2022 Recycled Water Maximization Study

City of San Luis Obispo Utility Department

October 2022

Ultraviolet Treatment at the Water Resource Recovery Facility.

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Terminology

Acre-Feet Per Year (AFY): One acre-foot of water is the volume that would cover one acre of land with a food of water. This volume is equal to 325,851 gallons. AFY is often utilized to quantify bulk water volumes. There are approximately three acre-feet per every million gallons.

Agronomic Irrigation Rate: The rate of application of recycled/reclaimed water and associated nutrients to plants that is necessary to satisfy the plants' nutritional and watering requirements while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants.

Direct Potable Reuse: The planned introduction of recycled water either directly into a public water system, as defined in Section 116275 of the Health and Safety Code, or into a raw water supply immediately upstream of a water treatment plant.

Groundwater Banking: The process of diverting surface water or recycled water into an aquifer where it can be stored until it is needed later.

Groundwater Recharge: The practice of increasing the amount of water that enters a groundwater aquifer through human-controlled means.

Indirect Potable Reuse: The planned use of recycled water to replenish drinking water supplies with a suitable environmental barrier. Suitable environmental barriers can include soil or a surface water reservoir.

Million Gallons Per Day (MGD): A measurement of water flow frequently used in measurement of wastewater flow. There are approximately three acre-feet in every million gallons.

Ocean Outfall: A pipeline extending into coastal and ocean waters that is used by a wastewater treatment facility to discharge treated waste effluent or treatment byproducts such as brine.

Proposition 218: Commonly referred to as the “Right to Vote on Taxes Act”, the intent of Proposition 218 is to ensure that all taxes and most charges on property owners are subject to voter approval. In addition, Proposition 218 seeks to curb some perceived abuses in the use of assessments and property-related fees, specifically the use of these revenue-raising tools to pay for general governmental services rather than property-related services.

Recycled Water: Wastewater that is treated and reused for irrigation, groundwater recharge, surface water augmentation, industrial water use, and environmental restoration.

Return Flow: Percolation of irrigation water into the groundwater basin that occurs when water is supplied to irrigated crops or vegetation in excess of the crop's water demand. This is done to avoid excess build-up of salts in the soil and overcome non-uniformity in the irrigation distribution system.

Reverse Osmosis: A water/wastewater treatment process that removes contaminants from water by using pressure to force water molecules through a semipermeable membrane.

Safe Yield (Groundwater): The amount of groundwater that can be withdrawn from a groundwater basin over a period of time without exceeding the long-term recharge of the basin or unreasonably affecting the basin's physical and chemical integrity.

Surface Water Augmentation: The planned placement of recycled water into a surface water reservoir used as a source of domestic drinking water supply.

Surface Water Groundwater Interconnection: When surface water seeps into the ground and recharges the underlying groundwater aquifer, or when groundwater discharges to the surface and supplies the stream with additional flow.

Tertiary Treated Recycled Water: Water treated to a point that meets or exceeds the standards established by the California Department of Public Health according to Title 22 of the California Code of Regulations for non-potable water intended for unrestricted use.

I. Introduction

The Recycled Water Maximization Study compiles information from previous reports such as the 2017 Recycled Water Master Plan (RWMP) and the Recycled Water Facilities Planning Study (RWMP, Appendix A), as well as recent work related to recycled water pricing strategies and analysis of legal and regulatory constraints for recycled water program expansion. This study serves as an overview of key information that will guide the City through maximizing the use of recycled water while protecting this investment for the community. As stated in the adopted 2017 RWMP, the City plans to put recycled water to its highest use as an additional potable water supply for the community of San Luis Obispo.

Recycled water generally refers to wastewater that is treated and reused for irrigation, groundwater recharge, surface water augmentation, industrial water use, and environmental restoration. In addition to traditional utilization of recycled water for irrigation use, cities are now developing strategies to maximize recycled water through advanced treatment technologies, where recycled water can ultimately be utilized as a drinking water supply.

While the overall goal for long-term use as a potable supply remains, much has changed around recycled water in the past five years. As part of the City's 2021-23 Financial Plan, the City Council authorized funding for staff to develop this study, which will be used to determine the feasibility of further expanding recycled water resources for the benefit of the community, including what short-term options exist for utilization of surplus recycled water until this resource can be utilized as a drinking water supply in the future.

This Recycled Water Maximization Study provides information and analysis of the following topics which are critical in the City's strategy to maximize its recycled water resources:

1. **Background Information.** Historical and background information on how recycled water is used in the City and recent changes to State-approved uses.
2. **Maximization Strategies.** Short-term and long-term strategies to maximize the use of recycled water supplies.
3. **Issues if Delivered outside of City limits.** Areas for discussion and consideration when examining outside-City delivery of recycled water, including legal risks, supply availability, pricing strategies for external delivery, and compliance with existing City policies.

II. Recycled Water Background Information

The Central Coast of California experienced a significant drought from 1987 to 1992 resulting in near depletion of the City's surface water supplies stored in Whale Rock and Salinas Reservoirs. This period of drought preceded the City's partnership in the Nacimiento Water Project (a current and third surface water supply for the City), and also stressed the City's groundwater supplies, which were at the time heavily relied upon. During this period of drought, the City implemented stringent water conservation measures that reduced the City's overall water use by 40%. In addition to permanently changing the water use characteristics of the community, this drought highlighted the need for greater water resiliency and was the driving force behind significant investments in the Nacimiento Water Project and the City's recycled water program. These two projects were constructed to enable the community to meet its current and projected water needs and to make the City's water supplies more resilient during periods of extended drought or other loss of supply. Today the City of San Luis Obispo receives water from three

surface water sources (Whale Rock, Salinas, and Nacimiento), limited groundwater for non-potable uses, and recycled water.

Currently Approved Uses of the City's Recycled Water

The City's recycled water supplies are currently treated and produced at the City's Water Resource Recovery Facility (WRRF) to tertiary standards, as defined by State regulations, which allow recycled water to be used for urban landscape irrigation, agricultural irrigation, and other de minis non-potable uses. As of 2022, the City's recycled water supply is used almost exclusively for landscape irrigation, with small volumes being utilized for dust control, grading, and soil compaction at large construction sites. While permitted for irrigation use, tertiary treated recycled water is **not permitted** for recharging groundwater basins, for surface water augmentation, or for human consumption.

> The State defines "disinfected tertiary recycled water" as a filtered and subsequently disinfected wastewater. Disinfection methods consist of either chlorine application meeting specific parameters or other process that inactivates or removes specific disinfection-resistant virus (such as polio). The process must also result in coliform bacteria concentrations below specific levels. *California Code of Regulations Title 22, §60301.230*

When applications for private development are received by the City, Utilities staff review the project to determine if the project site is within the recycled water delivery area and identify what site improvements or infrastructure is needed to connect the project site to the City's recycled water system. Larger developments and annexations are reviewed to determine if public improvements, consistent with the RWMP, should be required as a component of the project approval process, based on the project's demand and associated impact on the recycled water system.

To ensure compliance with the State's regulations prohibiting over-application of recycled water, which could result in degradation to the groundwater basin, City staff conduct a thorough review of how recycled water is planned to be utilized, along with the anticipated quantity that will be used at each site applying for new service. This review is performed to ensure that the amount of recycled water used does not exceed agronomic rates; recycled water is only permitted to be applied in the volume required by the plants being irrigated and is not allowed to be over-applied to intentionally induce groundwater recharge.

Potential Future Uses of the City's Recycled Water

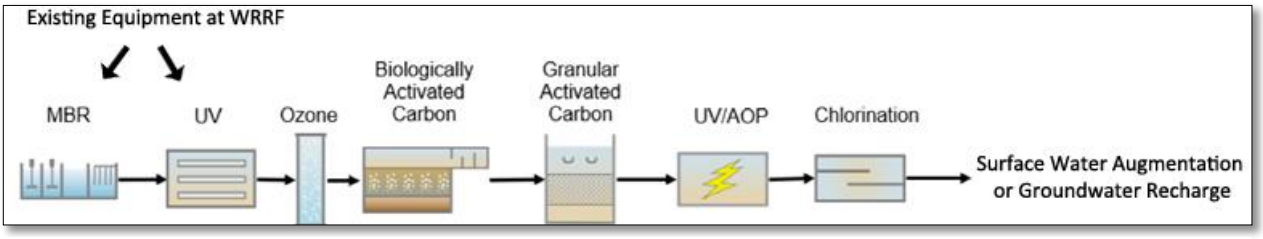
The WRRF is currently undergoing a comprehensive upgrade (SLO Water Plus), which is projected to be completed and operational in early 2024. The upgrade to the WRRF will result in increased treatment capacity, increased production of recycled water, and updated treatment and operational processes, which will result in significant long-term environmental, water quality, resiliency, and community benefit.[1] In addition, the City Council approved upgrades to the WRRF that would position the City to utilize recycled water for groundwater recharge or surface water augmentation in the future.

The use of recycled water for groundwater recharge has been permitted in California since 2014, and surface water augmentation has been permitted in the state since 2018. Often referred to collectively as

[1] For more information regarding the SLO Water Plus Project, please see City website: https://www.slowrrfproject.org/

Indirect Potable Reuse (IPR), these two uses of recycled water require additional treatment processes, commonly referred to as Advanced Treatment. Advanced Treatment is often used to mean additional engineered treatment after tertiary treatment of wastewater to remove contaminants of concern to meet public health requirements. However, the exact makeup of advanced treatment required for an IPR project can be specific to the site of the project and to the intended end use of recycled water (groundwater recharge or surface water augmentation).

Advanced treatment of recycled water requires the use of reverse osmosis (RO) in California. Reverse osmosis is a water purification technology that creates a byproduct known as brine, that is generally not cost effective to dispose of unless a community has an ocean outfall for brine disposal. As the City of San Luis Obispo is not proximate to the coast, and does not have an ocean outfall, the use of reverse osmosis is not currently economically feasible for the City; however, regional partnerships are being explored that may create opportunities for RO-based treatment. Since many of California's water stressed communities are not able to cost effectively remove brine, California's potable reuse regulations have an "alternatives clause" which provides an alternative permitting pathway for communities that cannot implement reverse osmosis or have other regulatory hurdles that need to be overcome. The potable reuse alternatives clause allows the City to replace the reverse osmosis process with treatment technologies that prove to be equally effective. This alternatives track requires substantial permitting and a multi-year "demonstration period" in which the advanced treatment facility must demonstrate that treated water continually meets water quality parameters. For the City, alternatives clause technologies would likely include a treatment series consisting of membrane bioreactors (MBR), ultraviolet light (UV), ozone, biologically activated carbon (BAC), granular activated carbon (GAC), ultraviolet advanced oxidation (UV/AOP), and chlorination. When planning the WRRF upgrade, the City opted to utilize MBR and UV in the wastewater treatment processes, which will reduce the cost of advancing from tertiary treated recycled water to advanced treated recycled water should the City opt to pursue permitting through the alternatives clause.



III. How Much Recycled Water is Available for Use?

Changed Conditions Since 2006

The City's recycled water program came online in 2006. Since that time many conditions and regulations have changed, resulting in the need for reexamining the City's strategy to optimize recycled water use. As discussed in more detail below, wastewater influent has substantially decreased since 2006 due to enhanced water conservation efforts, while the demand for recycled water has increased each year. Without acknowledgement of these changed conditions, the City not only risks underutilizing its recycled water supplies, but it also risks overallocation of this limited resource.

Decrease in Recycled Water Supply

Since the inception of the City's recycled water program, wastewater influent (which is utilized to produce recycled water) has **decreased** from approximately 5,000 acre-feet per year in 2006 to approximately 3,200 acre-feet per year in 2022. During the same period that influent was rapidly decreasing, the community expanded by approximately 1,500 residents, Cal Poly's attendance increased by approximately 3,000 students (the City currently treats all wastewater generated on the Cal Poly campus), and business and tourism in the City increased substantially. Most of the decrease in available recycled water can be attributed to decreases in indoor water use resulting from statewide water conservation standards and the City's aggressive water conservation programs. *Table-1* below documents the decreasing volume of wastewater treated at the WRRF at three-year intervals.

Table-1 - Wastewater Influent (Three-Year Intervals)		
Calendar Year	**Millions of Gallons Per Day**	**Acre-Feet Per Year**
2007	4.36	4,887
2010	4.69	5,257
2013	3.15	3,530
2016	2.51	2,813
2019	3.63	4,068[1]
2022	2.88	3,228[2]

Notes:
1. Wastewater influent average for 2019 was abnormally high due to wet weather resulting in increased influent Jan-Apr.
2. Wastewater influent for 2022 is estimated for October, November, and December.

Increase in Recycled Water Use

Concurrent with the City's wastewater influent decreasing and corresponding decreases in recycled water production, the City's recycled water user base was growing substantially, resulting in increased recycled water demand. *Table 2* below documents annual recycled water demand growth at three-year intervals. This increased use is largely attributed to use of recycled water at large City parks such as Laguna Lake Park, Islay Park, French Park, and Damon Garcia Park and landscape irrigation within expansion areas such as Righetti Ranch, San Luis Ranch and Avila Ranch.

Table-2 - Recycled Water Demand (Three-Year Intervals)	
Calendar Year	**Acre-Feet Per Year**
2007	77
2010	153
2013	177
2016	193
2019	215
2022	300[1]

Notes:
1. 2022 Recycled Water Demand is estimated for October, November, and December.

Creek Discharge Requirement Modifications

Not all treated wastewater produced at the WRRF can be utilized for recycled water. When the City initially received its State Water Board issued Master Reclamation Permit, which authorizes its use of recycled water, the City was required to discharge 1.1 Million Gallons Per Day (MGD) of recycled water to San Luis Obispo Creek. Two years later in 2005, prior to the recycled water program making its first delivery, the City was required by the National Oceanic and Atmospheric Administration (NOAA) to

increase creek discharge from 1.1 MGD to 1.6 MGD. This modification reallocated 500,000 gallons per day of water from potential irrigation use to permanent delivery to San Luis Obispo Creek to support steelhead habitat.

Anticipated Changes to Recycled Water Availability and Demand

Just as conditions have changed greatly since the launch of the City's recycled water program, staff anticipate that conditions will continue to change as California mitigates and adapts to climate change impacts, develops water supply augmentation projects to return groundwater basins to sustainability, and as technology and regulations advance, allowing for expanded uses of recycled water. Below are anticipated changes that City staff, the City Council, and the community should consider when planning for the future use of recycled water.

Increased Water Conservation Regulations

Water conservation regulations in California are expanding rapidly and reducing water demand across the state. While the state is focused on reducing both indoor and outdoor water use, landscape irrigation reductions do not impact wastewater influent volumes. This section speaks to decreased recycled water production resulting from indoor water conservation regulations and water use efficiency standards in California. Until Senate Bill X7-7 was passed in 2009, most water conservation programs in the state were locally controlled and not stipulated by state law. Today, the state has taken an active role in setting conservation standards for urban water purveyors and has also driven significant increases in water use efficiency standards for indoor plumbing fixtures such as toilets, showerheads, and faucets. In September 2022, Governor Newsom signed Senate Bill 1157, which outlined that urban water purveyors must reduce indoor water use for residential customers from a standard of 55 gallons per capita daily (gpcd) in 2020, to 47 gpcd by 2025, and then to 42 gpcd by 2030. While initial analysis indicates that the City is already compliant with the 2025 standards, statewide drought messaging and continued fixture efficiency improvements are likely to drive the City's indoor residential water consumption well below 42 gpcd by 2030. As the state continues to adopt more stringent water use efficiency and conservation measures, the City's recycled water supplies will be further reduced.

Expansion of Recycled Water Irrigation

The City continues to expand to meet the needs of the community, and several large developments are either partially constructed or soon to be constructed within City limits. Most of these large developments are located within the City's recycled water service area and will be required to connect to recycled water for irrigation of common areas and streetscapes. Additionally, as these developments are completed, recycled water will also be extended to additional City facilities such as Sinsheimer Park and Johnson Park. It is anticipated that the City's recycled water demand will increase from 300 acre-feet per year to approximately 600 acre-feet per year as development projects within the recycled water service area are completed. This increase in recycled water demand will further intensify seasonal constraints on recycled water availability. Further detail regarding recycled water availability for outside-City delivery will be provided in the Outside-City Delivery Considerations section of this report.

Cal Poly Wastewater Reclamation Facility Construction / Master Plan Expansion

The City currently treats all of Cal Poly's wastewater flow at the City's WRRF. As Cal Poly developed a strategy to outline the planned expansion of the campus, they determined that the university did not have sufficient water supplies to meet the needs identified in their master plan. University staff determined that future water needs could be accommodated by constructing a Wastewater Reclamation Facility

(WRF) on Campus. This facility would treat all wastewater generated from Cal Poly's new master plan-associated construction to tertiary treated recycled water standards, where it could be used for agricultural irrigation and landscape irrigation. Using this water for irrigation would then free up water supply in Whale Rock Reservoir for Cal Poly's domestic needs associated with its master plan expansion area.

While Cal Poly's long-term plan is to utilize their new WRF to treat all wastewater generated by their campus expansion, and to continue to deliver wastewater from the existing campus to the City's WRRF, there is a period where this may not be feasible and could result in a reduction in wastewater flow to the City. When Cal Poly constructs its WRF in 2025, expansion will likely be minimal and will not generate enough new wastewater flow to operate the treatment facility. Until a substantial portion of Cal Poly's new development is completed, it is possible that Cal Poly will need to redirect part or all of the wastewater flow from their existing campus to the new WRF. This temporary transfer of wastewater flow from the City WRRF to the Cal Poly WRF is necessary to operate the Cal Poly facility, as the wastewater treatment equipment and recycled water production equipment will have minimum flow requirements to run effectively. The volume of redirected wastewater and timing of this temporary reduction in flow is unknown at this time but is likely to start in 2025 and carry forward with varying impact through 2035. Cal Poly has initiated preparation of an Environmental Impact Report (EIR) to evaluate the proposed WRF project; this process will include further coordination with the City and is anticipated to provide additional information regarding the project's impact on the City's WRRF and associated recycled water production.

Sustainable Groundwater Management Plan (SGMA) Impacts

In accordance with SGMA, the City began drafting the San Luis Obispo Valley Basin Groundwater Sustainability Plan (GSP) alongside the County of San Luis Obispo (County) in 2019. This GSP documented groundwater conditions in the San Luis Obispo Valley Groundwater Basin (SLO Valley Basin) and identified that groundwater conditions varied significantly throughout the basin. In areas of the basin underlying the City, often referred to as the San Luis Subarea, groundwater conditions remain stable, with a 700 acre-foot per year surplus volume of groundwater. On the opposite side of the basin, in the agricultural areas of the Edna Valley (Edna Valley Subarea), groundwater pumping is not sustainable and exceeds sustainable yield by approximately 1,100 acre-feet per year.

The GSP had two major takeaways that are important to how recycled water supply and demand may change in the future.

1. The GSP documented that the City's portion of the groundwater basin is very small and can meet less than 20% of the City's water need each year. However, there are areas of the basin within City limits where recycled water could be utilized to recharge the groundwater basin, increasing the volume of groundwater available to the City annually. Recharging the groundwater basin with recycled water requires that the City further treat its recycled water to advanced treatment standards, which may require special permitting from the State, and could take 6-8 years from permitting and construction through initial operation. Despite the small groundwater basin size, it is estimated that the entire available volume of recycled water could be utilized for groundwater recharge in the future.

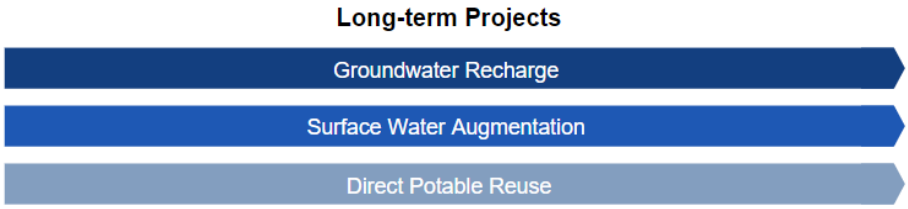
2. The GSP discussed the potential for the sale of the City's surplus recycled water supplies to the Edna Valley Subarea to offset groundwater pumping. The GSP identified that

approximately 500-800 acre-feet of recycled water could be delivered to the Edna Valley Subarea for a five-to-ten-year period until the City pursues groundwater recharge or surface water augmentation projects. Available recycled water volumes would not meet the entirety of the estimated 1,100 acre-feet per year required to bring the Edna Valley Subarea into sustainability and would not be available at all once the City moved toward potable reuse.

IV. Short Term vs. Long Term Maximization Strategy

Balancing recycled water availability and demand is a challenging topic that requires acknowledgement that current conditions are likely to change substantially within the next five to ten years. While the City has surplus supplies of recycled water available today, uncertainty exists around the impact that conservation regulations may have on available supplies, how rapidly technology will expand the approved uses of recycled water, and how Cal Poly's new WRF may impact recycled water production for the City. Acknowledging the uncertainty that exists around the future of recycled water, staff have identified short-term and long-term strategies that maximize the use of recycled water. While long-term strategies are focused on treating recycled water to make it a supplemental potable supply, short term strategies focus on irrigation use but vary in complexity, as well as the nature and volume of benefit to the community.

Long-Term Recycled Water Use



The City is in the final stages of drafting a Recycled Water Potable Reuse Implementation Plan. This plan outlines the opportunities for potable reuse in the future, a timeline for potable reuse project delivery, and treatment requirements associated with different potable reuse alternatives. This study reinforces the City's long-term strategy to further treat recycled water to make it potable, providing added resiliency to the City's water supply portfolio. Below is a list of potential potable reuse pathways that the City could take in the coming years to add a new potable water supply to the City's water supply portfolio. Long-term projects have not undergone a formal feasibility analysis and will be further studied in the coming years. All information about these projects should be considered informational in nature and likely to change as more detail is gathered

Groundwater Recharge Projects

As mentioned previously in this study, groundwater recharge requires advanced treatment of recycled water, which can be achieved through the State's approved advanced treatment process (including Reverse Osmosis), or by pursuing equivalent treatment utilizing the alternatives clause[2]. For both groundwater recharge projects listed below, staff are assuming that the City would be required to utilize

[2] The alternatives clause is a regulatory option that allows water purveyors to utilize an alternative permitting pathway to producing Advanced Treated recycled water in absence of the use of Reverse Osmosis. Advanced treated recycled water can be utilized for groundwater recharge or surface water augmentation.

the alternatives clause, due to the City not having access to an ocean outfall to dispose of reverse osmosis brine.

Groundwater Recharge within the San Luis Subarea of the Groundwater Basin

Project Description: This project would consist of siting a recycled water percolation field or injection well upstream of the City's existing water supply wells which are located near Los Osos Valley Road. This injection well or percolation field would be utilized to percolate or inject advanced treated recycled water into the San Luis Subarea of the groundwater basin, at a location upstream of the City's existing water supply wells which are located along Los Osos Valley Road. After achieving appropriate treatment and aquifer retention time[3], the City could utilize existing groundwater wells to pump this water back out of the basin for domestic use.

Benefits: Groundwater recharge within the San Luis Subarea of the SLO Basin provides unique benefits to the City and is in alignment with climate action plan goals. If the City was to site a groundwater percolation field or injection site within areas of San Luis Subarea underlying the City, recycled water could supplement native groundwater in the basin and allow the City to increase groundwater pumping each year. Additionally, the City could utilize existing groundwater wells for extraction and connection to the City's potable water system, reducing the need to construct new pumping and delivery infrastructure. As the City continues to focus on reduction of greenhouse gas emissions, it is also important to recognize that this option would reduce pumping costs for surface water supply delivery from the north county and would not require energy intensive pumping to the Edna Valley for groundwater recharge in the Edna Valley Subarea of the SLO Basin (alternative groundwater recharge option). In addition to environmental benefit, the City would have rights to the entirety of the water injected into the basin and would not be required to sell or exchange any of its available recycled water supplies in exchange for land, easements, or other infrastructure.

Constraints: The City's portion of the groundwater basin is small and has limited pumping capacity. The City would need to increase groundwater pumping in the basin to free up capacity for this new water supply to be percolated or injected into the groundwater basin. Unfortunately, due to the small size of the basin, the City would not likely be able to bank and store large volumes of water for long-term use and would be required to continually utilize the recycled water that was recharged into the basin.

Groundwater Recharge within the Edna Valley Subarea of the Groundwater Basin

Project Description: Staff have examined the potential to site a groundwater recharge project in the Edna Valley Subarea of the SLO Valley Basin. This project would utilize the City's surplus recycled water supplies as a supply source. This project would exchange a portion of the City's surplus recycled water supplies for a site to inject or percolate the remaining supply into the groundwater basin in the Edna Valley.

Benefits: The benefit to utilizing the Edna Valley Subarea of the groundwater basin for recharge is that this area of the basin has substantial available capacity, which could allow the City to bank water for several years in the basin for storage. Banking water in the Edna Valley would also provide the City with geographic diversity in its groundwater pumping program since the City's groundwater wells are all currently located on the southwestern side of town near Los Osos Valley Road. The City does not have

[3] Groundwater recharge of advanced treated recycled water requires 2-months of aquifer retention time before being pumped for use as a potable supply.

groundwater pumping capacity on the eastern of town and the San Luis Subarea cannot support the large-scale groundwater banking that could be provided in the Edna Valley Subarea.

Constraints: While storage in the Edna Valley Subarea allows for long-term water banking, there are several constraints to storage of advanced treated recycled water in this area. On the environmental front, storage in Edna Valley would require energy intensive pumping of advanced treated water to this area and additional pumping to return groundwater back into the City for use. Storage within this area would also likely require that the City exchange some of its recycled water for rights to site a recharge project in this location. Additionally, the City's infrastructure to deliver recycled water to the Edna Valley Subarea is undersized and not capable of delivery of all of the City's surplus recycled water, which means the City would not be able to fully utilize its recycled water supplies by delivering to the Edna Valley for groundwater recharge. Later in this report, a detailed analysis of risks of delivery of recycled water outside of City limits is presented. This section outlines considerations related to outside-City delivery of recycled water which would be applicable to this project.

Surface Water Augmentation Projects

As discussed previously in this study, surface water augmentation projects in California require advanced treatment of recycled water, which can be achieved through the State's approved advanced treatment process train (including Reverse Osmosis), or by pursuing equivalent treatment utilizing the alternatives clause. For the surface water augmentation projects listed below that are conducted at the City's Water Treatment Plant (WTP) and the City's WRRF, staff are assuming that the City would be required to utilize the alternatives clause, given the absence of an ocean outfall to dispose of reverse osmosis brine. For the regional project, it is assumed that the City would partner with a City that has an ocean outfall for brine disposal. Staff have identified the City of Morro Bay, Avila Beach, and Cayucos Sanitary District as locations with outfalls that could potentially be utilized for brine disposal. Formal discussions with these entities related to potential partnerships have not yet been conducted.

Surface Water Augmentation (Whale Rock – Treatment at City WTP or City WRRF)

Project Description: City staff have identified that the City could potentially augment Whale Rock Reservoir with advanced treated recycled water sited at the City's WTP or WRRF. This project would require the City to construct a new recycled water pipeline from the City's WRRF to the WTP where advanced treated water could be pumped to Whale Rock Reservoir for storage.

Benefits: This project provides unique benefit since the City already has water storage rights in Whale Rock Reservoir. Due to the small watershed around the lake, and the large storage capacity of approximately 40,000 acre-feet, it is uncommon for Whale Rock to be full, even during consecutive wet years. It is likely that the City could store water in Whale Rock for several years, essentially allowing the City to bank recycled water for future use as a potable water supply. Other benefits to surface water storage in Whale Rock are that Whale Rock experiences very low levels of evaporation and that water within Whale Rock is the highest quality of all of the City's surface water reservoirs. Additionally, delivery and treatment costs of Whale Rock supplies are substantially lower than those of Salinas and Nacimiento Reservoir.

Constraints: Major constraints related to this project include high infrastructure costs for construction of delivery infrastructure from the WRRF or WTP to Whale Rock. Electrical costs to pump advanced treated

water to Whale Rock would also increase operating costs and greenhouse gas emissions when compared to in-City groundwater recharge projects.

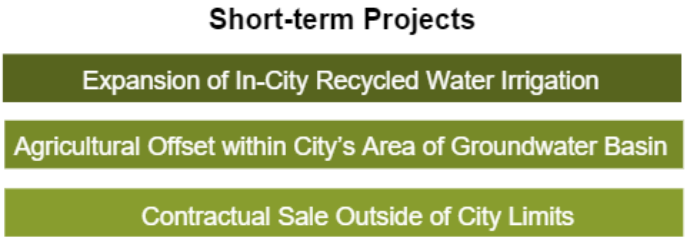
Surface Water Augmentation (Whale Rock - Regional)

Project Description: Surface water augmentation of advanced treated recycled water is more cost effective if the City can enter into regional partnerships to cost share and increase the volume of water that could be augmented in the reservoir. Additionally, taking advantage of existing infrastructure in other communities, such as ocean outfalls could allow the City to utilize the standard advanced treatment process, which requires reverse osmosis. A regional project for recharge of recycled water could include partnerships with Cal Poly, Cayucos Sanitary District, Avila Beach, and the City of Morro Bay. Cal Poly and the City both have storage in Whale Rock Reservoir, and both have expressed desire to increase potable water supplies to increase long-term sustainability of their communities. Cayucos Sanitary District, Avila Beach, and the City of Morro Bay are all constructing or considering construction of Wastewater Treatment Facilities. These three communities also possess active ocean outfalls that could be utilized for brine disposal. If the City could partner with any of these facilities, it could substantially reduce costs and increase the sustainability of each community. It should be acknowledged that the City has not discussed this partnership with potential partners at this time, nor has the Whale Rock Commission authorized the use of Whale Rock by parties outside of the Whale Rock Commission.

Benefits: A regional partnership for surface water augmentation would benefit the City by allowing it to leverage existing storage capacity within Whale Rock Reservoir to store advanced treated recycled water. Other communities would also benefit as they may be able to negotiate for storage capacity within Whale Rock Reservoir for advanced treated recycled water in exchange for utilization of existing ocean outfalls or other infrastructure. As is with most water supply projects, the larger the group of participants, the lower the cost burden on any individual party.

Constraints: Major constraints related to this project include high infrastructure costs for construction of delivery infrastructure from the WRRF or WTP to Whale Rock. Electrical costs to pump advanced treated water to Whale Rock would also drive costs up and increase greenhouse gas emissions. Other constraints could include difficulty in negotiating an equitable deal with multiple partners, lack of confirmed support from the Whale Rock Commission, or inability to secure the use of an ocean outfall.

Short-Term Recycled Water Use



With the City intending to utilize all surplus recycled water supplies for potable reuse in the future, it is important that the City understand the timeframe for implementation of a potable reuse project and the opportunities for use of surplus recycled water supplies prior to potable reuse implementation. In 2022, the City contracted with Carrollo Engineering to conduct a study on the City's strategy and timing for implementation of a groundwater recharge or surface water augmentation project utilizing the City's surplus recycled water supplies. Through this study, Carrollo Engineering provided estimates that the City could have a fully operational indirect potable reuse program within City limits in six to eight years if it committed to moving forward with a project. Knowing this timeframe, the City has opportunities to expand recycled water use during the interim timeframe to offset potable water demands, reduce pumping on the City's side of the

groundwater basin, or sell recycled water outside of the City to benefit the City's water ratepayers. The short-term delivery projects below could be pursued until the City moves forward with a potable reuse project.

Expansion of In-City Recycled Water Irrigation

Project Description: This project would maintain the status quo, focusing expansion efforts on increasing the use of recycled water for irrigation of local parks, business parks, and residential common areas. The City is already permitted for this type of use of recycled water and has staff dedicated to fulfilling these duties.

Benefits: There are several benefits to maintaining the status quo of expanding recycled water use inside the City. Notably, the City is already permitted to use recycled water in this manner and has a strategy to expand irrigation use in the 2017 Recycled Water Master Plan. Use of recycled water in the City also results in an immediate offset to potable water demands, freeing up water within the City's surface water reservoirs for future use. This immediate offset to potable water use is important during periods of drought, especially as the State generally exempts recycled water from conservation-related regulations. City parks irrigated with recycled water provided great community benefit during the 2012-2015 drought when the State required significant reductions in outdoor water use.

Constraints: With uncertainty around future recycled water availability, expansion of irrigation uses of recycled water could result in over allocation of this supply during July, August, and September, when Cal Poly is out of session and wastewater flow is reduced to the WRRF. However, minor over allocation during the summer months would not offset the overall benefit to continued expansion for irrigation use. Continued investment in irrigation system expansion must be monitored closely to minimize the over allocation of recycled water during periods when Cal Poly is out of session or if Cal Poly is no longer able to provide its wastewater effluent to the City's WRRF.

Agricultural Offset within City's Area of Groundwater Basin

Project Description: While the SLO Valley Basin GSP largely focused on overpumping of the Edna Valley Subarea of the groundwater basin, significant agricultural groundwater pumping is also conducted in the San Luis Subarea. From 2016-2019 agricultural pumping in the San Luis Subarea was approximately 1,370 acre-feet per year. Several agricultural operations in the subarea are adjacent to existing recycled water pipelines and can utilize recycled water with minimal infrastructure investment. This project would consider the delivery of recycled water to agricultural operations within the San Luis Subarea in exchange for an equivalent reduction in groundwater pumping by these parties. This reduction in groundwater pumping by agricultural operations could free up water within the groundwater basin for expanded domestic use by the City.

Benefits: The benefits to this project include low financial costs, due to several agricultural operations being proximate to existing recycled water lines. The City's existing tertiary treated recycled water is approved for use for agricultural irrigation and would not require further treatment. This project could result in an immediate reduction in pumping by agricultural operations which could increase the volume of groundwater that could be pumped by the City.

Constraints: While this project could be implemented quickly, water freed up in the groundwater basin through this offset program could not be guaranteed to the City without programs and policies that quantify and allocate groundwater pumping in the basin. In order be certain that this exchange resulted

in increased pumping capacity, the City would need to work with a water rights attorney to better understand the methods for appropriating this water to the City.

Contractual Sale Outside of City Limits

Project Description: This project considers the short-term sale of the City's recycled water supplies outside of the City limits. With current City policy restricting the outside-City delivery of recycled water to use for agricultural irrigation, this project could include delivery to the Edna Valley, the Los Osos Valley, Cal Poly, or to agricultural areas within the San Luis Subarea, but outside of City limits, such as areas along Buckley Road, South Higuera, and Los Osos Valley Road.

Benefits: The benefit of delivering recycled water outside of City limits would be to assist in preservation of the City's green belt and to increase funding to the City's Water fund for rate relief and expedited project delivery.

Constraints: Delivery of recycled water outside of City limits is a new concept to the City and poses a series of concerns related to protection of the City's recycled water supplies. These concerns are outlined in greater detail below in the Outside-City Delivery Considerations section of this report.

V. Outside-City Delivery Considerations

For any City water supply delivery project that expands beyond the City limits, it is important that the City Council, City staff, and community members understand the risks associated with such delivery, the impacts to the City's water rate payers, and resources required for such delivery. This enhanced focus is needed as the potential outside-City recipients of the City's recycled water are not water rate payers and have not made investments in the City's existing water supply portfolio. Additionally, interested parties outside of City limits are subject to policy requirements that limit the way recycled water can be used outside of the City. The following sections will provide additional detail related to legal considerations for outside-City delivery, supply and infrastructure limitations to outside-City delivery, pricing and cost considerations to ensure protection of the City's water rate payers, and an analysis of City policies related to outside-City recycled water delivery.

Legal Considerations

Just as the City has rights to groundwater and surface water, the City has a right to the recycled water that is produced at the WRRF, and it must ensure that this right is protected to retain the investment that the community has made in its recycled water program. To protect the City's investment in recycled water, staff have coordinated with water rights attorneys to examine potential risks to water rights in relation to the sale of recycled water outside of City limits. Additionally, the City must ensure that any action related to its use of recycled water does not expose it to legal issues related to water rates, habitat creation, or other potential legal risk. City staff have identified a number of specific concerns which are outlined below with summarized analysis from legal counsel.

1. **Obligation to Serve:** Staff requested legal guidance regarding whether the State of California, or a third party could compel the City to deliver its surplus recycled water supplies outside of the City. Counsel advised that they do not believe that the City could be compelled to deliver unallocated recycled water to a third party should the City Council opt not to pursue outside-City deliveries at this time.

2. **Permitting:** Staff requested legal analysis identifying the risk to the City in delivering recycled water outside of the City limits under its existing permits. Legal Counsel advised the City that it should require that any party receiving recycled water outside of City limits be required to deliver this supply under its own permit with the State of California and that the City should not allow a third party to conduct deliveries under the City's delivery permit. This requirement is especially important as the City does not have land use authority over areas outside of the City limits which would complicate monitoring and enforcement of delivery provisions. It has been acknowledged that the City would continue to be responsible for permitting associated with treatment of recycled water, but it would not be advisable to hold permits related to delivery. Despite not holding the permit related to the application of recycled water, the City would likely need to amend its existing permits to include outside-City areas as approved places of use for its recycled water supplies.

3. **Sustainable Groundwater Management Act (SGMA):** Staff requested legal analysis of the risk and the impacts of SGMA-related legislation on the ability for the City cease delivery of recycled water to a high priority groundwater basin that is in a state of overdraft. Legal counsel has directed staff that it is unlikely that SGMA could compel the City to continue delivery of recycled water to reduce basin overdraft and has advised that the City should make any contract language clear as to its ability to cease delivery. An outside-City delivery contract should also require that in the case of litigation between the City and the purchaser of recycled water, recycled water deliveries would be ceased until litigation is resolved. It should be acknowledged that SGMA is a new regulation that is un-litigated and therefore, delivery to a basin subject to SGMA regulations has an increased risk to the City when compared to non-SGMA basins.

4. **Habitat Creation:** Staff requested analysis of the risk of the delivery of recycled water creating or reestablishing habitat within areas where recycled water may be delivered, and thus being required to deliver recycled water indefinitely to support this habitat. Legal counsel has advised that this is a potential risk that can be mitigated with appropriate studies and monitoring infrastructure to ensure that the delivery of recycled water does not result in the reestablishment of surface-water groundwater interconnectivity and/or creation of habitat. In SGMA regulated basins, this may pose an issue, as one of the goals of augmented deliveries or reduced groundwater pumping is to raise groundwater levels, which could result in reestablishment of surface water groundwater interconnectivity, thus creating habitat. Staff are cautious of this risk, as the City is currently required to discharge 1.6 million gallons per day of water to San Luis Obispo Creek to ensure the protection of critical habitat that was created by discharging treated wastewater to San Luis Obispo Creek. Prior to entering into any agreement to sell recycled water to an overdrafted groundwater basin, appropriate studies would need to be conducted and monitoring infrastructure would need to be installed to ensure habitat is not created through outside-City delivery.

5. **Cessation of Delivery:** Staff have requested legal analysis of the potential risks associated with a recipient of recycled water filing suit against the City if water deliveries are ceased in alignment with the contract, the Water Shortage Contingency Plan, or due to infrastructure

failure or emergency. Legal counsel has advised that appropriate contract language could mitigate the risk of lawsuit in case of inability to deliver. Contract language for any delivery agreement should not only be reviewed by an attorney specializing in contract law but also by a water rights attorney familiar with California water rights law. While legal concerns are important when discussing cessation of delivery, public perception should be considered in addition to legal risk.

6. **Groundwater Pumping Restrictions and Accounting:** The City requested legal analysis as to what accounting structure and pumping restrictions would need to be in place should the City pursue a recycled water delivery project outside of City limits. Feedback from legal counsel indicates that should the City intend to deliver recycled water outside of the City limits in an effort to decrease groundwater pumping from a SGMA-regulated basin, a groundwater banking program and policies that restrict expansion of groundwater pumping may be necessary. The County of San Luis Obispo does not currently have any restrictions on groundwater pumping in the SLO Valley Basin. The County also does not have measures in place to prohibit expansion or intensification of agriculture in areas overlaying the SLO Valley Basin, which could result in further issues related to groundwater level decline.

Outside-City Delivery Limitations

As discussed earlier in this report, the City has a variety of constraints related to the delivery of recycled water outside of City limits. These constraints can broadly be categorized as availability limitations and infrastructure limitations.

Availability Limitations

The City's recycled water supplies have been decreasing since the recycled water program came online in 2006, with substantial decreases beginning in alignment with the 2012-2015 drought. Today, the City's total wastewater influent is approximately 2.88 MGD, or 3,200 acre-feet per year. Of this 3,200 acre-foot total, 1,800 acre-feet of water is required to be discharged to San Luis Obispo Creek each year, leaving approximately 1,400 acre-feet for use for recycled water delivery. The City's recycled water program uses approximately 300 acre-feet per year for landscape irrigation, with demand expected to grow to 600 acre-feet by 2030 as the City continues to expand. When accounting for all of the City's commitments to deliver recycled water, approximately 1,100 acre-feet of surplus recycled water was produced in 2022, with projected availability decreasing to 800 acre-feet by 2030. Recycled water availability for Calendar Year 2022 can be seen in *Table 3* below.

Table-3 – Calendar Year 2022 Recycled Water Availability (in Acre-Feet Per Year)

Category	Generation	Demand	Availability
Total Influent	3,200	-	-
Creek Discharge		(1,800)	1,400
Existing Customers		(300)	1,100
Future Customers (entitled 2023-2030)		(300)	800
Future Customers (not entitled 2030 - 2040)		(400)	400

While 1,100 acre-feet of recycled water is available as surplus in 2022, it is important to understand that that surplus volumes are predominantly available during winter months when irrigation demand is low. During the summer months when Cal Poly is out of session the City does not have sufficient recycled water

supplies available for outside-City delivery. However, from October through May each year the City should have sufficient recycled water supplies to sell outside of City limits until it moves forward with an indirect potable reuse project. It is also important to restate that this water cannot be stored in the groundwater basin, or excessively applied to create additional water percolating into the basin without advanced treatment.

Infrastructure Limitations

Should the City opt to enter into an agreement for outside-City recycled water sales, it may encounter delivery constraints that are not related to volumes of available wastewater influent but instead are related to infrastructure delivery limitations. Below are several infrastructure-related limitations that may require restrictions to the volumes of recycled water delivered to outside-City customers or may require financial investments to replace in order to maximize outside-City deliveries.

Piping Limitations

The City's recycled water pipelines were not designed for delivery to outside-City customers and pipelines decrease in size as they extend away from the WRRF and approach the edge of City limits. The City has four potential alignments that could be utilized for delivery of recycled water outside of City limits for agricultural irrigation. These alignments and maximum monthly delivery volumes can be seen in *Table 4*. Maximum delivery volumes listed in *Table 4* document the maximum volume of water that could be delivered through these pipelines if none of the City's existing irrigation customers were utilizing water. Before entering into a contract to deliver recycled water outside of City limits, use patterns for existing City irrigation customers would need to be factored into an availability analysis, which could further reduce total monthly delivery volumes.

Table-4 – Outside-City Recycled Delivery Pipeline Capacity

Location	Pipeline Size	Maximum Flow (GPM)	Maximum Monthly Delivery (AF)
Los Osos Valley Road (North)	8"	800	106
Tank Farm Road	8"	800	106
Broad Street	6"	450	60
South Higuera	12"	1,800	238

Pumping Limitations/Automation Limitations

The City's recycled water pump station was designed to serve recycled water to the City's inside-City customers for irrigation use. As the City considers delivery to outside-City customers, this pump station may need to be upsized to efficiently meet demand requirements. The pump station will also require reprogramming of computerized systems which automate delivery to maximize daily delivery. These updates will be required to ensure that delivery to outside-City customers is not conducted during times that would impact the City's existing recycled water irrigation customers.

Pricing/Cost Considerations

Water rate setting is conducted differently from municipality to municipality across the nation. In California, Proposition 218 establishes requirements for water rate setting, which at its most basic level ensures that a customer's water rates do not exceed their proportional share of the costs for delivery of water services. In the context of delivery of recycled water outside of City limits, this means that outside-City delivery could not negatively impact the City's water rate payer. An example of a negative impact to the City's rate payer would be entering into any type of delivery agreement that did not recover all costs

associated with this delivery or resulted in staffing resources associated with in-City delivery being utilized to support contractual deliveries outside of the City without reimbursement.

To establish water rates, the City does not individually price water from each of its five water supplies (Salinas, Whale Rock, Nacimiento, Groundwater, and Recycled Water). Rather, the City totals the costs of all water-related operations and distributes this cost equitably amongst its customer base in proportionality with their total use and the impact of their use on water infrastructure, staffing, etc. Internal City rate payers currently pay approximately $5,100 per acre-foot for potable water and $4,600 per acre-foot for recycled water (90% of the potable water irrigation rate).

While outside-City recycled water sales contracts are not subject to Proposition 218, any sale of recycled water at a rate of less than the cost to deliver such supply would result in inside-City rate payers subsidizing these deliveries and would thus constitute a violation of Proposition 218. As the City has an adopted methodology for pricing of its water supplies jointly, individualized costing of recycled water has not historically been the basis for pricing recycled water but would be required in to provide documentation that outside-City sales are not being subsidized by inside-City customers. In 2022 the City's water and wastewater rate consultant conducted a study of recycled water costs and revenues which was the first step in understanding what types of costs are attributable to recycled water production and the differentiation between recycled water costs, wastewater costs, and potable water costs. Further refining of cost increases for outside-City delivery would need to be conducted on a case-by-case basis as outside-City delivery scenarios can vary significantly in scope, duration, and benefit to the City's water rate payers.

Since recycled water is produced at the City's WRRF, which has a primary focus of treating wastewater, any cost that is additional to that needed to meet wastewater treatment requirements is attributable to recycled water and not to wastewater treatment. With the City's upgraded WRRF this means that costs related to additional ultraviolet treatment beyond permitted creek discharge requirements, chlorination, storage, and pumping would be defined as recycled water costs, and not wastewater treatment costs. Additionally, staffing resources associated with these processes at the WRRF are proportionately funded through the water fund, not the sewer fund. In addition to equipment and staff at the City's WRRF, the City's Water Distribution section is responsible for maintenance of the recycled water delivery pipelines, meters, and other associated infrastructure. As was noted with the WRRF, time and resources spent by the water distribution team on recycled water related work need to be considered for full cost recovery. On the program management side of the equation, the recycled water delivery program is managed by the water fund's water resources section, where regulatory reporting, inspections, long-term planning, and customer service is provided. Additional support for the recycled water program is provided by the Utilities department's administrative staff such as engineering, project management, and utility billing. Outside of the Utilities Department, additional support provided by the Public Works department's CIP engineering team, the City Attorney's Office, City Administration, and other support departments within the City. Assistance provided from outside of the utilities department is funded through cost allocation and would be subject to cost-recovery when negotiating an outside-City sales contract.

Although the City does not currently isolate direct costs for recycled water customers from those for potable water customers as a basis for setting recycled water rates, staff conducted an analysis of projected 2022-23 program costs and revenues and it is expected that revenue collected from recycled water sales will exceed direct program costs this fiscal year. Given that the City's recycled water rate is adequate to offset direct program costs, the recycled water program can be considered independently

sustainable. However, decreases to the rate for recycled water sales below the established rate of 90% of the potable water rate could result in the program not covering its direct costs. If the recycled water program does not cover direct costs, these costs must be offset by the City's water rate payer.

To assist in understanding recycled-water related costs, *Table 5* breaks recycled-water related costs into three categories, as follows:

1. **Fully Static Costs:** Fully static costs are costs that are not variable in nature, and do not change when recycled water production is increased or decreased. Examples include debt service, permitting fees, and training costs for staff.
2. **Fully Variable Costs:** Fully variable costs are completely variable and linked directly to the increased or decreased production of recycled water. Examples include electricity for pumping, electricity for enhanced UV disinfection, and chemical costs.
3. **Flat Rate Costs:** Flat rate costs are costs that would not vary based on production volume but would increase by virtue of adding a new type of delivery, with different permitting requirements, delivery expectations, etc. Examples include staffing costs, automation system upgrades, and pump station upgrades.

Table-5 – Recycled Water Cost Categories

Cost Category	Static, Variable, Flat	Additional Details	Notes & Examples
Salaries and Benefits	Flat	Salary and benefit costs at the for the City's employees to manage delivery to an external City customer would not increase proportionally based on volume delivered but would increase due the outside-City customer not receiving water in a manner consistent with existing deliveries.	WRRF and water distribution staff would need to monitor recycled water delivery to ensure delivery to external customer could be maximized. Admin staff would need to monitor for contract compliance annually.
Program Costs	Variable and Static	Program costs are largely static costs and not dependent upon volume of water treated. Minor increases in program costs are variable may occur as recycled water production is increased.	Variable Costs: meter reading and pump maintenance. Static Costs: Permitting, water quality sampling, employee certification.
Debt Service Repayment / Impact Fees	Static	Debt service payments are static and do not increase dependent on the volume of water being delivered. However, these costs could be considered as an item for potential repayment as existing recycled water	Policy direction required as to if short-term outside-City deliveries should result in repayment of sunk infrastructure costs and debt payments.

Table-5 – Recycled Water Cost Categories			
Cost Category	**Static, Variable, Flat**	**Additional Details**	**Notes & Examples**
		infrastructure was paid in full by in-City water ratepayers.	
Future RW CIP	Static	Outside-City contracts could include only price increases for CIP projects that provide a recipient direct benefit. These charges will vary year-to-year but are not based on contractual obligations to outside-City customers.	May require policy direction as to if short-term outside-City deliveries should result in repayment of future CIP such as water tank installation or pump station replacement
Wear and Tear on Equipment	Variable	Wear and tear on equipment and infrastructure increases as equipment is used. This cost should be shared with outside-City customers in proportion to total use.	Variable Costs: Reduction in useful life of pumps, motors, pipeline, etc. that serve in-City customers.
Electrical Costs	Variable	Electrical costs increase as the volume of pumping increases. This cost should be shared with outside-City customers as a proportion of total use, recognizing that pumping to outside-City customers will take place during peak energy pricing hours.	Variable Costs: Consumption charges and peak power increases that would not have otherwise been triggered by in-City customers.

Outside-City Pricing Options

The City does not have an established recycled water rate developed for outside-City delivery. Several options for establishing rates for outside-City delivery of recycled water are as follows:

1. **Status Quo / 90% of Potable Water Rate:** One potential option for the delivery of recycled water to customers outside of the City limits is to require that they pay the existing rate of 90% of the potable water rate. This requirement would ensure that there is parity between inside-City recycled water customers and outside-City customers but could discourage bulk purchases of recycled water. This pricing strategy would result in outside-City customers paying approximately $4,600 per acre-foot of recycled water purchased. By comparison, agricultural users are often accustomed to only paying $50-$200 per acre-foot for direct pumping from a groundwater basin.

2. **Variable Increases, Plus Flat Costs:** This pricing option would directly bill the outside-City customer for variable cost increases for electricity, chemicals, wear and tear on equipment, and other variable costs. Additionally, this pricing structure would add flat rate costs to recover expenses related to staff time, contract management expenses, regulatory reporting, etc. This

rate structure would fully recover costs related to the delivery of recycled water outside of the City limits but would not provide financial benefit to the City's water rate payer. This rate structure would also create a lack of parity between in-City customer rates and outside-City rates.

3. **Proportional Share of all Recycled Water Costs:** This pricing option would total all direct recycled water program costs and would charge outside-City customers for their proportional (based on per acre-foot demand) share of all of those costs. This rate structure would not create parity between in-City customers and outside-City customers but would cover substantial program costs if bulk quantities of recycled water were purchased, which would benefit the City's water rate payers. In alignment with this pricing strategy outside-City limits, the City could also elect to modify its existing in-City recycled water rate to only recover direct costs. This methodology would establish parity between inside-City customers and outside-City customers but would result in a reduction in recycled water program revenue. This reduction in revenue would result in the need to raise rates for the City's water ratepayer and would require analysis as part of the City's rate setting process in Spring of 2023.

4. **Options 1-3 Plus Profit:** Any of the options above could be considered alongside a price increase for profit for the City's water ratepayer. The addition of profit would be most necessary with option two, as this option would not otherwise provide benefit to the City's water rate payers to offset the risk of entering into an outside-City recycled water delivery agreement.

Policy Considerations

The City's General Plan includes a variety of policies related to the delivery of potable, raw, and recycled water outside-City limits. Most policies and restrictions on delivery of recycled water are outlined in *General Plan* ***Land Use Element Policy 1.13.2 Recycled Water***:

> *Provision of recycled water outside of City limits may only be considered in compliance with Water and Wastewater Element Policy A 7.3.4 and the following findings:*
>
> *A. Non-potable/recycled water is necessary to support continued agricultural operations.*
>
> *B. Provision of non-potable/recycled water will not be used to increase development potential of property being served.*
>
> *C. Non-potable/recycled water will not be further treated to make it potable.*
>
> *D. Prior to provision of non-potable/recycled water, the property to be served will record a conservation, open space, Williamson Act, or other easement instrument to maintain the area being served in agriculture and open space while recycled water is being provided.*

While this Recycled Water Maximization Study is intended to identify how the City may maximize recycled water use in the future, it intentionally does not examine delivery to one specific party. Therefore, this study assumes that parties interested in purchasing recycled water from the City are located in areas

proximate to City limits, where contractual delivery would be most economically feasible. These areas are agricultural areas, with most located within the SLO Valley Groundwater Basin. Additional analysis may be required if the City enters into formal negotiations for recycled water delivery to a specific customer, especially if not located within the SLO Valley Groundwater Basin.

Preliminary Consistency with Policy Finding 1.13.2.A: Staff believes that the use of recycled water within any of the agricultural areas surrounding the City would be in support of continued agriculture and that delivery would be in alignment with Section A as the water would be used to support crop production and agricultural operations.

Preliminary Consistency with Policy Finding 1.13.2.B: Staff examined the delivery of recycled water to areas subject to the City's GSP under two scenarios. The first scenario examines recycled water delivery under existing County regulations, which do not limit or restrict existing groundwater pumping, or expansion of pumping within the SLO Valley Groundwater Basin. The second scenario examines policy compliance if parcel-by-parcel (or similar methodology) water allotments were enacted, restricting increases in pumping within overdrafted areas of the basin.

Under *Scenario 1*, where groundwater pumping in the basin is unrestricted, staff **do not** believe that the delivery of recycled water to overdrafted areas of the basin can be conducted in compliance with Policy 1.13.2.B. The groundwater in the SLO Valley Basin is a joint resource that is available for use by all parties with groundwater rights within the basin. Since groundwater is interchangeable, importing recycled water to a single parcel (or area), frees up water in the basin as a whole, thus allowing that freed up groundwater to be utilized to increase development potential of neighboring properties. Without tracking, restrictions, and "capping" of basin withdraws on a parcel-by-parcel basis (or using similar methodology), there is no way to ensure that introduction of the City's recycled water to a single parcel in the SLO Basin does not free up groundwater at neighboring parcels, thus allowing increased development.

Under *Scenario 2,* where groundwater pumping within the SLO Basin is restricted and capped on a parcel-by-parcel basis, staff believe that recycled water can be delivered to overdrafted areas of the basin without increasing the development potential of the property being served. The inclusion of regulations capping, or requiring a reduction in groundwater pumping, and requiring that any imported water be utilized exclusively to decrease groundwater pumping, would ensure that the City's recycled water supplies were not being used to increase the development potential of the properties outside of City limits.

Preliminary Consistency with Policy Finding 1.13.2.C: In accordance with Section C, recycled water could not be sold outside of City limits and further treated to make it potable. While the City has traditionally utilized a surface water treatment plant to treat its water, the state of California recognizes that recycled water can be further treated through a series of advanced treatment processes, and then utilizing the groundwater basin as an environmental buffer, the water can be percolated through the soil and into the groundwater basin to make it safe to drink. This process, generally referred to as indirect potable reuse (IPR), would further treat recycled water to make it potable, and would not comply with Section C.

Should the City desire to sell recycled water outside of the City limits, it would need to be applied at rates consistent with crop or vegetation water needs (agronomic rates), ensuring that

unreasonable volumes of irrigation water would not percolate into the groundwater basin without State-required advanced treatment. Return flow[4] is allowable by the state in minimal quantities as it is generally understood that irrigation is an imperfect process where water cannot be applied to the plant in the exact quantity required, and sometimes results in irrigation water percolating into the groundwater basin. Furthermore, at the time of negotiating a contract to sell recycled water outside of City limits, the City would need to decide if it wanted to claim the return flow as a developed water right. A developed water right could be claimed by the City as the return flow water is not native to the groundwater basin and is therefore not the right of an overlaying pumper or appropriator. Retaining rights to this developed water would ensure that the use of the City's recycled water for agricultural uses would not allow that water to later be used as potable water or to encourage development.

Preliminary Consistency with Policy Finding 1.13.2.D: When examining the compliance of recycled water delivery to agricultural areas adjacent to the City with Section D, staff have identified that many of the potential recipients of recycled water have already entered into Williamson Act agreements or other forms of conservation at this time. However, as mentioned in the prior analysis of Section B, the use of recycled water to decrease groundwater pumping means that shared groundwater resources are freed up and could be used for further development. As with Section B, staff recommends that groundwater pumping be capped on a parcel-by-parcel basis (or similar methodology) to ensure that the delivery of recycled water does not encourage development within the City's green belt.

In addition to the above-mentioned policies, *General Plan* ***Water and Wastewater Element Policy A 7.3.4*** states that the City should *"Consider the potential to deliver available recycled water supplies to customers outside the city limits, including analysis of policy issues, technical concerns, and cost recovery, provided it is found to be consistent with the General Plan".* Staff believe that these policies requirements have been addressed in the previous sections of this report.

VI. Conclusion

The City has made ongoing investments in expanding its water supply portfolio over several generations. These investments, paired with an aggressive water conservation program, have resulted in the City being water secure, even during periods of extended drought. The City has multiple options that will allow increased utilization of its recycled water resources in both the short and long-term. Short term opportunities exist for the City to focus on further expansion of recycled water use to offset potable water demands, as well as opportunities to sell or exchange this water to bolster groundwater supplies and to increase the financial capacity of the City's water fund. As new water supplies become more rare and increasingly expensive, it is important that the City protects the investment it has made in its

[4] Irrigation Return Flow: Percolation of irrigation water into the groundwater basin that occurs when water is supplied to irrigated crops or vegetation in excess of the crop's water demand. This is done to avoid excess build-up of salts in the soil and overcome non-uniformity in the irrigation distribution system.

recycled water supply as it prepares for ultimate use of advanced treated recycled water as a potable water supply.