application for the

WaterSMART
Drought Response Program:
Drought Resiliency Projects for FY 2022

FOA: R22AS00020

City of Fresno Recycled Water Retrofit Project

Prepared For:
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October 5, 2021

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1. TECHNICAL PROPOSAL

1.A Executive Summary

Date:	October 5, 2021
Applicant Name:	City of Fresno - Department of Public Utilities
City, County, State:	Fresno, Fresno County, CA
Application:	**Category A – Funding Group 1**

The City of Fresno, located in the Central San Joaquin Valley of California, seeks to convert the source of irrigation water from potable to reclaimed water at three urban green spaces located in Downtown Fresno by installing new "purple" pipes and retrofitting the irrigation systems located at each site. These three sites include City Hall, Fink-White Park and Fulton Street (formerly known as Fulton Mall). Connections will be made to existing recycled water transmission mains. For over a decade, California has experienced below average rain fall, culminating in drought that impacted many areas of the state, including the San Joaquin Valley. From 2012 to 2016, Fresno County California was under moderate to extreme drought conditions. Approximately 98% of Fresno County, which includes the City of Fresno, is currently under Exceptional Drought Conditions (D4) according to the U.S. Drought Monitor as of September 7, 2021. Using recycled water in place of potable water will assist in protecting the City's vulnerable potable water supplies due to over pumping and prolonged drought. The project is an extension of the work completed through the "Recharge Fresno" project, a City program launched in 2015 to create a more reliant, resilient and sustainable water system. That program created a tertiary treatment facility and transmission mains for recycled water. Now that recycled water mains are complete, this project for irrigation conversion can proceed. Groundwater accounts for 45% of the potable water supply, with treated surface water supplies making up the remainder. Irrigating with reclaimed water at these three locations will save 48 acre-feet per year of potable water and reduce usage of over-pumped groundwater. Additionally, this project will support the goals for recycled water use outlined in the Metropolitan Water Resources Management Plan – Phase II (2011), the Water Shortage Contingency Plan found in the Urban Water Management Plan (2020), and the Recycled Water Master Plan (2010), which lay the groundwork for expanded use of recycled water in the City.

Project Start Date, Duration and Estimated Completion Date

The performance period for the project is two years. The project start date is July 1, 2022. Project planning and design will be completed by March 2022. Construction is scheduled to begin by December 1, 2022. Construction activities will be simultaneous at the three sites and are expected to take 21 months, with an estimated date of completion of April 2024.

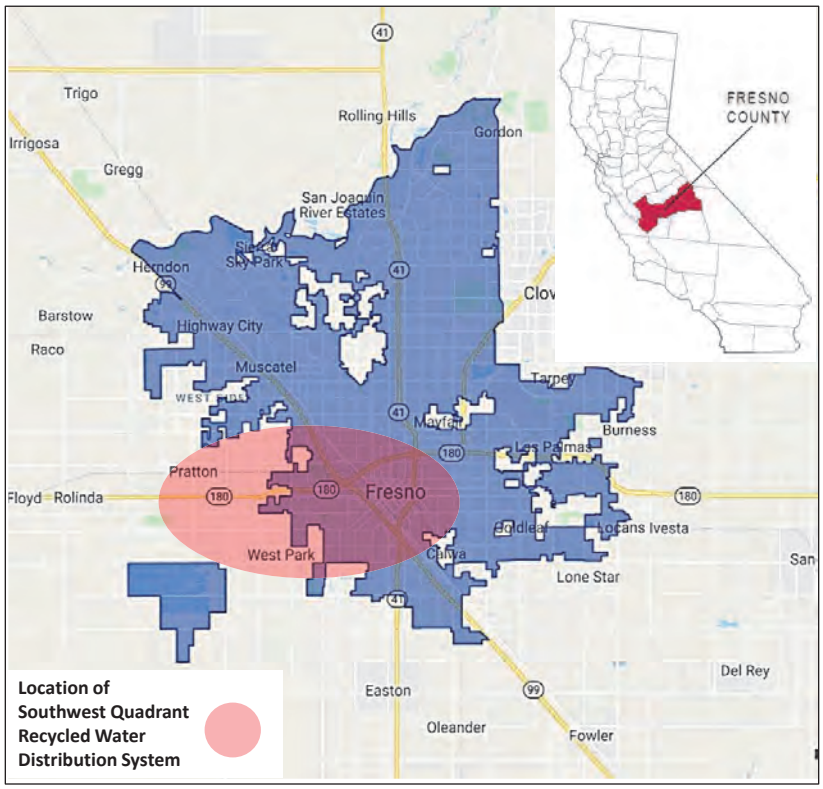
Federal Facility

The project is not located on a federal facility.

1B. Project Location

The project is located in the County of Fresno in Fresno, California. Specifically, the three proposed project sites are located within the Southwest Quadrant of the Recycled Water Main System (SW4).

Exhibit 1:
Location of Fresno, Fresno County, CA



The project latitude is 36° 44' 51.83" North, longitude 119° 46' 20.53" West. The City of Fresno (population 546,770 as of January 2021), incorporated in 1885, is in the Central San Joaquin Valley of California, approximately 170 miles south of the City of Sacramento, and 220 miles north of the City of Los Angeles. Fresno is the fifth largest city in California and encompasses nearly 110 square miles. Fresno is bounded on the northwest by the San Joaquin River, approximately 10 miles downstream of Friant Dam, and is approximately 13 miles west of the Kings River. A map of the project location is included as Exhibit 1.

The scope of this project includes three locations in downtown Fresno located within the Southwest Quadrant of the Recycled Water Main System: City Hall, located at 2600 Fresno Street, Fink-White Park, located at 535 South Trinity Street, and Fulton Street, formerly known as Fulton Mall, between Congo Alley and Federal Alley. Please see Exhibit 2 for the locations of the specific project sites.

1C. Technical Project Description

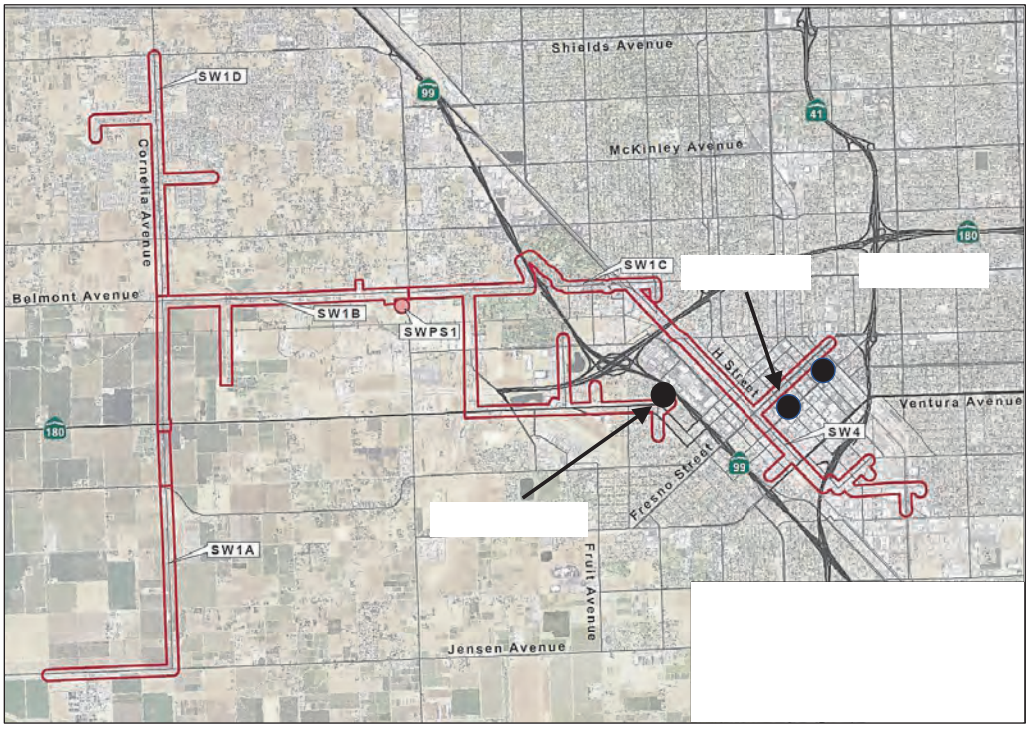
Project Background

The City of Fresno (City) relies on four sources of water for its customers:

- Groundwater from the North Kings Subbasin (45%);
- Surface water from Central Valley Project (CVP) through a contract with the United States Bureau of Reclamation (BOR – 17%);
- Surface water from the Kings River through a contract with the Fresno Irrigation District (FID – 37.5%); and
- Recycled water (0.5%).

Water production in the City historically consisted of 100% groundwater. A change in focus to using more surface water for potable water needs and more recycled water for non-potable uses resulted from critical overdraft of the North Kings Subbasin, which has had declining groundwater levels and contaminant impacts for decades.

Exhibit 2:
Locations of the Three Project Sites



In 2010, the City set a goal of using 25,000 acre-feet of recycled water per year for non-potable uses, including the irrigation of golf courses, street medians, parks, cemeteries, and other open spaces. To reach this goal, the City is currently constructing a Recycled Water Main System to deliver recycled water throughout much of the City. Portions of the Southwest Quadrant of the Recycled Water Main System (location of the proposed project) have already been installed.

The City proposes to connect irrigation systems at three locations in downtown Fresno to the existing recycled water mains under this Recycled Water Retrofit Project. These three locations include:

1.) Project Site #1 - City Hall: City Hall's irrigation system will be connected to a recycled water main (SW4) located in Fresno Street.
2.) Project Site #2 - Fink-White Park: Fink-White Park's irrigation system will be connected to a recycled water main (SW1C2) located in Amador Street.
3.) Project Site #3 - Fulton Street: Fulton Street's irrigation system will be connected to a recycled water main (SW4) located in Fresno Street.

Feasibility studies for each site were completed by the City's consultant in August and September of 2021.

Work to be Accomplished

Project Site 1– City Hall is characterized as a postmodern futurist structure with an abundance

of green space including manicured lawns, shrubs, and mature trees. Its centerpiece is a decorative fountain. Exhibit 3 is a photograph of the entrance to City Hall and surrounding grounds.

A two-inch recycled water service is connected to a recycled water meter box at the north corner of City Hall near the intersection of Q and Fresno Streets and will be the connection point of the irrigation system to the recycled water service. A new irrigation line will be installed to connect the recycled water main to the existing irrigation lines. Two (2) pipe alignments were evaluated during the feasibility study. Proposed alignments will be reviewed to determine the best option prior to construction activities. The linear feet of required piping is dependent on alignment chosen but is estimated to be 250 linear feet of 3-inch pipe. Depending on alignment chosen, portions of asphalt, concrete sidewalk, and/or curb may need to be removed for installation and subsequently replaced. A two-inch recycled water meter will be installed to monitor recycled water usage monthly.

Exhibit 3:
Fresno City Hall

Currently, four (4) hose bibbs are located on City Hall grounds that are supplied by the irrigation system. Some of these existing hose bibbs may no longer be in service. Remaining active hose bibbs accessible to the public will be replaced by below-grade quick coupler (gate) valves. Those not in service will be capped and removed to prevent potential public access.

A hydraulic analysis performed during the feasibility study indicates that a new booster pump will be required to maintain adequate system pressures. Therefore, booster pump assembly and installation will be performed as part of construction and design activities for City Hall. The new booster pump will be properly marked for recycled water use. This will include installation of purple identification tags on the booster pump, and placement of identification stickers on the outside of the booster pump's enclosure, that denote non-potable water use.

Sprinkler head configuration (number and placement) will be adjusted. New sprinkler heads will come with manufactured purple caps, and existing sprinkler heads will be retrofitted with purple caps or be painted purple. Existing sprinkler heads will be adjusted to prevent over-spray onto public areas. New and existing irrigation control timers and panels will have appropriate labels affixed to indicate recycled water use. Irrigation improvements will be performed enabling existing irrigation timers to communicate with each other and the booster pump.

Under Title 22 of the California Code of Regulations, Section 60310(g), areas using recycled water accessible to the public the must be posted with signs that are visible to the public with the following words: "Recycled Water – Do Not Drink." Therefore, bilingual signs in both English and Spanish will be posted at all entrances to the site indicating that recycled water is used for irrigation.

Project Site 2: Fink-White Park is an 8.62-acre neighborhood park located on the northwest side of Downtown Fresno that features lighted basketball courts, soccer and baseball fields, a public pool, and a playground. There is also a picnic shelter and public grills. The Park is in a neighborhood characterized by multi-family housing and is an important community space for the predominantly low-income residents who live there. Currently, the green space here is in poor condition due to drought and irrigation system deficiencies. A photograph of Fink-White Park is included as Exhibit 4.

Exhibit 4: Fink-White Park
Athletic Fields and Open Space

A four-inch recycled water service was constructed up to a recycled water meter box at the eastern corner of the park near the end of Amador Street. This will be the connection point of the irrigation system to the recycled water service. New irrigation line will be installed to connect the recycled water main to the existing irrigation lines. Three (3) pipe alignments were evaluated during the feasibility study. Proposed alignments will be reviewed to determine the best option prior to construction activities. The linear feet of required piping is dependent on alignment chosen but is estimated to be 650 linear feet of 6-inch pipe. Installation of irrigation piping will require trenching and resurfacing post-construction. A four-inch recycled water meter will be installed to monitor recycled water usage monthly.

Existing backflow prevention devices installed on the domestic service will be retrofitted with proper markings or signage to denote recycled water use.

A hydraulic analysis performed during the feasibility study indicates that a new booster pump would be required to maintain adequate system pressures. Therefore, booster pump assembly and installation will be performed as part of construction and design activities for Fink-White Park. The new booster pump will be properly marked for recycled water use. This will include installation of purple identification tags on the booster pump, and placement of identification stickers on the outside of the booster pump's enclosure, that denote non-potable water use.

All irrigation valves will be replaced with purple handles and/or tags noting non-potable water. Hose bibs converted to quick coupler valves will be properly demarcated for recycled water use and will have locking covers to prevent public access. Additionally, all valve box lids will be

replaced with purple lids. Irrigation improvements such as upsizing the current irrigation mainline and upgrading the system valves and controls will be included in the project.

Sprinkler head configuration (number and placement) will be adjusted. New sprinkler heads will come with manufactured purple caps, and existing sprinkler heads will be retrofitted with purple caps or be painted purple. Existing sprinkler heads will be adjusted to prevent over-spray onto public areas. Existing irrigation control timers and panels will have appropriate labels affixed to indicate recycled water use. Bilingual signs in both English and Spanish will be posted at all entrances to the site indicating that recycled water is used for irrigation.

Exhibit 5: Fulton Street Tree-Lined Walkway

Project Site 3: Fulton Street, formerly known as Fulton Mall, was previously a pedestrian mall in Downtown Fresno with no through traffic. Like many pedestrian malls, Fulton Mall was historically plagued with high vacancy rates, little activity after 5 p.m., poor visibility from other streets, and declining foot traffic. In 2015, the City and the Downtown Fresno Partnership advocated for a return of traffic to this traditional "complete" main street to improve connections, accessibility, community, sense of place, and economic vitality. Using a Federally Funded Transportation Investment Generating Economic Recovery (TIGER) grant, revitalization of this area is being accomplished. Fulton Street is characterized by installations of trees, flowers, shrubs, and public art. Maintaining this investment with recycled water irrigation to keep it green is critical to its revitalization. Exhibit 5 is a photograph of Fulton Street.

A two-inch recycled water service is connected to a recycled water meter box located at the northern corner of the intersection of Fulton and Fresno Streets and will be the connection point of the irrigation system to the recycled water service. New irrigation line will be installed to connect the recycled water main to the existing irrigation lines. Two (2) pipe alignments were evaluated during a feasibility study. Proposed alignments will be reviewed to determine the best option prior to construction activities. The linear feet of required piping is dependent on alignment chosen but is estimated to be 20 linear feet of 2-inch pipe. Installation of irrigation piping will require trenching and resurfacing of landscaped areas. A two-inch recycled water meter will be installed to monitor recycled water usage monthly.

A hydraulic analysis performed during the feasibility study indicates that the existing booster pump will maintain adequate system pressures following connection to the recycled water service. Therefore, booster pump assembly and installation are not expected at this site. The

existing booster pump will be properly marked for non-potable water use. This will include installation of purple identification tags denoting non-potable water use on the booster pump, and placement of identification stickers on the outside of the booster pump's enclosure that denote non-potable water use.

Existing irrigation valves and valve box lids that will be used currently have purple identification tags and purple lids identifying it as a non-potable source. A survey will be conducted to verify that all irrigation valves have purple identification tags and install new tags where necessary.

Sprinkler head configuration (number and placement) will be adjusted. New sprinkler heads will come with manufactured purple caps, and existing sprinkler heads will be retrofitted with purple caps or be painted purple. Existing sprinkler heads will be adjusted to prevent over-spray onto public areas. Bilingual signs in both English and Spanish will be posted at all entrances to the site indicating that recycled water is used for irrigation.

1D. Performance Measures

The performance measures to be used for this project include the following:

- **AFY of Saved Potable Water:** The City of Fresno has data on current usage of potable water at the three project sites from existing potable water meters. As identified in the feasibility studies conducted in 2021, a combined total of 48 AFY of potable water was used at the three sites in 2020, representing the amount of potable water savings as a result of converting to recycled water. Once the project is completed, there will be recycled water meters at each site to monitor recycled water usage. The City will take monthly recycled water readings from the on-site meters to calculate savings of potable water.
- **Adequate Water Pressures at Each Site:** Each site will be monitored to make sure required system water pressures are reached as defined in the feasibility studies (2021) conducted by the City's consultant.
- **Meeting a Demand of 70 AFY:** The three project sites are currently part of the potable water conservation requirements; thus, delivery of potable water was restricted. Once they are connected to the recycled water mains, the City would like to deliver approximately 70 AFY of recycled water to the three sites combined. This will be evaluated through water meter readings. This would result in a 48% increase in water delivery to the three sites. The increased water delivery is especially critical at Fink-White Park, whose green space has suffered due to drought, water restrictions, and needed improvements to the irrigation system. Updates to the irrigation system at Fink-White Park are included with this project.
- **Reduction in Amount of Groundwater Pumped:** The City currently gets approximately 45% of its potable water-supply from the North Kings Subbasin. Use of recycled water in place of potable water will result in a decrease in the amount of groundwater that the City needs to pump for potable use.
- **Financial Savings from Reduction in Groundwater Pumped:** Using recycled water will help offset the use of groundwater. Financial savings resulting from less power needed to run groundwater pumps and reduced treatment costs will be calculated.

- **Reduction in Tertiary Treated Water Sent to Disposal Ponds:** Implementation of the project will result in greater immediate use of recycled water and reduce the amount of treated water going to disposal ponds. If recycled water is not delivered to customers, this water is sent to the Regional Wastewater Reclamation Facility's disposal ponds, which is usually reserved for less costly treated wastewater. This could contribute to mounding beneath disposal ponds and thus future pond capacity. Diverting recycled water for use in irrigation will help to minimize this issue. This reduction will be calculated.

Tracking performance measures are included as task 4.1 of Table 2 presented in the ***Evaluation Criterion E —Project Implementation*** section on page 19.

1E. Evaluation Criteria

Evaluation Criterion A—Project Benefits (30 points)

Build Long-Term Resilience to Drought. The proposed project will be another step towards the City's goal of using 25,000 acre-feet of recycled water per year for non-potable uses to decrease usage of potable water supplies. With the construction of three surface water treatment plants, with the last coming on-line in 2019, groundwater currently accounts for 45% of the City's potable water supply, with surface water from an agreement with the BOR CVP and the FID making up the remainder. In normal and wet years, the City relies more on surface water supply for potable uses (following treatment) and to recharge the groundwater basin with raw surface water to build storage for dry years. In dry years, when surface water is less available, the City increases well production to meet demands. Using a greater volume of recycled water for irrigation will help to decrease usage of groundwater supplies used for potable purposes, allowing greater recharge to the groundwater system. These increases support long-term resilience to drought. The infrastructure proposed for this project has an estimated life of 60 years and will continue to benefit the City and its residents long-term. Strategies to increase the use of recycled water using projects such as that proposed here are outlined in the Recycled Water Master Plan (2010) and will be presented in the City's updated Metropolitan Water Resources Plan to be published in June of 2022.

Make Additional Water Supplies Available.
Completion of this project will allow additional potable water supplies to be available to the City by utilizing recycled water in place of potable water. According to the 2021 feasibility studies completed by the City's consultants, the three project sites used a total of 48 AFY of potable water, as broken down below:

City Hall:	24.5 AFY
Fink-White Park:	17.0 AFY
Fulton Street:	6.5 AFY
TOTAL	**48.0 AFY**

Totals were calculated using 2020 water meter data collected at each site by the City. Over a ten-year period, this amounts to 480 AFY (48 AFY x 10 = 480 AFY) and 2,880 AFY over the 60-year life of the infrastructure. These additional savings are equal to approximately 0.04% of the annual total potable water supply for the City. This calculation is based on 2020 actual demands for potable water of 121,993 AFY as illustrated in Table 1 below:

Table 1. 2020 Potable Water Demand

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME	PERCENT OF TOTAL
Single Family		Drinking Water	60,065	49.2%
Multi-Family		Drinking Water	18,842	15.4%
Commercial		Drinking Water	16,971	13.9%
Industrial		Drinking Water	5,729	4.7%
Institutional/ Governmental	See Note 1	Drinking Water	---	---
Landscape		Drinking Water	10,478	8.6%
Other	Travel Meters	Drinking Water	340	0.3%
Losses		Drinking Water	9,568	7.8%
Total:			**121,993**	**100%**

Source: From Table 4.2 of the City's Urban Water Management Plan – 2020

This calculation is illustrated below:

$$\frac{48 \text{ AFY}}{121,933 \text{ AFY}} = \mathbf{0.039\%}$$

Additionally, the actual 2020 potable water use for irrigation purposes only city-wide was 10,478 AFY, which was 8.6% of the total potable water usage. This is also shown in Table 1. By implementing this project, potable water use for irrigation alone will be decreased by approximately 0.46%. This calculation is illustrated below:

$$\frac{48 \text{ AFY}}{10,478 \text{ AFY}} = \mathbf{0.458\%}$$

Significance of Benefits Associated with Additional Water Supplies.

1.) **Reduced Pressure on Strained Groundwater.** Water resources in the Central San Joaquin Valley are extremely vulnerable due to historic and continued over pumping of the groundwater system, prolonged drought, and continued growth. Groundwater withdrawal has led to two hundred feet of water level decline over the past one hundred years, which has resulted in significant subsidence and contamination, including high levels of arsenic *(Smith, R., et al., Overpumping leads to California groundwater arsenic threat. Nature Comm. 9, 2089 (2018)).* Fresno County experienced exceptional drought between 2014 and 2016 and has again been under exceptional drought conditions since May of 2021. The population in Fresno has been growing steadily, with an increase of 8.58% in a ten-year period, and a projected steady

population growth of approximately 1.1% to 2.1% over the next 36 years (UWMP, 2020). As the fifth largest City in the State of California, this is a considerable increase in population. The City of Fresno relies heavily on the groundwater basin, which accounts for 45% of its potable water supply. By implementing the proposed project which seeks to use recycled water in place of potable water, pressure on the strained groundwater system due to the aforementioned factors is eased. Any additional water available to recharge the basin is significant.

2.) **Protection of Important Green Spaces.** The proposed project will help to protect and maintain important green spaces located in Downtown Fresno from periods of prolonged drought. According to the City's Water Shortage Contingency Plan (Appendix J of the UWMP), under varying water shortage levels, irrigation to green spaces is either limited or completely prohibited. The City's green spaces rely on upkeep through irrigation. Numerous studies have indicated that green space is an important component of thriving communities, business vitality, and individual health. A study by the Urban Institute in 2011 indicated that there is a significant link between property values and the proximity to parks, open space, and green areas. Green spaces also offer business benefits, as greening can renew business districts by increasing community pride, positive perception, and drawing in customers. Studies led by the Human Environment Research Lab at the University of Illinois Urbana-Champaign have concluded that green spaces promote close-knit communities and improve individual well-being. Numerous studies have also found that green spaces in urban areas are linked to greater psychological health of residents. Irrigation at the three project sites is currently part of the potable water conservation requirements; thus, delivery of potable water has been restricted. Impacts of restricted irrigation is evident at all three sites, and especially so at Fink-White Park, having resulted in poor turf and water stressed vegetation. By using recycled water, this project will help to maintain the very vital components of green space within the City during times of potable water shortages, as well as be able to bring higher volumes of irrigation water to these sites.

Improved Management of Water Supply. This project is estimated to better manage approximately 48 AFY of potable water. This estimate is based on actual current potable water use for irrigation at the three sites. This will conserve as much as 2,880 AFY over the next 60 years (estimated project life). One of the City's overarching goals is to reduce reliance on imported water sources and stretch limited potable water supplies. Recycled water projects are the main pathway to achieve these goals. This is an important step to begin using recycled water in Fresno and will lead the way to even greater phased use of recycled water in the future.

Salt Water Barriers, Wells, New Water Marketing Tools or Programs, or Metering/Water Measurement Projects. The proposed project does not include any of the aforementioned components.

Evaluation Criterion B—Sustainability and Supplemental Benefits (20 points)

Climate Change Adaptation and Resiliency: As previously described, this project will help protect some of the City's community green spaces by ending their dependence on the City's strained

potable water supplies. Numerous studies indicate green spaces can offset several environmental impacts, including urban heat island effect, air pollution, and carbon emissions.

1.) **Urban Heat Island Effect.** In 2016, the Urban Climate Lab at the Georgia Institute of Technology published a paper titled "The Benefits of Green Infrastructure for Heat Mitigation and Emissions Reductions in Cities." Researchers noted that parks and open green space cool primarily through evapotranspiration, in tandem with shade from tree canopy (if present), which can produce an "oasis effect" characterized by cooler temperatures when compared to the surrounding cityscape. Temperature decreases in green spaces were found to range from 2.7 to 7.2°F (Bowler et al., 2010; Doick et al., 2014; Shasua-Bar et al., 2009; Sugawara et al., 2015) and can be felt even beyond the boundary of the green space. As California experiences increasing temperatures resulting from climate change, green infrastructure, such as the three project sites, can be used to combat those effects in urban areas.

2.) **Mitigation of Air Pollution.** According to the U.S. Environmental Protection Agency (https://www.epa.gov/green-infrastructure), one of the many benefits of green infrastructure includes the mitigation of air pollution. In the presence of heat and sunlight, nitrogen oxides and volatile organic compounds interact and create "smog", or ground level ozone. Vegetation in green space can reduce smog by reducing air temperatures and removing air pollutants. Trees, parks, and other green infrastructure reduce pollution by absorbing and filtering particulate matter. Fresno County routinely ranks among the worst counties in the nation for ozone and year-round particle pollution according to the American Lung Association's *Annual State of Air* findings. In an area characterized by long seasons of high temperatures, such as in Fresno, green spaces can significantly improve air quality.

3.) **Mitigation of Carbon Emissions.** Green spaces also serve to sequester carbon in the form of CO^2, a major greenhouse gas. As plants take in CO^2 through the process of photosynthesis, carbon is stored as biomass (trunks, branches, foliage, and roots) and in surrounding soils. Previous research has indicated that green infrastructure can sequester approximately 0.0344 pounds of carbon per square foot (C/ft^2 - Getter et al. 2009). In just one acre of green space, this equates to 1,498 pounds of carbon (1 acre = 43,560 $ft.^2$; 43,560 ft^2 x 0.0344 $lbs./ft^{.2}$ = 1,498.46 lbs.). The estimated acreage of green space at each of the three project sites is given below:

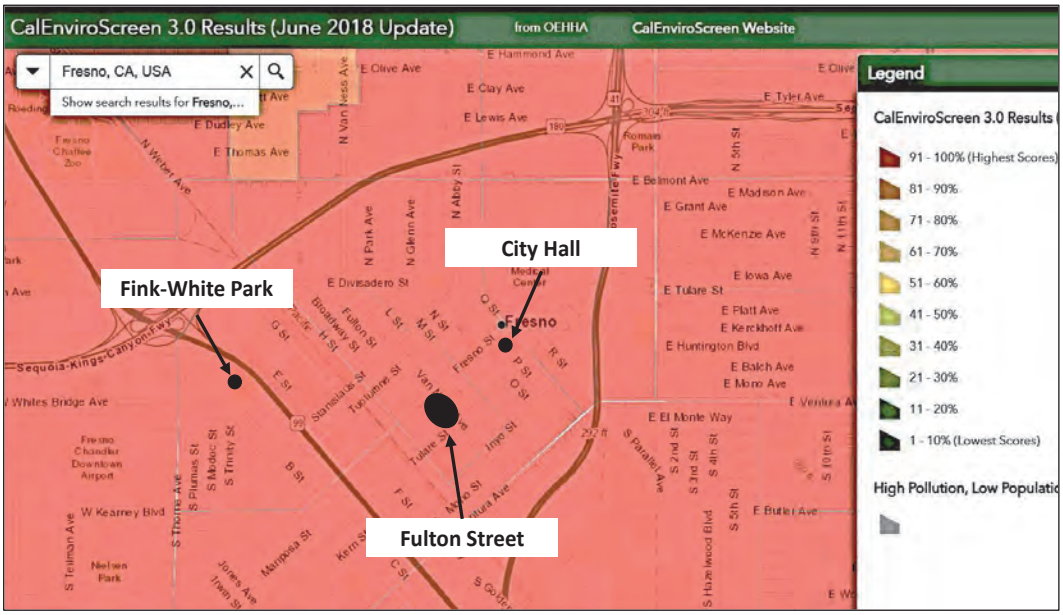
City Hall: 2 acres
Fulton Street: 0.7 acres
Fink-White Park: 8.62 acres
TOTAL: 11.32 acres

This amounts to sequestration of **nearly 16,935 lbs. of carbon** as detailed in below:

1,496 lbs. carbon/acre x 11.32 acres = **16,934.72 lbs.** of carbon.

Green spaces, such as those detailed in this project, are an important tool for combatting rising atmospheric CO^2 levels.

Project Benefits to Disadvantaged or Underserved Communities: The proposed project will provide benefits to disadvantaged and underserved communities within Fresno. All three proposed project sites are located in neighborhoods rated by the State of California as disadvantaged and underserved communities. Exhibit 6 shows a map of the City of Fresno from CalEnviroScreen 3.0, which identifies California communities by Census Tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution, as well as health issues, low rates of education, and high poverty and unemployment rates.



Source : https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30

Exhibit 7 illustrates Fresno's ranking within the state as a "priority population" with all three sites located in disadvantaged and low-income communities. These communities are especially vulnerable to water insecurity. With dwindling resources resulting from drought and over pumping of groundwater, the cost of residential water is driven up. Rising costs are especially harmful to populations which already sit at or below the poverty level. Any projects which look to preserve water resources within the City will assist in stabilizing costs to all consumers.

Green spaces are important to low-income and disadvantaged communities. According to an article published by the World Resources Institute, low-income residents are more likely to be exposed to higher levels of air pollution and live in hotter neighborhoods when compared to more affluent areas, often partly as a result of having fewer green amenities. They are also more likely to suffer the health impacts of heat waves. Recent studies also show a correlation between higher fatality rates from COVID-19 and increased air pollution. Green space can help make low-income neighborhoods less vulnerable to climate and health risks by lowering local

temperatures, mitigating floods, and improving air quality, as well as offering more opportunities to engage in physical activity (https://www.wri.org/insights/green-space-underestimated-tool-create-more-equal-cities). This project will assist in ensuring these critical green spaces are maintained in a sustainable manner.

Exhibit 7:
Fresno Communities Classified as Disadvantaged

https://webmaps.arb.ca.gov/PriorityPopulation

Although all green space is an important component to underserved and disadvantaged communities, Fink-White Park is a particularly important component of the surrounding community as a neighborhood park. Exhibit 8 from the California State Parks Community Fact Finder illustrates that Fink-White Park is a valuable green space in a city where green space is lacking. The Park is the only green space available to this "severely disadvantaged" community for more than a half mile.

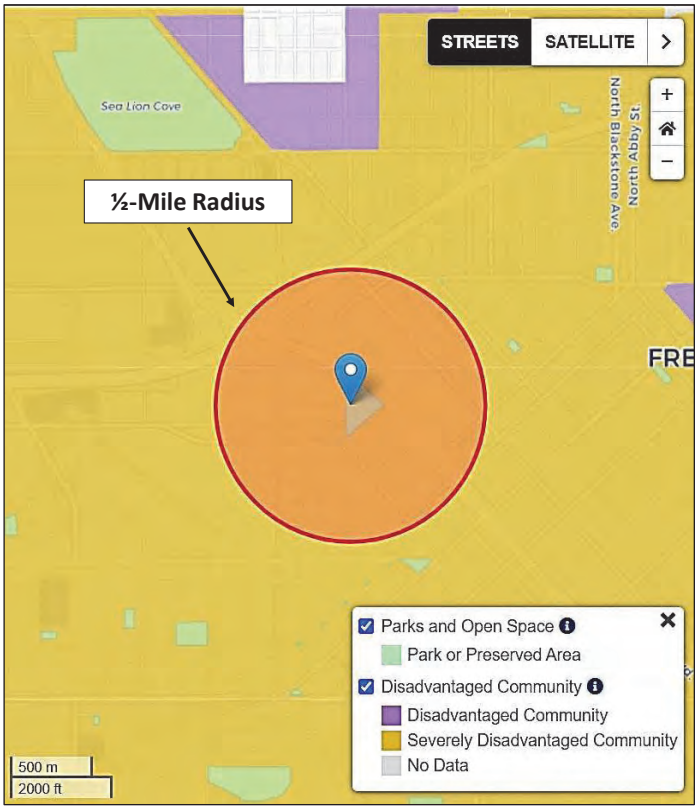
Fink-White Park is in a neighborhood characterized by modest single-family homes and multi-family housing. The neighborhood is dotted with vacant and boarded-up homes and businesses. It is located immediately adjacent to the six-lane Highway 99 (Golden Street Highway). A walk around this neighborhood reveals that Fink-White Park is a small oasis and the primary green space for nearby residents. Proximity to parks in low income and disadvantaged communities has been shown as an important factor to community health in many studies. Parks and recreation facilities may be the only place for children in low-income communities to be physically active outside of school. Proximity to parks offers greater access as driving to and from parks may not be a feasible option in homes experiencing poverty. Greater access to parks is known to increase the health of community residents, and those from low-income areas are often characterized by higher than-average negative health issues. By implementing this project, some of the valuable green space in Fresno's vulnerable neighborhoods will be more resilient to the effects of drought and water shortages.

Tribal Benefits: Not applicable.

Ecological Value: Urban green spaces are critically important to plant and animal species, particularly in times of drought. Providing a reliable and sustainable irrigation strategy for these green spaces is crucial to preserving the habitats they provide. The Fresno region is highly urbanized; green space for wildlife is limited and diminishing as residents reduce their lawns and

natural green spaces. Each year, at least one billion birds migrate along the Pacific Flyway, which includes Fresno and the Central Valley, which is only a fraction of those that flew the Flyway a century ago. Habitat loss, water shortages, diminishing food sources, and climate change all threaten birds traveling the Pacific Flyway.

Exhibit 8:
Green Space within ½-Mile of Fink-White Park



Source : https://www.parksforcalifornia.org/communities/

Other Benefits: As discussed in Section 1D, Performance Measures, there are benefits to Fresno's water partners associated with the project. Groundwater in the North Kings Subbasin is heavily pumped and overdrawn. Fresno County and the regional area of the San Joaquin Valley is a large agricultural center, ranking as the 5th highest producer in the world, and relies heavily on groundwater resources. Anything the City can do to decrease the burden on groundwater supplies will support the agricultural sector.

As previously described, the City has a mandated goal of using 25,000 AFY of recycled water in an effort to decrease use of potable water supplies. An additional benefit, therefore, is that the project will provide evidence of the feasibility of and water savings from similar, future projects. The City maintains numerous green spaces within a 110 square mile area. Other green spaces will be connected to existing and proposed recycled water infrastructure in the future because of the success of this project. The project will also demonstrate how large industrial and commercial customers can save a significant amount of potable water. The City is in the planning stages to install new booster pumps which will facilitate providing large customers with recycled water. Implementation of the project proposed will set the stage for other users to work recycled water into their infrastructure.

Evaluation Criterion C —Drought Planning and Preparedness (15 points)

During the last 10 years, the City of Fresno has made significant strides to diversify their water supply portfolio and address drought via several major planning efforts:

1**. City of Fresno - Metropolitan Water Resources Management Plan** (2011, "Metro Plan," currently being updated). The Metro Plan identifies strategies to protect its water resources from foreseen and unforeseen shortages resulting from drought, population growth, groundwater over-pumping, and other factors. Chief among the Plan's objectives are recommended projects to protect the City's supply portfolio. Recommended projects include those that maximize the use of recycled water (p. ES-2 through ES-4). How Project is Supported/Prioritized by the Metro Plan. One of the Plan's many recommendations is: "…the use of recycled water to meet landscape irrigation and/or other non-potable demands in new development areas, and existing landscaped areas throughout the City to offset potable water demands." (p. ES-3 through ES-6).

See Appendix A for selected pages from the Metro Plan which illustrate the prioritization of recycled water to support and protect the City's water portfolio in the face of drought and other issues that lead to water shortages.

2. **City of Fresno – Urban Water Management Plan and Water Shortage Contingency Plan (2020).** The Water Shortage Contingency Plan (WSCP) was prepared in conjunction with the Urban Water Management Plan (UWMP). The WSCP details how the City intends to respond to foreseeable and unforeseeable water shortages due to extended drought and/or catastrophic supply interruptions. The WSCP addresses drought by identifying water shortage response actions, communication protocols, and compliance and enforcement, among other objectives. The UWMP addresses drought by highlighting the myriad ways to support and protect the City's water supply portfolio, including the use of recycled water to offset the use of potable water. The City coordinated preparation of the documents with its water suppliers (including Reclamation), Fresno County, the City of Clovis, nearby water agencies, and community members. How the Project is Supported/Prioritized by the UWMP/WSCP: The UWMP details how the City should expand its recycled water supplies to offset use of potable water *for landscape irrigation, in particular* (p. 6-18).

3. ***City of Fresno - Recycled Water Master Plan*** (2010). The City of Fresno Recycled Water Master Plan is the operational plan that responds to the recommendation to increase the use of recycled water, as called for in the UWMP and Metro Plan (described above). The Recycled Water Master Plan calls for the production and use of 25,000 AFY of recycled water to address ongoing drought, reduce groundwater pumping, and replacing groundwater with recycled water for non-potable purposes. On July 17, 2014, the City approved Ordinance No. 2014-32, Article 9 (referred to as the Recycled Water Ordinance) which outlines the purpose and intent as "to provide recycled water to all service areas in the City as identified in the *Recycled Water Master Plan*." Multiple stakeholders provided information and were named as recipients of reclaimed water from the City of Fresno including the City of Clovis, Fresno Irrigation District, and the City and Central Valley Energy Center. How Project is Supported/Prioritized by the Recycled Water Master Plan. The Recycled Water Master Plan listed recommended recycled water uses that should be prioritized and listed first is *Non-Residential Urban Irrigation Re-Use* (p. 3-2), which includes parks and other areas currently irrigated by the City with potable water.

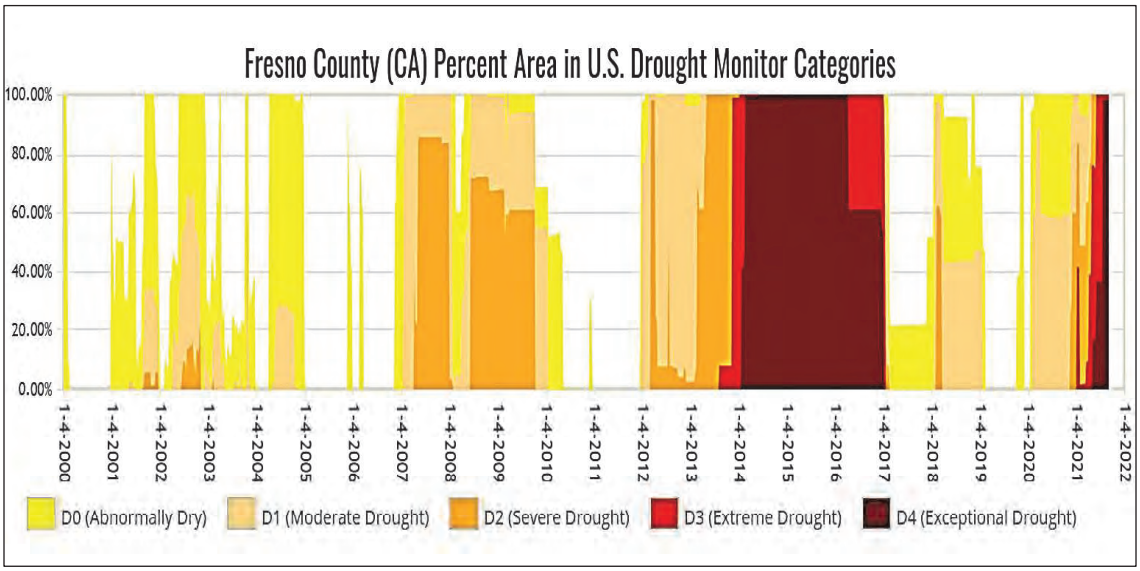
In addition to the local plans noted above, the region's issue with severe and ongoing drought was described in detail in the *Sacramento and San Joaquin Rivers Basin Study* (2016), which was funded by Reclamation, the California Department of Water Resources (DWR), and other local agencies. The Basin Study assessed current and future water supplies and demands in the Sacramento, San Joaquin and Tulare Lake Basins (Fresno is located in the Tulare Lake Basin) and evaluated the effects of projected 21st century climate changes (including drought) along with assumptions about potential population increases and land use changes. The Study found that temperatures will increase steadily, precipitation will change only slightly (from current drought conditions), snowpack will decrease in lower elevations of the mountains surrounding the Central Valley, and that increasing population and urban growth will increase urban water demands. The Study noted that demands already exceed the capacity of the existing water management system to supply adequate water—especially during droughts like the one California is now experiencing.

Evaluation Criterion D—Severity of Actual/Potential Drought Impacts Addressed by the Project (15 points)

Ongoing/Potential Impacts.

1.) **Background:** For over a decade, California has experienced below average rain fall, culminating in drought that impacted many areas of the state, including the San Joaquin Valley. From 2012 to 2016, Fresno County California was under moderate to extreme drought conditions, and conditions are currently rated as extreme (see Exhibit 9). UCLA climate scientist Daniel Swain has noted that in California, the "increase in drought severity has been driven by several factors, including extremely low rainfall, warmer than typical historical temperatures and unusually rapid snowmelt in mountain areas. Warming temperatures, a declining snowpack and a narrowing rainy season are all hallmarks of climate change in the region."

Exhibit 9:
Historical Drought Conditions in Fresno County, 2000-Present



2.) **Agricultural Impacts:** The San Joaquin Valley, including outlying areas of the City of Fresno, are important agricultural production centers, historically ranking as one of the highest agricultural producers in the world. This area is a national center for producing poultry, livestock, and a wide variety of crops. Agriculture, therefore, contributes significantly towards the economy of the San Joaquin Valley. Agriculture in this region depends heavily on groundwater, and ongoing drought has negatively impacted groundwater reserves because of over pumping in dry years. Adverse events in agriculture, such as drought, directly result in multiple adverse effects in the region's economy, including employment, wages, population migration, and food prices (*Impact of Drought on the San Joaquin Valley of California*; California State University, 2015). The project will reduce pressure on groundwater, thereby supporting agriculture, and thus helping to protect the region's economy.

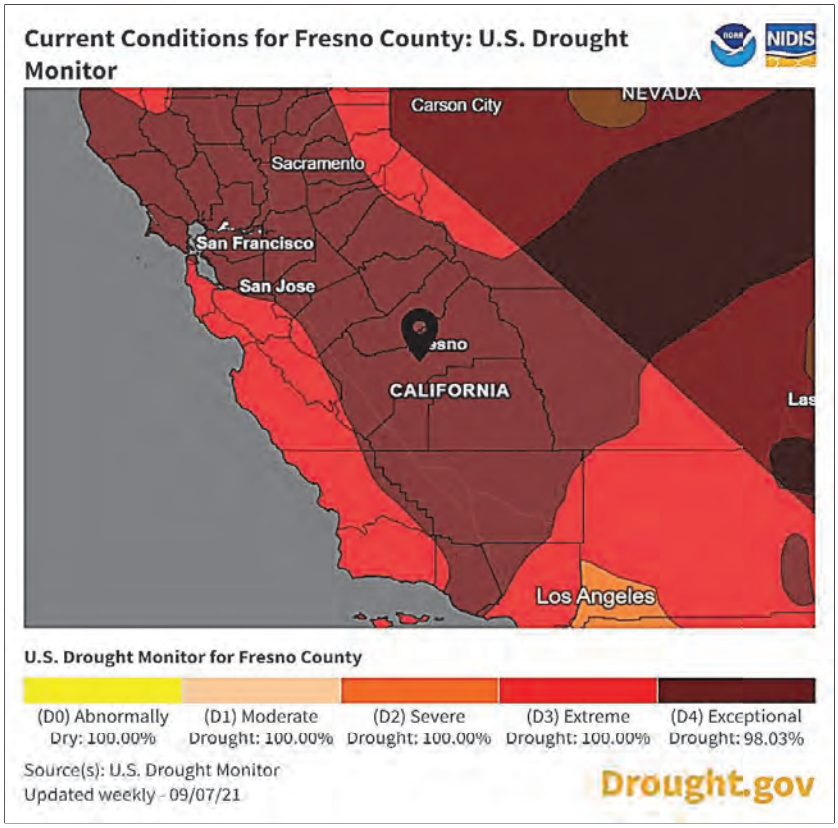
3.) **Groundwater Impacts:** Drought conditions in the San Joaquin Valley have resulted in over pumping of the groundwater basin. Groundwater from 10% of private wells located in the San Joaquin Valley tested within the last 10 years have shown arsenic concentrations above the recommended acceptable level of 10 µg/L (parts per billion, ppb), established by the World Health Organization. Studies have shown that arsenic concentrations are higher in clay layers of the aquifer system below the San Joaquin Valley. High vertical hydraulic gradients occur in the system during prolonged, heavy pumping, which causes a larger volume of water to be drawn from the aquifer's less-permeable clays. This induces the release of water with high arsenic concentrations. Consequently, over pumping increases arsenic concentrations (Smith, Ryan; et al., *2018.* "Over pumping leads to groundwater arsenic threat." Nature Communications, 9. Article Number 2089). Additionally, other priority contaminant plumes located beneath the City of Fresno are being controlled through minimum groundwater pumping to manage and prevent their spread. These contaminants include nitrate, 1,2-dibromo-3-chloropropane (DBCP), 1,2,3-trichloropropane (1,2,3-TCP), and other volatile organic compounds like trichloroethylene (TCE) and perchloroethylene (PCE). Continued pumping could lead to more wells contaminated. Reducing the pressure on groundwater by using recycled water, such as described in this project, could reduce the spread of contaminants in the groundwater system.

4.) **Recreation Impacts:** The City Hall and Fink-White Park sites are both used for recreation and are irrigated with potable water. As the City seeks to preserve precious potable supplies, choices will have to be made whether to continue irrigating these sites. As described above, Fink-White Park is the only green space within a nearly one-mile radius and is critically important for the disadvantaged and low-income residents who live there.

The use of recycled water for irrigation purposes at the three proposed project sites in Downtown Fresno will assist the City in preparing for climate change, help protect the economic foundation of the region, will assist in protecting groundwater quality and recreational sites, and will set the stage for future retrofit projects.

Existing/Potential Drought Conditions. On May 10, 2021, California Governor Gavin Newsom expanded an April 21, 2021, drought state of emergency proclamation to include a total of 41 counties, or 30% of the population of California, including Fresno County. On July 8, 2021, the Governor requested that Californians across the state reduce their water usage by 15% to help protect critical water supplies facing prolonged drought conditions. Early warm temperatures and extremely dry soils resulting from climate change characterized the 2021 California spring season. This depleted the expected surface water runoff from the Sierra-Cascade snowpack, resulting in historic, unanticipated reductions in the volume of water flowing to major reservoirs. According to *California Waterblog*, 2021 has been the third driest year in California in more than 100 years of precipitation record. Warmer than average temperatures for the spring and summer of 2021 further reduced stream flows and aquifer recharge and lengthened and deepened the wildfire season. Surface water available for agriculture is greatly reduced, especially in the San Joaquin Valley. City of Fresno Department of Public Utilities personnel have received calls from farmers within their jurisdiction reporting that their wells have gone dry, and they are unable to irrigate their crops. Approximately 98% of Fresno County, which includes the City of Fresno, is currently under Exceptional Drought Conditions (D4) according to the U.S. Drought Monitor as of September 7, 2021. Exhibit 10 shows these current conditions.

Exhibit 10:
Current Drought Conditions in Fresno County, September 7, 2021



Source : https://www.drought.gov/states/California/county/Fresno

Projections released from the National Oceanic and Atmospheric Administration in August 2021 show that drought conditions are predicted to persist in the western U.S., including California, through at least early fall. Therefore, implementation of the proposed project is an urgent task to combat the impacts of drought and to increase drought resiliency for the future.

Evaluation Criterion E —Project Implementation (10 points).

Proposed Project Implementation: Table 2 shows the activities and milestones of the proposed project scope of work.

Table 2
Implementation Plan

No.	High Level Activities/Milestones	Lead	Evaluation Technique	Dates
	Task #1: Grant Management			
1.1	Fully Executed Grant Agreement.	BOR/City	Grant award executed	07-2022/ 07-2022
1.2	Grant Administration	City	Successful audit	07-2022/ 06-2024
1.3	Submit Request for Reimbursements.	City	Request for reimbursement approved by BOR	01-2023 07-2023 01-2024
1.4	Submit progress reports required by grant agreement.	City	Progress reports submitted by City	01-2023 07-2023 01-2024
1.5	Complete final report and final payment request.	City	Final report approved by BOR	07-2024
1.6	Records Retention (3 years after final payment is made by BOR).	City	City to retain records for three years	07-2024/ 07-2027
	Task #2: Design/Permitting/Construction Management			
2.1	Project Design: Sites 1,2, & 3	City	Facility designs on file	03-2021/ 03-2022
2.2	Obtain construction permits	City	Copies of all construction permits	07-2022/ 08-2022
2.3	CEQA and NEPA Exemption Paperwork	City	Signed and stamped paperwork	07-2022/ 08-2022
2.4	Construction Management (21 months)	City	Notice of Completion	08-2022/ 04-2024
	Task #3: Construction (21 months)			
3.1	Request for Proposal for selection of Contractor	City	Request for Proposal for selection of Contractor	08-2022/ 11-2022
3.2	Execute agreement with selected Contractor	City	Signed contract on file	11-2022/ 11-2022
3.3.1	Project Site 1: City Hall – Connection to Recycled Water at intersection of Fresno and Q Streets	Contractor	Notice of Completion	12/2022- 04/2024
3.3.2	Project Site 2: Fink White Park – Connection to Recycled Water near end of Amador Street	Contractor	Notice of Completion	12/2022- 04/2024
3.3.3	Project Site 3: Fulton Mall Connection to Recycled Water at Fresno Street	Contractor	Notice of Completion	12/2022- 04/2024
3.4	Install recycled water signage and identification tags.	Contractor	Notice of Completion	05/2024- 06-2024
	Task #4: Monitoring and Performance Data			
4.1	Collect and report two months of performance data (including recycled water meter data)	City	Performance Data Including Recycled Water Meter Data	05-2024/ 06-2024

Required Permits: All permits required to perform the scope of work as well as required inspections are discussed in Section 4 found on page 27, and include a Traffic Control Permit, Street Work Permit, Building Permit, and an Air Quality Board Permit. The City anticipates no issues in obtaining required permits.

Engineering/Design Work Performed: Feasibility studies for each of the three sites were completed by the City's consultant, Blair Church and Flynn, in August and September of 2021. The scope of the studies included documenting the feasibility and regulatory requirements for use of recycled water for irrigation purposes, to identify design issues relevant to recycled water use scope of work, and to present related process and design recommendations to the City. Reports submitted to the City include the following:

- Feasibility Evaluation Report for Recycled Water Use at Fresno City Hall – 9/8/21
- Feasibility Evaluation Report for Recycled Water Use at Fink-White Park – 9/8/21
- Feasibility Evaluation Report for Recycled Water Use at Fulton Street – 9/11/21

The studies included recommendations on design elements for required infrastructure, as well as potential alignments of recycled water irrigation lines at each of the three sites. Hydraulic analyses were also performed to gauge the existing booster pumps' ability to maintain required system pressures to the irrigation system. Estimates of construction costs were also provided based on the recommendations of the reports and are included in the budget proposal in this application. Design and planning activities are currently underway and will be completed by March 2022. Construction is scheduled to begin by December 2022. Construction activities will be simultaneous at the three sites and are expected to take 17 months with an estimated date of completion of April 30, 2024.

New Policies/Administrative Actions: No new policies or actions are required. The City will be required to comply with all rules and regulations related to the use of recycled water, as they do with all sites where recycled water is used for irrigation. The rules and regulations include: 1) Title 22 regulations (state guidelines for how treated and recycled water is discharged and used), 2) the General Order (California State Water Board's adopted Water Reclamation Requirements for Recycled Water Use), and 3) the City' rules and regulations.

Evaluation Criterion F—Nexus to Reclamation (10 points)

Contract with Reclamation

In the 1960s, the City secured a surface water contract with Reclamation. The City of Fresno still contracts with the Reclamation CVP Friant Division for an annual supply of 60,000 AFY of Class 1 water under contract number 14-06-200-8910D. In wet years, surface water is both treated and used as potable water and sent to recharge basins to recharge the Kings Subbasin. In dry years, more groundwater is pumped and used as a potable water source. The proposed project will assist in allocating more surface water towards recharge of the groundwater system or for potable water use, rather than using groundwater.

End of 20-page Technical Proposal.

2. PROJECT BUDGET

2A. Funding Plan

The total estimated project cost is $613,811. Non-Federal Funding source match for this project will come from the City of Fresno – Department of Public Utilities (DPU), Public Works (PW), and Parks, After School, Recreation and Community Services (PARCS) Departments, totaling $320,361. The non-Federal portion of this request is 52% of the total project cost (see Tables 3 and 5). Funding from BOR will provide the final funding needed for the City to complete construction of the proposed project.

The budget proposal includes the following costs that have been or will be incurred prior to award, which is estimated as July 1,2022. Feasibility studies at each site were initiated in Spring 2021 and completed in August and September of 2021. Project design and construction drawings were initiated in August 2021 and will be complete by March 2022. The total cost for these activities is $177,525 (see Table 5).

2B. Budget Proposal

Table 3. Total Project Cost Summary

Source	Amount	Percentage
Costs to be reimbursed with the requested Federal funding	$293,450	48%
Costs to be paid by the applicant	$320,361	52%
Value of third-party contributions	$0	0%
TOTAL PROJECT COSTS	**$613,811**	**100%**

Table 4. Non-Federal and Federal Funding Sources Summary

Funding Sources	Amount
Non-Federal Entities	
1. City of Fresno	$320,361
Non-Federal Subtotal	**$320,361**
REQUESTED RECLAMATION FUNDING	**$293,450**

TABLE 5 Proposed Budget (2 YEARS)						
	Computation			Fresno Cost-Share	BOR Grant (50%)	TOTAL COST
Budget Item Description	**$/Unit**	**Unit**	**Quantity (2 Yrs)**		**$500,000 (max)**	
Salaries, Wages and Fringe						
Project Manager	$37.71	hr	500	$18,855		$18,855
Public Works Liaison	$55.79	hr	100	$5,579		$5,579
PARCS Liaison	$53.90	hr	100	$5,390		$5,390
Grant Administrator	$42.67	hr	200	$8,534		$8,534
Construction Management	$37.21	hr	792	$29,470		$29,470
Salaries and Wages Subtotal				**$67,827**		**$67,827**
				$0		
Fringe Benefits - Project Manager	$11.75	hr	500	$5,875		$5,875
Fringe Benefits - Public Works Liaisaon	$18.60	hr	100	$1,860		$1,860
Fringe Benefits - PARCS Liaison	$14.06	hr	100	$1,406		$1,406
Fringe Benefits - Grant Administrator	$14.22	hr	200	$2,845		$2,845
Fringe Benefits - Construction Management	$9.12	hr	792	$7,223		$7,223
Fringe Benefits Subtotal				**$19,208**		**$19,208**
Contractual/Design						
Project Design (Feasiblity Studies, Design, Drawings)	$158,400	LS	1	**$158,400**		**$158,400**
Other/Permitting-Environmental						
State DDW Review and Approval (3 Sites)	$200	hr	42	$8,400		$8,400
Steet work Permit (no cost)	$0		0	$0		$0
Air Quality Board Permit (no cost)	$0	LS	1	$0		$0
Building Permit	$8,000	LS	1	$8,000		$8,000
Traffic Control Permit	$575	LS	3	$1,725		$1,725
Environmental-CEQA/NEPA Exemption Paperwork	$ 1,000	LS	1	$1,000		$1,000
Other/Permitting-Environmental Subtotal				**$19,125**		**$19,125**
CONSTRUCTION ***Project Site #1: City Hall***						
1. Mobilization	$4,550	LS	**1**		$4,550	$4,550
2. Clearing/Grubbing/Demo	$6,500	LS	**1**		$6,500	$6,500
1. 3-in Recycled Water Irrigation Main	$39	LF	250		$9,750	$9,750
2. 3-in Gate Valve	$728	each	2		$1,456	$1,456
3. 2-in Recycled Water Meter	$1,950	each	1		$1,950	$1,950
4. Connection to Existing Pipes	$3,250	LS	1		$3,250	$3,250
5. Recycled Water Signage/Marking	$3,900	LS	1		$3,900	$3,900
6. Swivel-Ell Assembly	$6,500	LS	1		$6,500	$6,500
7. Replace Valve Box Lids	$2,600	LS	1		$2,600	$2,600
10. Retrofit Sprinkler Heads	$3,250	LS	1		$3,250	$3,250
11. Retrofit Irrigation Control Facilities	$1,950	LS	1		$1,950	$1,950
12. Booster Pump Assembly	$32,500	LS	1		$32,500	$32,500
13. Irrigation System Control Improvements	$3,900	LS	1		$3,900	$3,900
14. Remove and Replace asphalt/ concrete	$3,250	LS	1		$3,250	$3,250
15. Remove and Replace Concrete Sidewalk	$3,900	LS	1		$3,900	$3,900
16. Remove and Replace Concrete Curb	$3,250	LS	1		$3,250	$3,250
17. Misc. Facilities and Operations	$3,744	LS	1		$3,744	$3,744

TABLE 5, Continued. Proposed Budget (2 YEARS)						
	Computation			Fresno Cost-Share	BOR Grant (50%)	TOTAL COST
Budget Item Description	$/Unit	Unit	Quantity (2 Yrs)		$500,000 (max)	
CONSTRUCTION ***Project Site 2: Fink-White P ark***						
1. Mobilization	$7,150	LS	1		$7,150	$7,150
2. Clearing/Grubbing/Demo	$6,500	LS	1		$6,500	$6,500
3. 6-in Recycled Water Irrigation Main	$72	LF	650		$46,475	$46,475
4. 6-in Gate Valve	$1,222	each	2		$2,444	$2,444
5. 4-in Recycled Water Meter	$3,380	LS	1		$3,380	$3,380
6. Reduced Pressure Principle Backflow Preventer	$2,600	each	1		$2,600	$2,600
7. Connection to Existing Pipes	$3,250	LS	1		$3,250	$3,250
8. Recycled Water Signage/Marking	$3,900	LS	1		$3,900	$3,900
9. Swivel-Ell Assembly	$6,500	LS	1		$6,500	$6,500
10. Replace Valve Box Lids	$2,600	LS	1		$2,600	$2,600
11. Retrofit Sprinkler Heads	$6,500	LS	1		$6,500	$6,500
12. Retrofit Irrigation Control Facilities	$1,300	LS	1		$1,300	$1,300
13. Booster Pump Assembly	$52,000	LS	1		$52,000	$52,000
14. Trench Resurfacing	$6,500	LS	1		$6,500	$6,500
15. Site Grading	$4,550	LS	1		$4,550	$4,550
15. Misc. Facilities and Operation	$7,501	LS	1		$7,501	$7,501
CONSTRUCTION ***Project Site #3: Fulton Mall***						
1. Mobilization	$5,500	LS	1		$5,500	$5,500
2. Clearing/Grubbing/Demo	$2,750	LS	1		$2,750	$2,750
3. 2-in Recycled Water Irrigation Main	$22	LF	20		$440	$440
4. 2-in Gate Valve	$451	each	1		$451	$451
5. 2-in Recycled Water Meter	$1,650	each	1		$1,650	$1,650
6. Reduced Pressure Principle Backflow Preventer	$2,079	each	1		$2,079	$2,079
7. Connection to Existing Pipes	$2,750	LS	1		$2,750	$2,750
8. Recycled Water Signage/Marking	$5,500	LS	1		$5,500	$5,500
9. Swivel-Ell Assembly	$5,500	LS	1		$5,500	$5,500
10. Resurfacing	$5,500	LS	1		$5,500	$5,500
11. Misc. Facilities and Operations	$1,980	LS	1		$1,980	$1,980
Construction Subtotal (3 Sites)					**$293,450**	**$293,450**
Total Direct Costs						$558,010
Indirect--10% De Minimum (on Total Direct Costs)	$558,010	%	0.1	$55,801	0	$55,801
TOTAL PROJECT COSTS				**$320,361**	**$293,450**	**$613,811**
Percentage Contribution by Funding Source				**52%**	**48%**	**100%**

Salaries and Wages: Total salaries of $87,035 are anticipated for the proposed project and include key staff and fringe benefits associated with project completion, as well as grant management time. Staff required for this project are discussed below.

- **Project Manager**: The project manager is responsible for procurement (including developing the RFP, reviewing proposals, and selecting the contractor), coordinating and participating in monthly meetings with consultants/contractor, managing the design, environmental, and construction process, reviewing design documents and plans, and

securing permits. The project manager serves as the primary contact with Reclamation and will be responsible for the project's budget and schedule.

- **Public Works Liaison:** The Public Works liaison will provide Public-Works related expertise at two of the three project sites: City Hall and Fulton Street. The liaison acts as a resource on design plans when the consultant has questions about Public Works infrastructure or other related questions that may have a bearing on design. The liaison will address requests for information from the contractor for unforeseen issues and circumstances that arise prior to or during construction activities.
- **PARCS Liaison:** The PARCS liaison will provide expertise at one of the three project sites: Fink-White Park. The liaison acts as a resource on design plans when the contractor has questions about PARCS infrastructure or other related questions that may have a bearing on design. The liaison will address requests for information from the contractor for unforeseen issues and circumstances that arise prior to or during construction activities.
- **Grant Administrator:** The grant manager will be responsible for managing the reporting, payments, and invoicing associated with the grant project, as well as provide monthly monitoring data.
- **Construction Management:** Construction management will be conducted by staff in the City Department of Public Works. Estimated costs are based on a blended rate for the Construction Management Team which includes engineers, surveyors, and inspectors.
- **Fringe Benefits**: Fringe benefits for the staff identified above are estimated at approximately $19,208. Proposed staff are in three different City departments (DPU, PW, and PARCS), and thus rates vary. Fringe includes costs for vacation, sick leave, employee retirement contributions, health and life insurance, disability and liability insurance, worker's compensation insurance, and costs for benefits administration.

Contractual/Design: Total contractual and design costs are $158,400 and are described below.

- **Feasibility Studies and Design Costs**: The City's consultant completed feasibility studies at each of the three project sites in August and September 2021. The studies included design recommendations and construction costs. The City has contracted with a consultant for design at each of the three sites following recommendations made in the feasibility studies.

Other – Permitting and Environmental: Permitting and environmental costs are $19,125 and are described below.

- **DDW Review and Approval**: The California Water Boards – Division of Drinking Water (DDW) must review and approve the feasibility studies conducted by the City's Consultant prior to construction activities. Costs provided in the budget proposal are based on a DDW rate of $200/hour and an estimate of 14 hours of time spent per site (14 hours x 3 sites = 42 hours).
- **Permitting:** Costs for permits are estimates from previous projects of similar size and scope. Permits required include Air Quality, Street Work, Building, and Traffic Control permits. There is no cost associated with an Air Quality or Street Permit, however both are required to provide information for recordkeeping purposes. The cost for the traffic control permits

assumes each of the three sites will need a level three permit, which covers all the following:
    - Level 1 – Shoulder and/or sidewalk closures
    - Level 2 - Lane closures, lane shifts, and flagging operations
    - Level 3 - Road closures and traffic re-route plans
- **Environmental and Regulatory Compliance Costs:** The project is categorically exempt from CEQA and NEPA, and a Notice of Exemption and Categorical Exemption will be filed at a cost of $1,000 lump sum for the three sites. The cost for filing paperwork is an estimate from previous projects of similar size and scope.

Travel: Not applicable.

Equipment: Not applicable.

Materials and Supplies: Not applicable.

Construction: Total Construction costs for all three sites are $293,450. The contractor will be selected using the City's established procurement processes, which fully aligns with federal procurement requirements. Feasibility studies conducted at each of the three sites were performed by the City's Consultant Blair, Church & Flynn and included recommendations for each site as well as a cost analysis. Costs for the feasibility studies are included in the budget proposal under Design/Permitting. Construction activities will include mobilization, traffic control, clearing, demolition and grubbing where needed, connections to existing recycled water main, and installation of construction components. These components include the following: water irrigation mains; gate valves; reduced pressure principle backflow preventers; recycled water meters; recycled water signage; replacement of valve box lids; swivel ell assembly and installation; retrofitting of sprinkler heads and irrigation control facilities; booster pump assembly and installation; irrigation system control improvements where needed, and; recycled water signage. Costs also include trench resurfacing, site grading, replacement of asphalt and/or concrete, and site resurfacing, where needed.

Third-Party In-Kind Contributions: Not applicable.

Other Expenses: Not applicable.

Indirect Costs: Indirect costs are calculated at 10% of the total project costs, using the allowed 10% de minimus calculation on total direct costs.

3. ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

As noted previously, the project is categorically exempt from CEQA and NEPA, and a Notice of Exemption and Categorical Exemption will be filed, respectively. The project is upgrading

existing facilities, on previously disturbed ground, and requires only minor alternations to the land. The new recycled water lines will be installed adjacent to the existing potable water lines.

Impacts to the Surrounding Environment.
No long-term impacts on the surrounding environment are expected. The project will require *temporary* traffic control and mitigation measures during construction (only) near the City Hall and Fulton Mall sites, as traffic is heavier in these areas. Materials that will be removed to lay the new "purple" pipe (e.g., sod, sidewalk, etc.) will be replaced so that, aesthetically, the three sites will appear unchanged.

Threated or Endangered Species.
There are **no known threatened or endangered species** at the three project sites, all of which are urban and or suburban in nature. The City's natural resources are located primarily along the San Joaquin River, which is approximately eight miles north of the three project sites. Owing to the year-round presence of water, the river bottom and bluffs host the richest aquatic and riparian forest biota in the City. It is in this area where migratory waterfowl and federally and state-listed endangered wildlife are most likely be encountered. These species include the valley elderberry longhorn beetle, and the giant garter snake.

Wetlands or Surface Waters Inside the Project Boundary.
There are **no wetlands or other surface waters** located inside the project boundaries.

Water Delivery System Construction Date.
The original Fresno water system began operations in 1876 as a non-profit organization. Initially, the water system consisted of one pumping station composed of small pumps and two storage tanks. In 1888, the first pumping station and water tower were constructed. After ownership by several different entities, the water system was acquired by the City of Fresno in 1931 and has been operated as a municipal utility since that time. Most of the current infrastructure was constructed after the 1950's and some are more than 100 years old.

Modifications of, or Effects to, an Irrigation System.
No modifications will be made to irrigation systems that affects features such as headgates, canals, or flumes. Minor modifications will be made to the sprinkler systems at each of the three sites to ensure that that the systems are compatible with recycled water, and in some cases to convert from water-wasting spray nozzles to water-smart drip systems.

National Register of Historic Places.
There are thirty-two sites in Fresno and the immediate surrounding area in the National Register of Historic Places, but **none are located on the three project sites.** (http://historicfresno.org/nrhp/nrhp.html)

Archeological sites.
There are **no archaeological sites** in the vicinity of the three project sites.

Effect on Low income or Minority Populations.
The Census Tracts where the three project sites are located are classified by the State of

California as disadvantaged, but there will be **no disproportionately adverse effects** to these communities. In fact, these communities will benefit from the project, as follows:

1.) Low-income communities would bear a significant burden if water prices were to soar in the face of water shortages. The project is part of the City's larger plan to secure the sustainability of the City's water supplies (and thus, water prices); and
2.) Low-income communities reap the benefits of green space. All three project sites are in the midst of communities that are classified as low-income and bear a high level of pollution burden. Fresno County routinely ranks among the worst counties in the nation for ozone and year-round particle pollution according to the American Lung Association's *Annual State of Air* findings. One of the project sites (Fink-White Park) is located in an area of the City that is considered "park deficient," underlying the importance of this green space to the well-being of children and families who live there.

Access to Indian Sacred Sites or Impact on Tribal Lands.
The project sites are **not** located on sacred sites or tribal lands. All three project sites are located on City-owned property, and on previously disturbed ground.

Noxious Weed or Invasive Species.
The project will **not** introduce noxious weeds or invasive species. The only planting that will take place is the replacement of sod (if necessary) where new "purple" pipes are installed.

4. REQUIRED PERMITS AND/OR APPROVALS

Required Approval
The City of Fresno owns the land on which the three sites are located, and construction will occur. There are no water rights associated with the proposed project. Under the City of Fresno – State Water Resources Control Board, Order WQ 2016-0068-DDW, water reclamation requirements for recycled water use are outlined. The following are documents that the Fresno Department of Public Utilities will be required to submit to ensure program compliance for approval of recycled water use under the aforementioned order.

- Record Drawings
- Plans
- Site Supervisor Training Certification
- Cross Connection Survey and inspection

The City is required to submit information to the California Water Boards - Division of Drinking Water (DDW) on each use area as it is developed and receive written approval prior to delivering recycled water. As part of this submittal, the City shall include an addendum to the Title 22 Engineering Report describing the use area in detail for DDW approval. DDW will need

to review and approve all plans and drawings for each of the three sites prior to construction activities.

Inspection

The City will perform a final inspection to ensure all requirements have been met prior to establishing Recycled Water service. This inspection will be coordinated with the Cross Connection Survey. The inspector will check to see that the proper equipment was used and that all required tags, labels, and signs are in place. The City must grant final approval before Recycled Water may be supplied to the Use Area. Final approval will be granted when construction has been completed in accordance with approved Record Drawings, all Cross Connection tests have been performed, a final on-site inspection has been conducted, and all requirements have been met satisfactorily. DDW will be provided with a copy of all test and inspection reports as well as notification that Recycled Water service has started. For the lifetime of the On-site Recycled Water System, the City will periodically inspect the Use Area to ensure compliance with all applicable Rules and Regulations.

Required Permits

Finally, the following permits will be required to be obtained prior to start of construction activities:

- **Traffic Control Permit** – This permit comes from the City of Fresno – Department of Public Works, Traffic Operations and Planning to limit and control access to shoulders and sidewalks; approve plans for lane closures, lane shifts and flagging operations, and/or; approve road closures and associated plans related to any construction activities.
- **Street Work Permit**– This is a no cost permit issued by the City to the contractor that is used to allow construction work in the public right-of-way. Permits are kept for recordkeeping purposes.
- **Building Permit**– This permit provides written authorization issued by the City to ensure the safety of the work and its compliance with building, construction, and zoning codes.
- **Air Quality Board Permit** – In California, Air Quality Board permits are needed to protect human health and the environment by limiting air pollution that may be a part of project activities. Permits help ensure that air quality remains within state and federal standards.

5. LETTERS OF PROJECT SUPPORT

Letters of support for this project from the Downtown Fresno Partnership, Congressman Jim Costa, Fresno County District 3 Supervisor Sal Quintero, and Tree Fresno are included in Appendix B.

6. OFFICIAL RESOLUTION

An Official Resolution will be brought to City Council on October 28th, 2021, and once signed will be submitted under separate cover to BOR immediately. A draft of the Resolution that will go before City Council is included in Appendix C.

APPENDICES

APPENDIX A

Drought Plan

APPENDIX B

Letters of Project Support

1. **Downtown Fresno Partnership**
2. **Congressman Jim Costa**
3. **Fresno County Supervisor Sal Quintero, 3rd District**
4. **Tree Fresno**

September 23, 2021

Ms. Sheri Looper
Reclamation Drought Coordinator
Bureau of Reclamation
Mail Code: MP-400
2800 Cottage Way
Sacramento, CA 95825

Re: ***City of Fresno - Recycled Water Retrofit Project***

Dear Ms. Looper:

The Downtown Fresno Partnership is happy to write this letter of support for the City of Fresno – Department of Public Utilities' application to the Department of the Interior, Bureau of Reclamation FY 2022 WaterSMART Drought Resiliency Grant Program for the Recycled Water Retrofit Project. This project proposes to retrofit existing irrigation infrastructure so that recycled water can be used in place of potable water for the irrigation of three green spaces located in downtown Fresno: City Hall, Fink-White Park, and the Fulton Street medians.

The Downtown Fresno Partnership is a partnership between the public and private sector, organized for the improvement of downtown Fresno. Our partnership endeavors to lead downtown Fresno toward its future as a vibrant hub of business activity by promoting the downtown's image; supporting physical improvements and development; advocating for merchants; and hosting special events that bring new life to the historic core of our city. We work to improve the downtown physical environment in many ways, including, but not limited to, adding new landscaping and improving existing landscaping.

We believe that the completion of the Recycled Water Retrofit Project would improve our downtown area by sustainably supporting the three green spaces identified in the project. This project will also help to ensure these green spaces will continue to be sustainable aesthetic components of a thriving community. A study by the Urban Institute in 2011 indicated that there is a significant link between property values and the proximity to parks, open space and green areas. Three neighborhood studies in Boulder, Colorado indicated that for each foot away from a green space, property values decreased by $4.20. Green spaces also offer business benefits, as greening can renew business districts by increasing community pride, positive perception, and drawing in customers. For these reasons, the Downtown Fresno Partnership strongly supports the City's proposed project which, if implemented, will further support our vision for a vibrant and successful downtown.

Sincerely,

James Cerracchio
President & CEO

JIM COSTA
16TH DISTRICT, CALIFORNIA
WEB PAGE: www.costa.house.gov

COMMITTEE ON AGRICULTURE
CHAIR - SUBCOMMITTEE ON
LIVESTOCK AND FOREIGN AGRICULTURE

COMMITTEE ON NATURAL RESOURCES
SUBCOMMITTEE ON
WATER, OCEANS, AND WILDLIFE

CONGRESS OF THE UNITED STATES
HOUSE OF REPRESENTATIVES
WASHINGTON, DC 20515

COMMITTEE ON FOREIGN AFFAIRS
SUBCOMMITTEE ON
EUROPE, EURASIA, ENERGY, AND THE ENVIRONMENT

TRANSATLANTIC LEGISLATORS' DIALOGUE
CHAIR

NATO PARLIAMENTARY ASSEMBLY
MEMBER

September 22, 2021

Ms. Sheri Looper
Reclamation Drought Coordinator
Bureau of Reclamation
Mail Code: MP-400
2800 Cottage Way
Sacramento, CA 95825

Re: Application for the City of Fresno Recycled Water Retrofit Project

Dear Ms. Looper:

This letter serves to express my support for the City of Fresno Department of Public Utilities' application for the WaterSMART Drought Response Program: Drought Resiliency Projects Grant (WaterSMART Grant) for Fiscal Year 2022 for the Recycled Water Retrofit Project. This proactive approach made by the City of Fresno Department of Public Utilities will utilize recycled water for irrigation purposes.

If funded, this grant will help ease the strain on water resources for the City of Fresno. It will also allow three green spaces in downtown Fresno to use recycled water for irrigation. The City of Fresno is presenting a smart solution to our current devastating drought conditions. As a Member of the House Natural Resource Committee, I see this project as a critical step in the right direction and as a long-term solution to the increased strain on our water resources. This effort will help reduce imported potable water usage in irrigation and will move us forward in increasing the use of recycled water and creating a better management of our region's valuable resources.

Securing of water resources and supporting forward-thinking water projects in California's Central Valley remain one of my top priorities. By converting the irrigation systems at these locations to utilize recycled water, the project is anticipated to save the City a total of 70 acre-feet per year of potable water across the three locations.

As the representative of California's 16th Congressional District and lifelong Central Valley resident, I am proud to offer my full support for the City of Fresno Department of Public Utilities application. It is my sincere hope that this application receives full and fair consideration. If you would like further input from me regarding this letter of support, please do not hesitate to contact me at my Fresno District Office at (559) 495-1620.

Sincerely,

JIM COSTA
Member of Congress

FRESNO OFFICE:
855 M STREET, SUITE 940
FRESNO, CA 93721
PHONE: (559) 495-1620
FAX: (559) 495-1027

MERCED OFFICE:
2222 M STREET, SUITE 305
MERCED, CA 95340
PHONE: (209) 384-1620
FAX: (209) 384-1629

WASHINGTON OFFICE:
2081 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
PHONE: (202) 225-3341
FAX: (202) 225-9308

County of Fresno
BOARD OF SUPERVISORS
SUPERVISOR SAL QUINTERO – DISTRICT THREE

September 22, 2021

Camille Calimlim Touton
Deputy Commissioner, External and Intergovernmental Affairs
Bureau of Reclamation
1849 C Street NW
Washington DC 20240-0001

Re: Recycled Water Retrofit Project, City of Fresno

Dear Ms. Touton,

I am writing to you to express my support for the Recycled Water Retrofit Project initiated by the City of Fresno. I understand that the City hopes to fund part of this project through submittal of a grant application. The proposed project will allow recycled water to serve irrigation systems located at City Hall, Fulton Street and Fink-White Park located in downtown Fresno, aiding in reduced of use of potable water.

I am very aware of the issues Fresno faces as it looks to maintain resources for our growing City under the threat of prolonged drought. As a life-long resident and community member, I have a deep appreciation for Fresno's rich history, diverse community, and what the future holds for our great City. One of my top priorities when I ran for this office was upgrading aging infrastructure in the City's neighborhoods. I understand that solving our water crises is a vital component to keeping our City a healthy, thriving one, and feel positive that the proposed project to upgrade existing water supply infrastructure will improve our City. This project represents a step to further strengthen Fresno's adaptability in the face of climate change and will improve our ability to better serve the citizens of Fresno.

I support the Recycled Water Retrofit Project application, as it will provide many benefits, both economic and environmental. Thank you for your consideration in funding this important project. Should you have any questions please contact my office at (559) 600-3000 or district3@fresnocountyca.gov

Sincerely,

Sal Quintero
Fresno County Supervisor, District 3

We create special places. We plant, care, inspire.
We are a voice, a teacher, a steward.

September 23, 2021

Ms. Sheri Looper
Reclamation Drought Coordinator
Bureau of Reclamation
Mail Code: MP-400
2800 Cottage Way
Sacramento, CA 95825

Re: Recycled Water Retrofit Project - City of Fresno

Dear Ms. Looper,

On behalf of Tree Fresno, I am writing to share our support of The City of Fresno – Department of Public Utilities' application to the FY 2022 WaterSMART Drought Resiliency Grant Program. This project will retrofit irrigation infrastructure within the City of Fresno to utilize recycled water, rather than potable water, to irrigate green spaces at three locations.

The mission of Tree Fresno is to transform the San Joaquin Valley with trees, greenways, and beautiful landscapes. Trees and green spaces help us connect with nature and restore our health, ability to learn, happiness and spirit. We also believe that environmental stewardship saves lives and is a responsibility of every citizen. Projects that support maintenance of healthy green spaces using environmentally friendly practices are illustrative of our core values. We know that green spaces create healthy communities. Studies led by the Human Environment Research Lab at the University of Illinois Urbana-Champaign have concluded that "Green spaces are gathering places that create close-knit communities and improve well-being."

Completion of the proposed project would not only help keep current City green spaces thriving but would also allow a significant reduction in use of one of our most valuable resources in the Central Valley – potable water. Reduction of potable water use is a basic, but critical, environmental stewardship action.

Tree Fresno strongly supports this proposal, and we thank you for your consideration of our letter.

Sincerely,

Mona N. Cummings

Mona N. Cummings
Chief Executive Officer

3150 East Barstow Avenue, Fresno, CA 93740 — Office 559-221-5556, Fax 559-221-5559 — www.treefresno.org