS	1	0	0	0	TMWRF	1	100%	0%	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000	200,000
Lift Stations	University LS	1	0	0	0	TMWRF	1	100%	0%	-	4,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000,000	4,000,000	4,000,000
Lift Stations	Sky Vista FM	1	0	0	0	NORTH VALLEYS	1	100%	0%	317,594	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	317,594	317,594	317,594
Treatment	Digester Cover #4 Repair - Interior Coating & Insulation***	1	0	0	0	TMWRF	1	100%	0%	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000	200,000
Treatment	Effluent Reuse Pump Station Rehabilitation	1	0	0	0	TMWRF	1	100%	0%	4,750,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,750,000	4,750,000	4,750,000
Treatment	Clarifier Basin Concrete and Steel Rehabilitation (One per ye	1	0	0	0	TMWRF	1	100%	0%	591,000	609,000	627,000	646,000	665,000	591,000	706,000	727,000	749,000	771,000	794,000	-	-	-	-	-	-	-	-	-	-	3,729,000	7,476,000	7,476,000
Treatment	Nitrification Tower Rehabilitation & Improvements: Structur	1	0	0	0	TMWRF	1	100%	0%	-	4,200,000	500,000	4,410,000	500,000	4,630,500	500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14,240,500	14,740,500	14,740,500
Treatment	Odor Control Improvements	1	0	0	0	TMWRF	1	100%	0%	300,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300,000	300,000	300,000
Treatment	Bleach Building HVAC Project	1	0	0	0	TMWRF	1	100%	0%	1,100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,100,000	1,100,000	1,100,000
Treatment	Gas Conditioning System Improvements	1	0	0	0	TMWRF	1	100%	0%	100,000	240,000	800,000	-	-	500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,640,000	1,640,000	1,640,000
Treatment	Dewatering Improvements	1	0	0	0	TMWRF	1	100%	0%	-	1,340,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,340,000	1,340,000	1,340,000
Treatment	Thickened Waste Activated Sludge Rehabilitation	1	0	0	0	TMWRF	1	100%	0%	-	2,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,000,000	2,000,000	2,000,000
Treatment	MCC's Rehabilitation	1	0	0	0	TMWRF	1	100%	0%	510,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	-	-	-	-	-	-	-	-	-	-	3,010,000	5,510,000	5,510,000
Treatment	Filter Building/UV Disinfection Bypass, Evalutation & Enginee	1	0	0	0	TMWRF	1	100%	0%	250,000	-	-	-	-	-	750,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250,000	1,000,000	1,000,000
Treatment	Fluidized Bed Reactors Evaluation & Expansion Pre-Design	1	0	0	0	TMWRF	1	100%	0%	450,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450,000	450,000	450,000
Treatment	New Dewatering Bldg Preliminary Engineering Report	1	0	0	0	TMWRF	1	100%	0%	450,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450,000	450,000	450,000
Treatment	Digester #4 Membrane Cover (Design)	1	0	0	0	TMWRF	1	100%	0%	-	650,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	650,000	650,000	650,000
Treatment	Digester #4 Membrane Cover (Construction)	1	0	0	0	TMWRF	1	100%	0%	-	-	4,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000,000	4,000,000	4,000,000
Treatment	Heat Loop Improvements (Design Ph1/Ph2)	1	0	0	0	TMWRF	1	100%	0%	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000	200,000
Treatment	Heat Loop Improvements (Construction Ph1/Ph2)	1	0	0	0	TMWRF	1	100%	0%	-	-	3,200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,200,000	3,200,000	3,200,000
Treatment	Heat Loop Improvements (Design Ph2)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000	200,000
Treatment	Heat Loop Improvements (Construction Ph2)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	3,600,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,600,000	3,600,000	3,600,000
Treatment	UV Disinfection/Filter Building Bypass/Filter Improvements (	1	0	0	0	TMWRF	1	100%	0%	-	330,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330,000	330,000	330,000
Treatment	UV Disinfection/Filter Building Bypass/Filter Improvements (	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	10,050,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,050,000	10,050,000	10,050,000
Treatment	Filter Bldg Rehab Eval	1	0	0	0	TMWRF	1	100%	0%	-	300,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300,000	300,000	300,000
Treatment	Aeration Basin Rehabilitation System 1 (Design)	1	0	0	0	TMWRF	1	100%	0%	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000	200,000
Treatment	Aeration Basin Rehabilitation System 1 (Construction)	1	0	0	0	TMWRF	1	100%	0%	-	-	2,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,000,000	2,000,000	2,000,000
Treatment	Aeration Basin Rehabilitation System 2 (Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	500,000	2,250,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,750,000	2,750,000	2,750,000
Treatment	New Dewatering Facility	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	9,900,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,900,000	9,900,000	9,900,000
Treatment	Aeration Improvements (Pre-Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	240,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240,000	240,000	240,000
Treatment	Aeration Improvements (Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	560,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	560,000	560,000	560,000
Treatment	Aeration Improvements Construction	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	2,400,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,400,000	2,400,000	2,400,000
Treatment	Emergency Generators Pre-Design	1	0	0	0	TMWRF	1	100%	0%	-	-	-	125,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	125,000	125,000	125,000
Treatment	Digester #1 Control Building HVAC & Electrical Room (Pre-De	1	0	0	0	TMWRF	1	100%	0%	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000	200,000
Treatment	Digester #1 Control Building HVAC & Electrical Room (Constr	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	800,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	800,000	800,000	800,000
Treatment	Third Centrifuge and Cake Pump	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	1,550,000	-	-	-	-	-	-	-	-	-	-	-	1,550,000
Treatment	Digester #5 Cover (Pre-Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	400,000	-	-	700,000	-	-	-	-	-	-	-	-	-	-	-	-	1,100,000	1,100,000
Treatment	Digester #5 Cover (Construction)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	4,500,000	-	-	-	-	-	-	-	-	-	-	-	4,500,000	4,500,000
Treatment	Blower Building Air Intake (Pre-Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200,000	200,000
Treatment	Blower Building Air Intake (Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	500,000	-	-	-	-	-	-	-	-	-	-	-	-	500,000	500,000
Treatment	Blower building Air Intake (Construction)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	2,000,000	-	-	-	-	-	-	-	-	-	-	-	2,000,000	2,000,000
Treatment	Replace two existing centrifuges with larger centrifuges to m	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	1,650,000	-	-	-	-	-	-	-	-	-	-	-	1,650,000
Treatment	Nitrification Pump Repairs	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Treatment	NTFs 1, 3, 4 rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	5,500,000	-	5,500,000	-	-	5,500,000	-	-	-	-	-	-	16,500,000
Treatment	Top Deck Recoating	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	2,000,000	-	-	-	-	-	-	-	-	-	-	-	2,000,000
Treatment	Pipe Gallery C Structural Repair	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-	200,000
Treatment	RAS System 2 and 3 Improvements	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	6,600,000	-	-	-	-	-	-	-	-	-	-	6,600,000
Treatment	New Chiller for Gas Conditioning System	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-	200,000
Treatment	New Sludge Heater Pumps	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	800,000	-	-	-	-	-	-	-	-	-	-	-	800,000
Treatment	Process Air Piping Replacement in Pipe Gallery A (West)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	1,100,000	-	-	-	-	-	-	-	-	-	-	-	1,100,000
Treatment	Gravity Filters Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	5,100,000	-	-	-	-	-	-	-	-	-	-	5,100,000
Treatment	Gravity Thickeners Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	250,000	-	-	-	-	-	4,100,000	-	-	-	-	-	-	-	-	-	250,000	4,350,000
Treatment	DAFTs Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	4,200,000	-	-	-	-	-	-	-	-	-	-	4,200,000
Treatment	Grit Washer (Pre-Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Treatment	Grit Washer (Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	200,000	500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700,000	700,000	700,000
Treatment	Grit Facility Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	6,000,000	-	-	-	-	-	-	-	-	-	6,000,000
Treatment	Install new natural gas connection	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	1,150,000	-	-	-	-	-	-	-	-	-	-	1,150,000
Treatment	Nevada Energy Electrical Study	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	37,500	-	-	-	-	-	-	-	-	-	-	37,500
Treatment	AquaNereda Pilot	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	250,000	-	-	-	-	-	-	-	-	-	-	250,000
Treatment	Aeration Improvements (Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	800,000	-	-	-	-	-	-	-	-	-	-	-	-	-	800,000	800,000
Treatment	Aeration Improvements (Construction)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	5,000,000	-	-	-	-	-	-	-	-	-	-	-	-	5,000,000	5,000,000
Treatment	Post Air Tank Rehab (Pre-Design & Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	600,000	-	-	-	-	-	-	-	-	-	-	-	-	600,000	600,000
Treatment	Post Air Tank Rehab (Construction)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	1,500,000	-	-	-	-	-	-	-	-	-	-	-	1,500,000	1,500,000
Treatment	Activated Sludge Expansion (Pre-Design)	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Treatment	Aeration Tanks Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	8,400,000	-	-	-	-	-	-	-	-	-	8,400,000
Treatment	Filter Expansion Phase 1	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,600,000	-	-	-	-	-	-	-	-	9,600,000
Treatment	FBR Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Treatment	Primary and Secondary Clarifiers Rehab Phase 1	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000,000	-	-	-	-	-	-	-	-	-	4,000,000
Treatment	Two Additional Methanol Storage Tank	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	179,820	179,820	179,820	179,820	179,820	-	-	-	-	899,100
Treatment	System 3 Expansion Phase 1	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,455,000	1,455,000	1,455,000	1,455,000	1,455,000	-	-	-	-	7,275,000
Treatment	NTFs 5-6 Rehab	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,200,000	2,200,000	2,200,000	2,200,000	2,200,000	-	-	-	-	11,000,000
Treatment	Digester Rehab Phase 1	1	0	0	0	TMWRF	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	-	-	-	-	10,000,000
Treatment	Electrical Expansion & Upgrades	1	0	0	0	TMWRF	1	100%	0%	-	140,000	-	2,400,000	-	-	-	-	-	-	-	-	-	-	267,500	267,500	267,500	267,500	267,500	-	-	2,540,000	2,540,000	3,877,500
Tratment	Storage Bldg and Dedicated Control Rm/Server Space (Desigr	1	0	0	0	NORTH VALLEYS	1	100%	0%	105,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105,000	105,000	105,000
Tratment	Construct 60ft x 80 ft Metal Storage Bldg. Construction. Incre	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	600,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600,000	600,000	600,000
Tratment	Construct dedicated Control Rm/Server Space at Admin Bldg	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	450,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450,000	450,000	450,000
Tratment	RSWRF Existing Landscaping Irrigation Rehab (onsite)	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	50,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50,000	50,000	50,000
Tratment	Clarifier: Drain, inspect and rehab as required (estimate is pl	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	-	175,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175,000	175,000	175,000
Reuse	Offsite Flow control valves and meters and telemetry at reus	1	0	0	0	NORTH VALLEYS	1	100%	0%	368,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368,300	368,300	368,300
Reuse	Mayor's park reuse upgrades pending Stantec Recommendat	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100,000	100,000	100,000
Reuse	Reuse Improvements, The Lakes	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	75,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75,000	75,000	75,000
Reuse	Reuse Pump Station Improvements	1	0	0	0	NORTH VALLEYS	1	100%	0%	1,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000,000	1,000,000	1,000,000
Reuse	American Flat ASR Construction, 70% cost share reflected	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	8,721,295	12,375,000	12,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33,596,295	33,596,295	33,596,295
Reuse	RSWRF Am Flat ASR Project 30% Design ($2,010,586 total; $1	1	0	0	0	NORTH VALLEYS	1	100%	0%	1,005,293	(301,588)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	703,705	703,705	703,705
Reuse	APWF at Am Flat detailed design 4/22 through 10/23 (assum	1	0	0	0	NORTH VALLEYS	1	100%	0%	375,000	1,250,000	125,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,750,000	1,750,000	1,750,000
Reuse	Red Rock Reservoir or Reno Sparks Indian Colony first Segme	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	7,500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,500,000	7,500,000	7,500,000
Reuse	Direct Bury Swan Lake to American Flat Lake Dewatering Pip	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	-	5,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,000,000	5,000,000	5,000,000
Reuse	Red Rock Reservoir	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	-	-	-	-	-	-	50,000,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50,000,000	50,000,000
Reuse	OneWater Community Outreach	1	0	0	0	NORTH VALLEYS	1	100%	0%	50,000	50,000	50,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150,000	150,000	150,000
Reuse	OneWater Demonstration Center Preliminary Engineering?	1	0	0	0	NORTH VALLEYS	1	100%	0%	-	-	500,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500,000	500,000	500,000
0	Sparks Contribution	1	0	0	0	0	1	100%	0%	(2,729,504)	(3,359,413)	(3,722,678)	(2,993,012)	(6,576,721)	(5,214,165)	(1,037,092)	(384,910)	(642,771)	(2,531,873)	(2,915,528)	(4,078,100)	(6,724,944)	(7,497,430)	(4,925,818)	(1,914,298)	(3,639,648)	(1,914,298)	(1,914,298)	-	-	(24,595,492)	(32,107,666)	(64,716,498)
0	0	1	0	0	0	0	1	100%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								58%	42%	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042			
								57%	43%	**$ 48,521,204**	**$ 145,704,201**	**$ 67,164,800**	**$ 60,852,653**	**$ 39,989,915**	**$ 53,664,965**	**$ 21,383,633**	**$ 145,442,090**	**$ 43,076,529**	**$ 24,814,127**	**$ 34,180,622**	**$ 9,921,900**	**$ 16,750,556**	**$ 19,440,570**	**$ 47,495,502**	**$ 12,293,022**	**$ 8,962,672**	**$ 6,286,022**	**$ 4,188,022**	**$ -**	**$ -**	**$ 415,897,738**	**$ 684,794,739**	**$ 810,133,006**
								58%	42%	$ 37,784,281	$ 61,433,294	$ 46,179,962	$ 37,027,988	$ 31,051,280	$ 28,195,335	$ 18,256,908	$ 66,830,090	$ 21,533,162	$ 20,786,571	$ 22,378,086	$ 9,921,900	$ 15,980,129	$ 17,970,291	$ 12,554,022	$ 6,261,666	$ 8,962,672	$ 5,353,942	$ 4,188,022	$ -	$ -	$ 241,672,140	$ 391,456,958	$ 472,649,603
										$ 10,736,923	$ 84,270,907	$ 20,984,838	$ 23,824,665	$ 8,938,635	$ 25,469,630	$ 3,126,725	$ 78,612,000	$ 21,543,367	$ 4,027,556	$ 11,802,536	$ -	$ 770,427	$ 1,470,279	$ 34,941,480	$ 6,031,356	$ -	$ 932,080	$ -	$ -	$ -	$ 174,225,598	$ 293,337,782	$ 337,483,404

City of Reno
Sewer Utility Rate Model
Operating Reserve Funds
Alternative 1-3

FARR WEST ENGINEERING

FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Beginning Cash Balance	$ 138,835,971	$ 130,548,772	$ 85,056,148	$ 63,341,044	$ 54,593,238	$ 70,342,778	$ 74,838,096	$ 114,910,005	$ 83,048,879	$ 104,567,291	$ 145,443,125
Reserve Funded from Rates	$ -	$ -	$ -	$ 7,169,264	$ 16,700,010	$ 21,896,934	$ 35,051,557	$ -	$ 35,948,709	$ 38,903,531	$ 39,605,475
Reserve Used as Revenue Source	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Reserve Used to Fund Shortfalls/Capital Projects	$ (7,581,130)	$ (26,583,146)	$ (9,865,078)	$ -	$ -	$ -	$ -	$ (11,474,410)	$ -	$ -	$ -
Operating Reserve	$ (8,353,814)	$ (8,198,312)	$ (8,593,489)	$ (8,687,366)	$ (9,012,159)	$ (9,413,389)	$ (9,871,860)	$ (10,353,254)	$ (10,858,717)	$ (11,389,454)	$ (11,946,728)
Actual Connection Fee Revenue	$ (706,070)	$ (18,909,477)	$ (11,850,027)	$ (15,917,070)	$ (950,470)	$ (17,401,616)	$ 5,020,352	$ (20,386,716)	$ (14,430,297)	$ 1,972,303	$ (5,727,467)
Free Cash	**$ 122,194,957**	**$ 76,857,836**	**$ 54,747,555**	**$ 45,905,871**	**$ 61,330,618**	**$ 65,424,707**	**$ 105,038,145**	**$ 72,695,625**	**$ 93,708,574**	**$ 134,053,671**	**$ 167,374,406**
Ending Cash Balance	**$ 130,548,772**	**$ 85,056,148**	**$ 63,341,044**	**$ 54,593,238**	**$ 70,342,778**	**$ 74,838,096**	**$ 114,910,005**	**$ 83,048,879**	**$ 104,567,291**	**$ 145,443,125**	**$ 179,321,133**

Internal Reserves

Operating Reserve	$ 8,353,814	$ 8,198,312	$ 8,593,489	$ 8,687,366	$ 9,012,159	$ 9,413,389	$ 9,871,860	$ 10,353,254	$ 10,858,717	$ 11,389,454	$ 11,946,728
Goal	*$ 8,353,814*	*$ 8,198,312*	*$ 8,593,489*	*$ 8,687,366*	*$ 9,012,159*	*$ 9,413,389*	*$ 9,871,860*	*$ 10,353,254*	*$ 10,858,717*	*$ 11,389,454*	*$ 11,946,728*

Debt Coverage Ratio

NET Total Operating + CF Revenue	***$ 35,920,885***	***$ 40,635,069***	***$ 42,168,924***	***$ 45,713,110***	***$ 48,038,135***	***$ 50,092,270***	***$ 52,001,215***	***$ 53,983,068***	***$ 56,040,627***	***$ 58,176,797***	***$ 60,394,591***
Debt Service	*$ 5,717,733*	*$ 5,784,921*	*$ 7,162,485*	*$ 4,132,750*	*$ 2,903,738*	*$ 2,616,892*	*$ 2,616,892*	*$ 2,616,892*	*$ 3,806,389*	*$ 4,995,885*	*$ 4,995,885*
Debt coverage Ratio	6.28	7.02	5.89	11.06	16.54	19.14	19.87	20.63	14.72	11.64	12.09

City of Reno
Sewer Utility Rate Model
Revenue Requirement
Alternative 1-3

FARR WEST ENGINEERING

	FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Revenue Sources												
Rate Revenue		$ 72,912,436	$ 76,312,833	$ 79,873,087	$ 83,600,723	$ 87,503,623	$ 91,590,037	$ 95,868,608	$ 100,348,382	$ 105,038,833	$ 109,949,883	$ 115,091,919
Additional Rate Revenue After Prior Year Adjustment		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Connection Fee Revenue		$ 8,720,826	$ 8,952,800	$ 9,190,944	$ 9,435,424	$ 9,686,406	$ 9,944,064	$ 10,208,576	$ 10,480,124	$ 10,758,896	$ 11,045,082	$ 11,338,882
Miscellaneous Revenues		$ 5,106,661	$ 5,242,498	$ 5,381,949	$ 5,525,108	$ 5,672,076	$ 5,822,954	$ 5,977,844	$ 6,136,855	$ 6,300,095	$ 6,467,678	$ 6,639,718
Reserves												
American Flat Water Revenue (100% of sales)		$ -	$ -	$ -	$ -	$ -	$ -	$ 1,307,250	$ 1,372,613	$ 1,441,243	$ 1,513,305	$ 1,588,971
Total Revenue Sources		**$ 86,739,923**	**$ 90,508,132**	**$ 94,445,980**	**$ 98,561,255**	**$ 102,862,105**	**$ 107,357,055**	**$ 113,362,278**	**$ 118,337,974**	**$ 123,539,067**	**$ 128,975,949**	**$ 134,659,489**
Expenses												
Sewer Operation & Maintanence		$ 50,819,038	$ 49,873,063	$ 52,277,057	$ 52,848,145	$ 54,823,970	$ 57,264,785	$ 60,053,814	$ 62,982,293	$ 66,057,197	$ 69,285,846	$ 72,675,927
[Not Used]												
Capital Outlay Directly Funded by Rates		$ 37,784,281	$ 61,433,294	$ 46,179,962	$ 37,027,988	$ 31,051,280	$ 28,195,335	$ 18,256,908	$ 66,830,090	$ 21,533,162	$ 20,786,571	$ 22,378,086
Existing Debt Service - Sewer Operating		$ 5,717,733	$ 5,784,921	$ 5,854,039	$ 1,515,858	$ 286,846	$ -	$ -	$ -	$ -	$ -	$ -
Future Debt Service		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue Requirement		**$ 94,321,053**	**$ 117,091,278**	**$ 104,311,058**	**$ 91,391,991**	**$ 86,162,095**	**$ 85,460,121**	**$ 78,310,721**	**$ 129,812,383**	**$ 87,590,359**	**$ 90,072,417**	**$ 95,054,014**
Net Cash Flow (Deficiency)		**$ (7,581,130)**	**$ (26,583,146)**	**$ (9,865,078)**	**$ 7,169,264**	**$ 16,700,010**	**$ 21,896,934**	**$ 35,051,557**	**$ (11,474,410)**	**$ 35,948,709**	**$ 38,903,531**	**$ 39,605,475**

Rate Adjustments

	FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Rate Revenues with Prior Year Adjustment		$ 72,912,436	$ 76,312,833	$ 79,873,087	$ 83,600,723	$ 87,503,623	$ 91,590,037	$ 95,868,608	$ 100,348,382	$ 105,038,833	$ 109,949,883	$ 115,091,919
Annual Rate Adjustment Required		10.40%	34.83%	12.35%	-8.58%	-19.08%	-23.91%	-36.56%	11.43%	-34.22%	-35.38%	-34.41%
Number of Months Rate Adjustment will be in Effect		6	12	12	12	12	13	14	15	16	17	18
Percentage Increase to Generate Required Revenue		*20.80%*	*34.83%*	*12.35%*	*-8.58%*	*-19.08%*	*-22.07%*	*-31.34%*	*9.15%*	*-25.67%*	*-24.98%*	*-22.94%*
Proposed Rate Adjustment		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Estimated Ending Cash Balance

	FYE	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Projected Rate Revenue		$ 72,912,436	$ 76,312,833	$ 79,873,087	$ 83,600,723	$ 87,503,623	$ 91,590,037	$ 95,868,608	$ 100,348,382	$ 105,038,833	$ 109,949,883	$ 115,091,919
Net Cash Flow		$ (7,581,130)	$ (26,583,146)	$ (9,865,078)	$ 7,169,264	$ 16,700,010	$ 21,896,934	$ 35,051,557	$ (11,474,410)	$ 35,948,709	$ 38,903,531	$ 39,605,475
Ending Cash Balance		**$ 131,254,841**	**$ 104,671,695**	**$ 94,806,617**	**$ 101,975,882**	**$ 118,675,892**	**$ 140,572,826**	**$ 175,624,383**	**$ 164,149,973**	**$ 200,098,682**	**$ 239,002,213**	**$ 278,607,688**

City of Reno

Version 9

Wastewater Utility New Connection Model

Date 4/11/2022

Alternative 1-3

Line Item No.					Units
1	**Existing Cost-Basis: Value of Collection System Assets**				
2	**Existing Cost-Basis**				
3	Acquired Asset Value		$	555,451,207	
4	Plus:Present Day Asset Value		$	395,280,708	
5	**Total Current Existing Cost-Basis**		**$**	**950,731,914**	
6					
7	**Future Cost-Basis - Value of All Expansion Projects in CIP**				
8	**CIP - Expansion Projects**				
9	CIP Period	20-Year CIP			
10	Total Expansion Projects		$	357,520,991	
11	less: Developer Contributions		$	(36,036,990)	
12	**Total Future Cost-Basis**		**$**	**321,484,001**	
13					
14					
15	**TMWRF Collection System (CENTRAL)**				
16	**Existing Cost-Basis**				
17	Total Current Asset		$	950,731,914	
18	Less: Accumulated (Depreciation) Y/N	Y	$	(200,069,468)	
19	Less: Current Value Plant (RSWRF)		$	(52,312,557)	
20	Less: Current Value Storm Water		$	(189,549,332)	
21	less: Rehab-related projects		$	(131,766,705)	
22	Less: Contributed Capital		$	(31,300,000)	
23	Less: Current Value of Lawton-Verdi System		$	(29,941,877)	
24	**Total TMWRF Existing Cost-Basis**		**$**	**315,791,977**	
25	**Less: Use Capacity**	30%	$	94,737,593	
26	Plus: Existing Cash Balances		$	125,251,238	
27	Less: TMWRF Outstanding Long Term Debt		$	(19,159,397)	
28	**Total Existing "Buy-In" Cost-Basis**		**$**	**200,829,434**	
29					
30	**Future Cost-Basis**				
31	TMWRF Collection System Expansion Projects		$	70,971,423	
32	less: Lawton-Verdi Expansion Projects		$	(29,074,448)	
33	**Total TMWRF Collection Future Cost-Basis**		**$**	**41,896,975**	
34					
35	**Cost-Basis Summary**				
36	Existing Cost-Basis		$	200,829,434	
37	Future Cost		$	41,896,975	
38	**Total Cost-Basis**		**$**	**242,726,409**	
39					
40	**Collection System Capacity**				
41	Available Capacity for Additional ERUs			5.3	MGD
42	ERUs Served by Capacity			32,112	ERUs
43	**TMWRF Central Connection Fee / ERU**		**$**	**7,559**	
44					
45					

46	**Lawton-Verdi Existing Cost-Basis**				Units
47	**Existing Cost-Basis**				
48	Current Value of Lawton-Verdi System		$	29,941,877	
49	Less: Accumulated (Depreciation) Y/N	Y	$	(7,552,977)	
50	**Total Existing Cost-Basis**	74%	**$**	**16,533,341**	
51					
52	**Future Cost-Basis**				
53	Lawton-Verdi Expansion Projects		$	29,074,448	
54	Interest/Finance Charges		$	-	
55	Less: Grants		$	-	
56	**Total Future Cost-Basis**		**$**	**29,074,448**	
57					
58	**Cost-Basis Summary**				
59	Existing Cost-Basis		$	16,533,341	
60	Future Cost		$	29,074,448	
61	**Total Cost-Basis**		**$**	**45,607,789**	
62					
63	**Plant Capacity**				
64	Existing Interceptor Capacity			3.25	MGD
65	Remaining Capacity			2.4	MGD
66	Expanded Capacity with Proposed CIP			0.9	MGD
67	Available Capacity for Additional Connections			3.3	MGD
68	ERUs Served by Capacity			20,000	ERUs
69	**Lawton Verdi Only Connection Fee / ERU**		**$**	**2,280**	
70	**Lawton Verdi + TMWRF Central Connection Fee / ERU**		**$**	**9,839**	
71					
72					
73	**TMWRF Plant Component**				Units
74	**Existing Cost-Basis**				
75	Value of Capacity Remaining		$	129,091,413	
76	Value of Reno Share of Plant Capacity	68.63%	$	88,595,437	
77	**Total Existing Cost-Basis**		$	88,595,437	
78					
79	**Future Cost-Basis**				
80	TMWRF Plant Expansion Projects		$	27,838,010	
81	Interest/Finance Charges		$	-	
82	Less: Grants		$	-	
83	**Total Future Cost-Basis**		**$**	**27,838,010**	
84	Less: Sparks Contribution		$	(20,037,588)	
85	**Total Future Cost-Basis Less Sparks Contribution**		**$**	**7,800,423**	
86					
87	**Cost-Basis Summary**				
88	Existing Cost-Basis		$	88,595,437	
89	Future Cost-Basis		$	7,800,423	
90	**Total Cost-Basis**		**$**	**96,395,859**	
91					
92	**Plant Capacity**				
93	Current Total Capacity			34	MGD
94	Reno Share of Total Plant Capacity			23.3	MGD
95	Reno's Current Average Flow (June 2019 - September 2021)			18.4	MGD
96	Reno's Share of Committed/Unrealized Flows			0.831	MGD
97	Reno's Total Utilized Capacity			19.3	MGD
98	Reno Share Remaining Capacity			4.06	MGD
99	Total Expanded Capacity			1.80	MGD
100	Reno Share Expanded Capacity			1.2	MGD
101	Total Reno Share Capacity after Expansion			25.1	MGD
102	Reno's Available Capacity for Additional Connections			5.30	MGD
103	ERUs Served by Capacity			32,112	ERUs
104	**TMWRF Plant Connection Fee/ ERU**		**$**	**3,002**	
105					
106					

107	**RSWRF Component**			Units
108	**Existing Cost-Basis**	**$**	**-**	
109	Existing Cash Balances	$	13,584,733	
110	**Total Existing Cost-Basis**	**$**	**13,584,733**	
111				
112	**Future Cost-Basis**			
113	RSWRF Collection System Expansion Projects	$	22,124,568	
114	RSWRF Plant Expansion Projects	$	107,000,000	
115	RSWRF Effluent Management Expansion Projects	$	93,550,000	
116	Interest/Finance Charges	$	44,876,945	
117	Less: Grant	$	-	
118	Less: Water Sales	$	(27,176,789)	
119	**Total Future Cost-Basis**	$	240,374,725	
120				
121	**Cost-Basis Summary**			
122	Existing Cost-Basis	$	13,584,733	
123	Future Cost	$	240,374,725	
124	**Total Cost-Basis**	$	253,959,457	
125				
126	**Plant Capacity**			
127	Current Plant Capacity		2.0	MGD
128	Total Expanded Capacity		4.0	
129	Total Capacity with Proposed CIP		6.0	MGD
130	Available Capacity for Additional Connections		4.0	MGD
131	ERUs Served by Capacity		24,242	ERUs
132	**RSWRF Plant Connection Fee / ERU**	**$**	**10,476**	
133				
134				
135	**Uniform System Analysis**			Units
136	**Existing System Capacity Value**			
137	Existing TMWRF Plant Capacity Cost	$	88,595,437	
138	Existing TMWRF Central System Cost	$	200,829,434	
139	Existing Lawton-Verdi System Cost	$	12,209,237	
140	Existing RSWRF Cost-Basis	$	13,584,733	
141	less: TMWRF Debt Principal Outstanding	$	(19,159,397)	
142	**Total Existing Cost-Basis**	**$**	**296,059,443**	
143				
144	**Future Cost-Basis: Total Expansion Projects in CIP**			
145	TMWRF Expansion	$	27,838,010	
146	TMWRF Collection	$	41,896,975	
147	Lawton-Verdi Collection	$	29,074,448	
148	RSWRF	$	240,374,725	
149	**Total Future Cost-Basis**	**$**	**339,184,158**	
150	Less: Sparks Contribution	$	(20,037,588)	
151	**Total Future Cost-Basis Less Sparks Contribution**	**$**	**319,146,570**	
152				
153	**Cost-Basis Summary**			
154	Existing Cost-Basis	$	296,059,443	
155	Future Cost	$	319,146,570.13	
156	**Total Cost-Basis**	**$**	**615,206,013**	
157	Total Plant Capacity with Expansion		9.30	MGD
158	ERUs Served by Capacity		56,355	ERUs
159	**Cost per ERU Connection (Uniform)**	**$**	**10,917**	

Summary of Proposed Connection Fee Options

Uniform Connection Fee	Existing Fee	Proposed Fee
Applied to All Service Areas	$ 6,376	**$ 10,917**
Separate Connection Fees		
TMWRF Service Area	-	**$ 10,560**
RSWRF Service Area	-	**$ 10,476**
Lawton/Verdi Service Area	-	**$ 12,841**

Note: Connection Fees presented above are the Single Family Dwelling Connection Fee.
Details of fees associated with each customer class are summarized on the Summary & Results and Conn Fee Schedule sheets.

City of Reno
Sewer Utility Rate Model
Connection Fee Schedule
Alternative 1-3

FARR WEST ENGINEERING

Proposed Connection Fees
TMWRF Service Area

Residential/Commercial Unit	Existing Fee	Proposed TMWRF Service Area Fee
Single Family Dwelling	$ 6,376	**$ 10,560**
Multi-Family Dwelling	$ 5,445	**$ 9,019**
Mobile Home Estates or Subdivisions (per space)	$ 6,376	**$ 10,560**
Mobile Home Parks (per space)	$ 5,445	**$ 10,560**
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$ 2,271	**$ 3,761**
Rooming House (per room rental)	$ 2,041	**$ 3,380**
Commercial Fixture Unit Fee	$ 295	**$ 487**

Proposed Connection Fees
RSWRF Service Area

Residential/Commercial Unit	Existing Fee	Proposed RSWRF Service Area Fee
Single Family Dwelling	$ 6,376	**$ 10,476**
Multi-Family Dwelling	$ 5,445	**$ 8,946**
Mobile Home Estates or Subdivisions (per space)	$ 6,376	**$ 10,476**
Mobile Home Parks (per space)	$ 5,445	**$ 10,476**
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$ 2,271	**$ 3,731**
Rooming House (per room rental)	$ 2,041	**$ 3,353**
Commercial Fixture Unit Fee	$ 295	**$ 483**

Proposed Connection Fees
Lawton/Verdi Service Area

Residential/Commercial Unit	Existing Fee	Proposed L/V Service Area Fee
Single Family Dwelling	$ 6,376	**$ 12,841**
Multi-Family Dwelling	$ 5,445	**$ 10,966**
Mobile Home Estates or Subdivisions (per space)	$ 6,376	**$ 12,841**
Mobile Home Parks (per space)	$ 5,445	**$ 12,841**
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$ 2,271	**$ 4,574**
Rooming House (per room rental)	$ 2,041	**$ 4,110**
Commercial Fixture Unit Fee	$ 295	**$ 593**

Proposed Connection Fees
Combined Service Areas

Residential/Commercial Unit	Existing Fee	Proposed Combined Service Area Fee
Single Family Dwelling	$ 6,376	**$ 10,917**
Multi-Family Dwelling	$ 5,445	**$ 9,323**
Mobile Home Estates or Subdivisions (per space)	$ 6,376	**$ 10,917**
Mobile Home Parks (per space)	$ 5,445	**$ 10,917**
Res. Dwelling Unit Shared Kitchen or Rooming House Kitchen	$ 2,271	**$ 3,888**
Rooming House (per room rental)	$ 2,041	**$ 3,494**
Commercial Fixture Unit Fee	$ 295	**$ 504**

APPENDIX B – TECH MEMO: USER RATE SUFFICIENCY

FARR WEST
ENGINEERING

TECHNICAL MEMORANDUM

CITY OF RENO

SEWER UTILITY USER RATE AND CONNECTION FEE ANALYSIS

Prepared For:	John Flansberg, P.E. Trish Sebastian
Prepared By:	Kristi Thompson and Laine Christman
Reviewed By:	Lucas Tipton, P.E.
Date:	May 3, 2022
Subject:	User Rate Sufficiency

1.0 BACKGROUND

The City of Reno (City) contracted Farr West Engineering (Farr West) to provide an analysis of user rates and connection fees for its sewer system. This technical memorandum (tech memo) discusses the sufficiency of the City's current sewer user charges as defined in Ordinance No. 619. For more information regarding the proposed connection fees, refer to *Reno Connection Fee Study Report (2022).*

2.0 SUMMARY OF THE RATE SUFFICIENCY ANALYSIS

This study found that no rate increases in addition to the current annual Consumer Price Index-All Urban Consumers (CPI) adjustments are required. As further described below, the City's cash reserves are able to cover budgeted expenses, while maintaining reserves above the required amounts. Based on the results of this study, it is recommended that the City continue to use its current rate schedule and implement annual increases equal to CPI.

3.0 INFLATION FACTORS

To prepare the 5-year financial plan, inflation factors are applied to future revenue and expense projections over the study period. The inflation factors shown in Table 1, were developed in coordination with City staff and considered commonly used price indices. The general inflation rate (CPI) is assumed to escalate by 2.66% annually. Rate revenues are assumed to escalate at CPI plus growth for the 2021 customer base. Labor cost inflation and benefits cost inflation were assumed to escalate by 5 percent.

Table 1 Inflation Factor Assumptions

Key Factors	Inflation Rate per Year
General Cost Inflation (CPI)	2.66%
Construction Cost Inflation (ENR-CCI)	3.00%
Labor Cost Inflation	5.00%
Benefits Cost Inflation	5.00%
Admin Charge Projection	2.00%
No Escalation	0.00%
General Inflation Plus Growth	4.71%
City Directed 5% Projection	5.00%
Customer Growth (Multi-fam/Comm)	2.00%
Customer Growth (Single-Family)	1.00%

4.0 CURRENT REVENUES AND EXPENSES

The City's historic actuals for FY 17 through FY 22 were reviewed for this study. The City also provided the FY 23 budget. FY 23 was selected to be the starting point for revenue projections for nearly all revenue and expense items. Approximately $76M is projected to be collected in rate revenue and an additional $14M collected from non-rate revenue sources. Table 2 shows the projected revenues from FY 23 through FY 27. Considering the customer growth and inflationary factors described in Section 3.0, total projected revenues will increase to approximately $107 million (M) by FY 27 without any additional rate increases.

Table 2: 5-Year Budgeted Revenues.

Revenues	2023	2024	2025	2026	2027
Rate Revenue	76,312,833	79,873,087	83,600,723	87,503,623	91,590,037
Connection Fee Revenue	8,952,800	9,190,944	9,435,424	9,686,406	9,944,064
Miscellaneous Revenues	5,242,498	5,381,949	5,525,108	5,672,076	5,822,954
Total Revenue Sources	**90,508,132**	**94,445,980**	**98,561,255**	**102,862,105**	**107,357,055**

The City's total cost to operate the utility consists of total operation and maintenance (O&M), non-operating expenses, capital replacement projects funded by rates, and debt service payments. Similar to the revenue forecast, FY 23 was selected to be the starting point or basis for the projection of system costs. Table 3 shows the projected expenses from FY 23 through FY 27. The total projected costs for the utility will reach $85M in FY 27.

Table 3: 5-Year Budgeted Expenses.

Expenses	2023	2024	2025	2026	2027
O&M	49,873,063	52,277,057	52,848,145	54,823,970	57,264,785
CIP Funded by Rates	61,433,294	46,179,962	37,027,988	31,051,280	28,195,335
Existing Debt Service	5,784,921	5,854,039	1,515,858	286,846	-
Total Expenses	**117,091,278**	**104,311,058**	**91,391,991**	**86,162,095**	**85,460,121**

4.1 OPERATING EXPENSES

The City's O&M expenses consist of ongoing annual costs which can generally be classified as collection, sewage treatment, disposal, and administrative. Similar to the revenue forecast, FY 23 was selected to be the starting point for the projection of the system's expenses. Budgeted O&M expenses amount to $49.87M in FY 23 and $85.46M in FY 27.

4.2 EXISTING DEBT SERVICE

The City has one outstanding debt obligation that is specific to user rates under the 2016 Sewer General Refunding Bond. The annual debt payments amount to approximately $5. 8M until debt payments decrease in FY 25 and retire in FY 26.

4.3 OPERATING RESERVES

The City maintains reserve funding from user rates and connection fees under the Operating Fund. Based on the City's financial records, the Operating Fund's beginning cash balance in FY 22 was $138M. Maintaining a cash balance that allows for variability in revenues and expenses, on an annual basis, can be accomplished through adequate funding and using reserves to compensate for annual shortfalls. The City currently funds *at least* 60 days of operating expenses in its Operating Reserve. This value increases from $8.2M in FY 23 to $9.4M in FY 27.

4.4 CAPITAL PROJECTS AND FUNDING

The City developed a 20-year CIP to address the needs of the system. Repair and Maintenance projects maintain the system infrastructure and the capacity that is currently in place for existing connections. As the system ages, the City makes regular investments to maintain the integrity of its facilities through user rate revenues. For the purposes of the rate sufficiency analysis, only the 5-year CIP was taken into account. It is assumed that these projects will be funded through the City's reserves. The 5-year CIP is displayed in Table 4.

Table 4: 5-year CIP for Repair and Maintenance Projects.

FY	2023	2024	2025	2026	2027
CIP Funded By rates	$ 61,433,294	$ 46,179,962	$ 37,027,988	$ 31,051,280	$ 28,195,335

5.0 STUDY RESULTS

A detailed analysis shows that in FY23, the City will receive approximately $87M in revenues from existing rates. This is approximately $2M above the revenue of $85M projected by the FY 23 budget. However, this updated value shall still be considered an estimate because the model assumes rate increases occur at the start of each fiscal year when in reality adjustments occur in October of each year. Also, the model is based on commercial contribution to the sewer system in 2020. Table 5 provides the estimated rate revenue for FY 23. Note single and multi-family customers do not pay a volumetric charge and commercial do not pay a base charge. Customer counts are based on Equivalent Residential Units (ERUs).

Table 5: Estimated Revenues for FY 23

	FY 23 Estimates				
Customer Class	Base Charge	Vol Charge per kgal	ERU Count	Annual Revenue From Base Charge	Annual Revenue from Vol Charge
Single-Family	$50.78	-	59,565	$36,293,257	-
Multi-Family	$41.65	-	55,015	$27,495,743	-
Commercial	-	$11.12	4,570	-	$23,508,687
		Totals:	**119,149**	**$63,788,999**	**$23,508,687**
			Total Revenue:		**$87,297,686**

An analysis of reserve account balances suggests that the City is currently in a strong financial position to withstand annual shortfalls while maintaining all associated financial policies, over the next 5 years. As seen in Figure 1, the City is projected to end FY 27 with a cash ending balance of $85M. It was also estimated the City will have an unrestricted cash balance of $76M at the end of the study period.

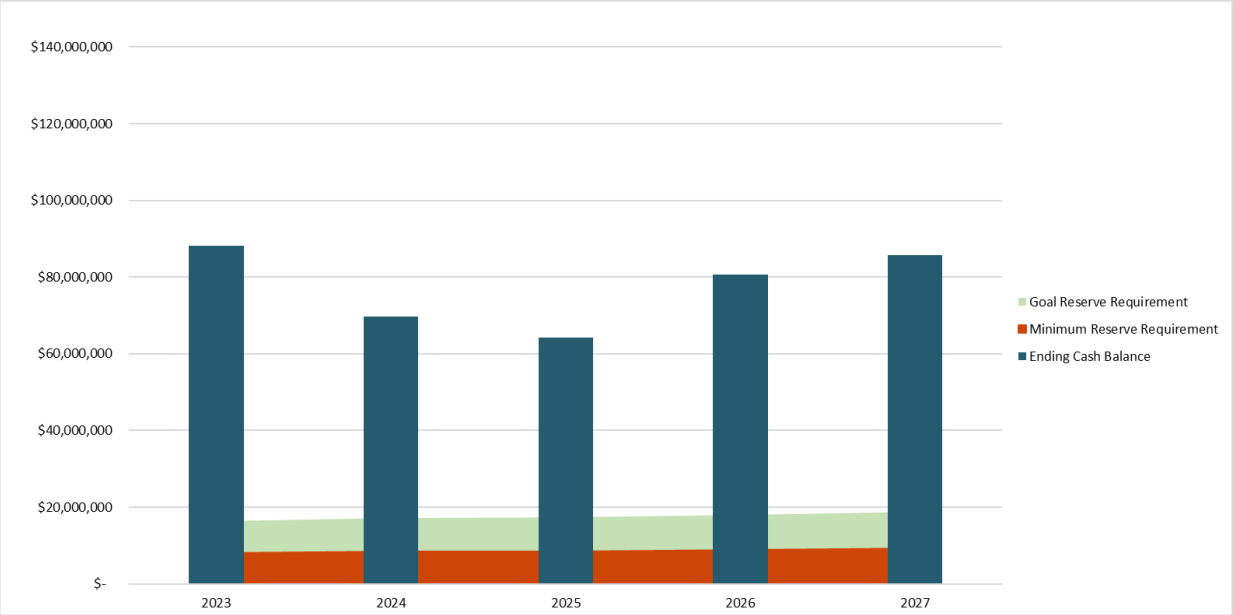

Figure 1: 5-Year Sewer Fund Cash Flow Projection.

6.0 RECOMMENDATIONS

Based on the results of the sufficiency analysis, it is recommended the City maintain the current rate structure and continue annual CPI adjustments. As seen in Figure 1, the City's ending cash balance is well above the reserve goals at the end of each year studied. Table 5 provides the recommended 5-year user rate schedule.

Table 5: Proposed 5-Year User Rate Schedule

Customer Class	Existing	2023	2024	2025	2026	2027
Single-Family (Flat)	$ 49.46	**$ 50.78**	$ 52.13	$ 53.51	$ 54.94	$ 56.40
Multi-Family (Flat)	$ 40.57	**$ 41.65**	$ 41.65	$ 41.65	$ 41.65	$ 41.65
Commercial (Vol)	$ 10.83	**$ 11.12**	$ 11.41	$ 11.72	$ 12.03	$ 12.35

Single and multi-family customers only incur a base charge for service. Commercial customers do not incur a base charge.

APPENDIX C – TECH MEMO: RESIDENTIAL INDOOR WATER USAGE (TMWA)

TRUCKEE MEADOWS WATER AUTHORITY

Quality. Delivered.

TO: John Enloe, Director, Natural Resources

FROM: Shawn Stoddard, Senior Resource Economist

DATE: December 28, 2021

SUBJECT: Single Family and Multi-Family Indoor Water Use Coefficients

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Estimated Indoor Water Use Coefficients.

- Indoor water use for single-family homes is expected to be 4,130 gallons per month.
- Indoor water use for multi-family dwelling units is expected by 3,400 gallons per month.
- As a reference, indoor water use for single-family homes, excluding zero water use observations is estimated to be 4,190 gallons per month.

Estimated Indoor Water Use Coefficients by Jurisdiction.

Estimated single-family monthly indoor water use per service for years 2016 to 2020.

Area	Total Observations	Expected Water Use
TMWA	525,762	4,130 gal.
City of Reno	299,286	4,020 gal.
City of Sparks	140,003	4,320 gal.
Unincorporated	86,473	4,180 gal.

Estimated multi-family monthly indoor water use per service and per dwelling unit for years 2016 to 2020.

Area	Total Observations – Water Services	Expected Use per Service	Total Observations – Dwelling Units	Expected Water Use
TMWA	24,615	30,100 gal.	218,089	3,400 gal.
City of Reno	18,766	29,980 gal.	166,084	3,390 gal.
City of Sparks	5,667	30,470 gal.	50,790	3,400 gal.
Unincorporated	The number of observations were less than 0.5% of the total and not significant.			

Data Definition and Collection

The expected water use is computed by taking the mean of pooled billing data for winters 2016 to 2020. Each observation is defined as the monthly water use for December to March for a single water service in a single winter. The mean of December to March use for each service is the average winter use for that service and is the indoor water use.

avgwinuse = avg(Dec, Jan, Feb, Mar)/4 for each observation

The multi-family observations also have the number of dwelling units attached to the water service. The number of dwelling units is used to compute the per unit use, per observation.

perunit = avgwinuse/units for each multi-family observation

Data Cleaning Procedures

For indoor water use studies, TMWA has a dataset containing all water services for winters 2003 to 2020. From this dataset, single-family and multi-family records with full winter water use and use greater than or equal to zero were extracted for winters 2016 to 2020. This created a raw dataset with 555,919 observations.

Class	Raw Observations	Cleaned Observations
Single-family	530,623	525,762
Multi-family	25,296	24,615
Total	555,919	550,377

Data Cleaning: Single-Family Data

The single-family data was further cleaned to remove observations with avgwinuse greater than the 99th percentile (17,000 gallons). For single-family observations, outliers are defined as having water use greater than the 99th percentile. The cleaned dataset has 525,762 observations with avgwinuse between 0 and 17,000 gallons. Zero water use is acceptable if a water bill was generated.

Data Cleaning: Multi-Family Data

The multi-family data was further cleaned to remove observations meeting these conditions:

- Dwelling unit count is missing or equal to zero.
- Dwelling unit count equal to 1. This is not a building with dwelling units.
- Avgwinuse equal to 0, the only time a complete building will have no water use for four or months is during some period of construction. For this reason, zero winter use is excluded. Some observations might low levels of use such that the perunit use will round to zero.
- Only duplexes and triplexes had water use outliers.

The cleaned dataset has 24,615 observations.

Summary Statistics

The summary statistical tables below were created using STATA 17.0 MP-Parallel Edition. The commented script is available upon request. The raw datafiles used are also available upon request.

The summary tables provide statistics for single family services, followed by multi-family water services. The multi-family water services statistics provide both water use and dwelling unit statistics. This table is intermediate to computing the per dwelling unit statistics presented in the third table. All three tables are available in a Microsoft Excel workbook.

Indoor Water Use Coefficients - Single Family Water Services
Water Use x 1,000 gallons

Statistics for All Areas

Water Year	Service Counts	Average Use	Standard Deviation	Minimum Use	First Percentile	First Quartile	Median	Third Quartile	85th Percentile	99th Percentile	Maximum Use
2016	101,199	4.08	2.58	0.00	0.00	2.25	3.50	5.25	6.50	13.00	17.00
2017	102,786	4.13	2.60	0.00	0.00	2.25	3.75	5.25	6.50	13.25	17.00
2018	105,514	4.20	2.62	0.00	0.00	2.50	3.75	5.50	6.50	13.25	17.00
2019	107,210	4.05	2.58	0.00	0.00	2.25	3.50	5.25	6.25	13.25	17.00
2020	109,053	4.17	2.63	0.00	0.00	2.25	3.75	5.50	6.50	13.25	17.00
Combined	**525,762**	**4.13**	**2.60**	**0.00**	**0.00**	**2.25**	**3.75**	**5.25**	**6.50**	**13.25**	**17.00**
Statistics for City of Reno											
2016	57,422	4.02	2.60	0.00	0.00	2.25	3.50	5.25	6.50	13.00	17.00
2017	58,400	4.01	2.59	0.00	0.00	2.25	3.50	5.25	6.25	13.25	17.00
2018	60,150	4.09	2.61	0.00	0.00	2.25	3.50	5.25	6.50	13.25	17.00
2019	61,131	3.95	2.56	0.00	0.00	2.25	3.50	5.00	6.25	13.00	17.00
2020	62,183	4.04	2.60	0.00	0.00	2.25	3.50	5.25	6.50	13.25	17.00
Combined	**299,286**	**4.02**	**2.59**	**0.00**	**0.00**	**2.25**	**3.50**	**5.25**	**6.25**	**13.25**	**17.00**
Statistics for City of Sparks											
2016	26,966	4.23	2.61	0.00	0.00	2.50	3.75	5.50	6.50	13.25	17.00
2017	27,536	4.36	2.67	0.00	0.00	2.50	4.00	5.75	6.75	13.50	17.00
2018	28,079	4.40	2.69	0.00	0.00	2.50	4.00	5.75	7.00	13.50	17.00
2019	28,519	4.28	2.68	0.00	0.00	2.50	3.75	5.50	6.75	13.50	17.00
2020	28,903	4.34	2.68	0.00	0.00	2.50	3.75	5.75	6.75	13.25	17.00
Combined	**140,003**	**4.32**	**2.67**	**0.00**	**0.00**	**2.50**	**3.75**	**5.50**	**6.75**	**13.25**	**17.00**
Statistics for Washoe County											
2016	16,811	4.06	2.47	0.00	0.00	2.50	3.50	5.25	6.25	12.75	17.00
2017	16,850	4.17	2.50	0.00	0.00	2.50	3.75	5.25	6.50	13.00	17.00
2018	17,285	4.24	2.52	0.00	0.00	2.50	3.75	5.50	6.50	13.00	17.00
2019	17,560	4.07	2.47	0.00	0.00	2.50	3.75	5.25	6.25	13.00	17.00
2020	17,967	4.34	2.65	0.00	0.00	2.50	3.75	5.50	6.75	13.75	17.00
Combined	**86,473**	**4.18**	**2.53**	**0.00**	**0.00**	**2.50**	**3.75**	**5.25**	**6.50**	**13.25**	**17.00**

Indoor Water Use Coefficients - Single Family Water Services, Excluding Zero Use.
Water Use x 1,000 gallons

Statistics for All Areas

Water Year	Service Counts	Average Use	Standard Deviation	Minimum Use	First Percentile	First Quartile	Median	Third Quartile	85th Percentile	99th Percentile	Maximum Use
2016	99,848	4.14	2.56	0.25	0.25	2.50	3.75	5.25	6.50	13.00	17.00
2017	101,288	4.19	2.57	0.25	0.25	2.50	3.75	5.50	6.50	13.25	17.00
2018	104,024	4.26	2.59	0.25	0.50	2.50	3.75	5.50	6.50	13.25	17.00
2019	105,611	4.12	2.55	0.25	0.25	2.25	3.50	5.25	6.50	13.25	17.00
2020	107,466	4.23	2.60	0.25	0.25	2.50	3.75	5.50	6.50	13.25	17.00
Combined	**518,237**	**4.19**	**2.58**	**0.25**	**0.25**	**2.50**	**3.75**	**5.25**	**6.50**	**13.25**	**17.00**
Statistics for City of Reno											
2016	56,644	4.08	2.57	0.25	0.25	2.25	3.50	5.25	6.50	13.25	17.00
2017	57,482	4.08	2.56	0.25	0.25	2.25	3.50	5.25	6.50	13.25	17.00
2018	59,241	4.16	2.58	0.25	0.25	2.25	3.75	5.25	6.50	13.25	17.00
2019	60,125	4.01	2.53	0.25	0.25	2.25	3.50	5.25	6.25	13.00	17.00
2020	61,260	4.10	2.57	0.25	0.25	2.25	3.50	5.25	6.50	13.25	17.00
Combined	**294,752**	**4.09**	**2.56**	**0.25**	**0.25**	**2.25**	**3.50**	**5.25**	**6.50**	**13.25**	**17.00**
Statistics for City of Sparks											
2016	26,630	4.28	2.58	0.25	0.50	2.50	3.75	5.50	6.75	13.25	17.00
2017	27,201	4.41	2.64	0.25	0.50	2.50	4.00	5.75	6.75	13.50	17.00
2018	27,728	4.45	2.66	0.25	0.50	2.50	4.00	5.75	7.00	13.50	17.00
2019	28,188	4.33	2.65	0.25	0.25	2.50	3.75	5.50	6.75	13.50	17.00
2020	28,552	4.39	2.66	0.25	0.50	2.50	3.75	5.75	7.00	13.25	17.00
Combined	**138,299**	**4.37**	**2.64**	**0.25**	**0.50**	**2.50**	**3.75**	**5.50**	**6.75**	**13.50**	**17.00**
Statistics for Washoe County											
2016	16,574	4.12	2.44	0.25	0.25	2.50	3.75	5.25	6.25	13.00	17.00
2017	16,605	4.23	2.47	0.25	0.50	2.50	3.75	5.25	6.50	13.00	17.00
2018	17,055	4.30	2.49	0.25	0.50	2.75	3.75	5.50	6.50	13.00	17.00
2019	17,298	4.13	2.44	0.25	0.25	2.50	3.75	5.25	6.25	13.00	17.00
2020	17,654	4.41	2.61	0.25	0.25	2.75	4.00	5.75	6.75	13.75	17.00
Combined	**85,186**	**4.24**	**2.49**	**0.25**	**0.25**	**2.50**	**3.75**	**5.25**	**6.50**	**13.25**	**17.00**

Indoor Water Use Coefficients - Multi-Family Water Services
Water Use x 1,000 gallons

Statistics for All Areas	Water Usage per Service Statistics										
Water Year	Service Counts	Average Use	Standard Deviation Use	Minimum Use	First Percentile	First Quartile	Median	Third Quartile	85th Percentile	99th Percentile	Maximum Use
2016	4,725	30.13	66.90	0.25	1.50	8.00	16.00	31.75	45.50	237.25	1,748
2017	4,785	30.44	69.58	0.25	1.25	7.75	16.25	31.50	45.00	246.75	1,761
2018	4,923	30.52	69.46	0.25	1.25	7.75	16.25	32.00	44.75	242.00	1,664
2019	5,037	29.92	70.52	0.25	1.00	7.75	15.75	31.25	44.50	235.25	1,803
2020	5,145	29.52	65.37	0.25	1.25	7.50	16.00	31.25	43.75	240.25	1,554
Combined	**24,615**	**30.10**	**68.38**	**0.25**	**1.25**	**7.75**	**16.00**	**31.50**	**44.75**	**240.25**	**1,803**
Statistics for City of Reno											
2016	3,602	30.16	63.76	0.25	1.25	7.50	16.25	31.25	44.25	237.25	1,748
2017	3,645	30.48	66.57	0.25	1.25	7.50	16.50	31.00	44.00	240.50	1,761
2018	3,762	30.29	64.94	0.25	1.00	7.50	16.25	31.25	43.75	245.75	1,664
2019	3,844	29.93	67.94	0.25	0.75	7.50	15.75	30.75	44.25	237.50	1,803
2020	3,913	29.08	61.24	0.25	1.25	7.25	15.75	31.00	43.25	240.25	1,454
Combined	**18,766**	**29.98**	**64.91**	**0.25**	**1.25**	**7.50**	**16.00**	**31.00**	**43.75**	**240.50**	**1,803**
Statistics for City of Sparks											
2016	1,087	30.23	76.69	0.25	1.50	8.75	15.75	33.00	48.50	155.25	1,513
2017	1,104	30.49	79.36	0.25	1.50	8.25	15.88	33.38	49.25	177.75	1,588
2018	1,126	31.55	83.55	0.25	2.00	8.50	16.00	34.00	48.50	225.00	1,662
2019	1,156	29.52	76.73	0.25	1.75	8.25	15.75	32.50	46.00	185.50	1,552
2020	1,194	30.59	75.53	0.25	1.25	8.25	16.25	33.25	48.50	232.75	1,554
Combined	**5,667**	**30.47**	**78.37**	**0.25**	**1.50**	**8.50**	**16.00**	**33.25**	**48.25**	**200.50**	**1,662**
Statistics for Washoe County											
2016	36	25.35	57.03	5.75	5.75	9.88	12.50	25.13	29.75	353.25	353
2017	36	24.94	42.18	5.25	5.25	9.13	12.63	24.13	30.25	246.75	247
2018	35	22.57	30.87	5.25	5.25	8.50	14.25	28.00	33.25	184.75	185
2019	37	41.54	118.16	3.25	3.25	8.50	13.00	25.50	40.00	708.50	709
2020	38	41.34	115.29	2.25	2.25	10.00	15.25	28.00	35.00	693.50	694
Combined	**182**	**31.36**	**81.96**	**2.25**	**3.25**	**9.50**	**13.13**	**26.00**	**33.25**	**693.50**	**709**

Multi-Family Water Services - Service Counts and Dwelling Unit Statistics

Statistics for All Areas			Dwelling Units per Service Statistics									
Water Year	Service Counts	Total Units	Average Units	Standard Deviation	Minimum Unit Count	First Percentile	First Quartile	Median	Third Quartile	85th Percentile	99th Percentile	Maximum Unit Count
2016	4,725	41,457	9	17	2	2	2	5	8	13	66	307
2017	4,785	42,044	9	17	2	2	2	5	8	13	70	302
2018	4,923	43,520	9	17	2	2	2	6	8	14	70	307
2019	5,037	44,881	9	17	2	2	2	6	8	14	66	307
2020	5,145	46,187	9	17	2	2	2	6	8	14	70	307
Combined	**24,615**	**218,089**	**9**	**17**	**2**	**2**	**2**	**6**	**8**	**14**	**70**	**307**
Statistics for City of Reno												
2016	3,602	31,883	9	16	2	2	2	6	8	12	66	307
2017	3,645	32,017	9	15	2	2	2	6	8	12	66	258
2018	3,762	33,278	9	16	2	2	2	6	8	12	70	307
2019	3,844	34,056	9	16	2	2	2	6	8	13	63	307
2020	3,913	34,850	9	15	2	2	2	6	8	14	65	307
Combined	**18,766**	**166,084**	**9**	**16**	**2**	**2**	**2**	**6**	**8**	**13**	**66**	**307**
Statistics for City of Sparks												
2016	1,087	9,373	9	21	2	2	2	4	8	16	89	302
2017	1,104	9,826	9	21	2	2	2	4	8	16	89	302
2018	1,126	10,043	9	21	2	2	2	4	8	16	89	302
2019	1,156	10,519	9	21	2	2	2	4	8	16	89	302
2020	1,194	11,029	9	21	2	2	2	5	8	16	112	302
Combined	**5,667**	**50,790**	**9**	**21**	**2**	**2**	**2**	**4**	**8**	**16**	**89**	**302**
Statistics for Washoe County												
2016	36	201	6	7	2	2	4	4	4	8	43	43
2017	36	201	6	7	2	2	4	4	4	8	43	43
2018	35	199	6	7	2	2	4	4	4	8	43	43
2019	37	306	8	18	2	2	4	4	4	8	105	105
2020	38	308	8	17	2	2	4	4	4	8	105	105
Combined	**182**	**1,215**	**7**	**12**	**2**	**2**	**4**	**4**	**4**	**8**	**105**	**105**

Indoor Water Use Coefficients - Multi-Family Dwelling Units
Water Use x 1,000 gallons

Statistics for All Areas

Water Year	Total Units	Average Use	Standard Deviation	Minimum Use	First Percentile	First Quartile	Median	Third Quartile	85th Percentile	99th Percentile	Maximum Use
2016	41,457	3.43	2.00	0.00	0.17	2.19	3.03	4.26	5.01	10.33	37.63
2017	42,044	3.47	2.04	0.00	0.16	2.23	3.06	4.25	5.24	10.30	38.25
2018	43,520	3.45	2.15	0.01	0.01	2.19	3.03	4.28	5.13	10.91	37.38
2019	44,881	3.36	2.05	0.00	0.11	2.07	2.98	4.25	5.09	10.88	27.69
2020	46,187	3.29	1.93	0.00	0.15	2.08	2.88	4.15	5.05	9.61	24.06
Combined	**218,089**	**3.40**	**2.04**	**0.00**	**0.12**	**2.14**	**3.00**	**4.25**	**5.09**	**10.33**	**38.25**
Statistics for City of Reno											
2016	31,883	3.41	1.97	0.10	0.30	2.18	2.97	4.13	4.96	10.50	20.63
2017	32,017	3.47	2.02	0.04	0.45	2.23	3.03	4.19	5.08	10.33	25.55
2018	33,278	3.42	1.98	0.01	0.26	2.25	3.00	4.20	5.00	10.91	25.56
2019	34,056	3.38	2.01	0.03	0.38	2.13	2.97	4.21	4.95	10.59	27.69
2020	34,850	3.27	1.84	0.02	0.36	2.09	2.85	4.00	4.85	9.29	24.06
Combined	**166,084**	**3.39**	**1.97**	**0.01**	**0.36**	**2.17**	**2.97**	**4.15**	**4.98**	**10.31**	**27.69**
Statistics for City of Sparks											
2016	9,373	3.51	2.07	0.00	0.00	2.25	3.25	4.75	5.19	9.45	37.63
2017	9,826	3.43	2.08	0.00	0.00	2.23	3.20	4.50	5.24	10.19	38.25
2018	10,043	3.54	2.65	0.01	0.01	1.97	3.21	4.59	5.50	11.34	37.38
2019	10,519	3.24	2.16	0.00	0.00	1.80	3.00	4.32	5.14	11.33	20.08
2020	11,029	3.31	2.17	0.00	0.00	1.88	2.93	4.50	5.16	9.83	21.19
Combined	**50,790**	**3.40**	**2.24**	**0.00**	**0.00**	**2.00**	**3.11**	**4.53**	**5.24**	**10.40**	**38.25**
Statistics for Washoe County											
2016	201	4.54	2.21	1.44	1.44	2.94	3.63	6.19	8.22	8.22	8.22
2017	201	4.47	2.40	1.50	1.50	3.13	3.88	5.74	5.74	13.66	13.66
2018	199	3.97	1.31	1.31	1.31	3.13	4.16	4.41	4.94	7.13	7.13
2019	306	5.02	1.69	1.56	1.56	3.63	5.13	6.75	6.75	7.13	7.13
2020	308	5.10	1.70	1.13	1.38	3.75	5.76	6.60	6.60	7.00	11.88
Combined	**1,215**	**4.70**	**1.91**	**1.13**	**1.44**	**3.25**	**4.41**	**6.44**	**6.75**	**8.22**	**13.66**